NATIONAL SCIENCE FOUNDATION

2014

APPENDIX TABLES

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National Science Board

Science & Engineering Indicators

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APPENDIX TABLES

Science & Engineering Indicators

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Appendix table 1-1

First-time kindergarteners and their average mathematics and science assessment scores, by child, family, and school characteristics: Academic year 2010−11

Child, family, and school characteristic	Number	Percent distribution	Assessment score: Mathematics, fall 2010	Mathematics, spring 2011	Science, spring 2011[a]
All children	3,472,902	100	29.3	42.0	11.4
Sex					
Male	1,779,792	51	29.4	42.0	11.4
Female	1,693,109	49	29.2	42.0	11.3
Race or ethnicity[b]					
American Indian or Alaska Native	42,970	1	26.3	40.2	11.5
Asian	142,096	4	34.5	46.0	10.8
Black	458,058	13	25.8	37.5	10.0
Hispanic[c]	820,424	24	24.7	37.8	9.7
White	1,844,241	53	31.7	44.6	12.4
Family poverty status in fall 2010[d]					
Income below the federal poverty level	707,334	25	24.1	36.8	9.8
Income between 100% and 199% of the federal poverty level	635,889	22	27.9	40.6	11.1
Income at or above 200% of the federal poverty level	1,519,452	53	33.3	45.9	12.5
Parents' highest education in fall 2010[e]					
Less than high school education	308,586	9	21.0	34.3	8.7
High school education	706,967	20	24.7	37.4	10.2
Some college/vocational degree	1,122,354	32	28.4	41.1	11.3
Bachelor's degree	693,651	20	33.1	45.8	12.3
Graduate/professional school	630,113	18	35.7	48.1	12.8
Family type in fall 2010[f]					
Two parents	2,432,987	76	30.6	43.4	11.7
One parent	715,725	22	25.9	38.3	10.6
Other	69,293	2	24.6	37.3	10.7
Primary home language in fall 2010[g]					
Not English	514,014	15	24.1	37.3	8.8
English	2,909,750	84	30.2	42.9	11.8
School type in fall 2010					
Public	3,074,220	89	28.8	41.5	11.2
Private	398,682	11	32.9	45.8	12.3

[a] There was no science assessment in fall 2010.
[b] Other racial and ethnic groups are included in All children but are not shown separately in the table.
[c] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[d] Poverty status is based on 2010 U.S. Census poverty thresholds, which identify incomes determined to meet household needs, given family size. For example, in 2010 a family of two was below the poverty threshold if its income was lower than $14,220.
[e] The highest level of education achieved by either of the parents or guardians in a two-parent household or by the only parent or guardian in a single-parent household.
[f] Two parents includes two biological parents, two adoptive parents, and one biological/adoptive parent and one other parent/partner. One parent refers to one biological or adoptive parent only. Other refers to related or unrelated guardians.
[g] Excludes about 1% of students with multiple home languages or no primary home language identified.

NOTES: Mathematics assessment scores range from 0 to 75, and science assessment scores range from 0 to 20. Detail may not sum to total due to rounding, missing data, and categories excluded for some variables.

SOURCES: Science scores: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Early Childhood Longitudinal Study, Kindergarten Class of 2010−11, National Center for Education Statistics. Number of students and mathematics scores: Mulligan GM, Hastedt S, McCarroll JC, *First-Time Kindergartners in 2010−11: First Findings From the Kindergarten Rounds of the Early Childhood Longitudinal Study, Kindergarten Class of 2010−11* (ECLS-K:2011), NCES 2012-049 (2012).

Science and Engineering Indicators 2014

Appendix table 1-2

Average NAEP mathematics scores of students in grades 4 and 8, by student and school characteristics: 1990–2011

Grade/student and school characteristic	1990	1992	1996	2000	2003	2005	2007	2009	2011
All grade 4 students	213	220	224	226	235	238	240	240	241
Sex									
Male	214	221	224	227	236	239	241	241	241
Female	213	219	223	224	233	237	239	239	240
Race or ethnicity[a]									
American Indian or Alaska Native	S	S	217	208	223	226	228	225	225
Asian or Pacific Islander	225	231	229	S	246	251	253	255	256
Black	188	193	198	203	216	220	222	222	224
Hispanic[b]	200	202	207	208	222	226	227	227	229
White	220	227	232	234	243	246	248	248	249
Sex by race or ethnicity[a]									
Male									
American Indian or Alaska Native	S	S	S	S	224	228	228	226	225
Asian or Pacific Islander	S	231	229	S	248	252	255	255	255
Black	187	193	197	203	216	219	221	222	223
Hispanic[b]	200	201	208	207	223	227	228	228	230
White	221	229	233	237	245	248	250	249	250
Female									
American Indian or Alaska Native	S	S	S	S	222	225	227	224	225
Asian or Pacific Islander	S	231	229	S	245	250	252	255	256
Black	188	193	199	204	216	220	223	223	225
Hispanic[b]	200	204	207	208	220	224	226	227	228
White	219	226	231	232	242	245	247	247	248
Free/reduced-price lunch[c]									
Eligible	NA	NA	207	208	222	225	227	227	229
Not eligible	NA	NA	232	235	244	248	249	250	252
English language learner status[d]									
English language learner	S	S	201	199	214	216	217	218	219
Not English language learner	S	S	225	227	237	240	242	242	243
Student disability status[d]									
Has a disability	S	S	204	198	214	219	220	221	218
Does not have a disability	S	S	225	228	237	240	242	242	244
Score at percentile[e]									
10th	171	177	182	184	197	200	202	202	203
25th	193	199	203	205	216	220	222	221	222
50th	214	221	225	227	236	239	242	241	242
75th	235	242	245	248	255	258	260	260	261
90th	253	259	262	265	270	273	275	275	276
School type									
Public	212	219	222	224	234	237	239	239	240
Charter school[f]	NA	NA	NA	NA	228	232	234	231	237
Noncharter school	NA	NA	NA	NA	235	238	240	240	241
Private	224	228	235	238	244	S	246	246	247
All grade 8 students	263	268	270	273	278	279	281	283	284
Sex									
Male	263	268	271	274	278	280	282	284	284
Female	262	269	269	272	277	278	280	282	283
Race or ethnicity[a]									
American Indian or Alaska Native	S	S	S	259	263	264	264	266	265
Asian or Pacific Islander	275	290	S	288	291	295	297	301	303
Black	237	237	240	244	252	255	260	261	262
Hispanic[b]	246	249	251	253	259	262	265	266	270
White	270	277	281	284	288	289	291	293	293
Sex by race or ethnicity[a]									
Male									
American Indian or Alaska Native	S	S	S	261	264	266	264	267	265

Appendix table 1-2

Average NAEP mathematics scores of students in grades 4 and 8, by student and school characteristics: 1990–2011

Grade/student and school characteristic	1990	1992	1996	2000	2003	2005	2007	2009	2011
Asian or Pacific Islander	273	290	S	287	291	296	297	301	302
Black	236	237	241	243	252	254	259	260	261
Hispanic[b]	247	250	253	253	260	263	265	268	271
White	271	276	281	285	289	289	293	294	295
Female									
American Indian or Alaska Native	S	S	S	257	262	262	263	264	266
Asian or Pacific Islander	S	290	S	290	291	294	297	300	303
Black	238	237	239	245	253	255	260	262	264
Hispanic[b]	244	248	249	252	258	261	264	265	270
White	269	277	280	283	287	288	290	292	292
Free/reduced-price lunch[c]									
Eligible	NA	NA	250	253	259	262	265	266	269
Not eligible	NA	NA	277	283	287	288	291	294	296
English language learner status[d]									
English language learner	S	S	226	234	242	244	246	243	244
Not English language learner	S	S	272	274	279	281	283	285	286
Student disability status[d]									
Has a disability	S	S	231	230	242	245	246	249	250
Does not have a disability	S	S	273	276	282	283	285	287	288
Score at percentile[e]									
10th	215	221	221	223	230	231	235	236	237
25th	239	243	245	249	254	255	258	259	260
50th	264	269	273	275	279	280	283	284	285
75th	288	294	297	300	303	304	306	308	309
90th	307	315	316	320	323	324	327	329	329
Type of school									
Public	262	267	269	272	276	278	280	282	283
Charter school[f]	NA	NA	NA	NA	NA	268	273	275	281
Noncharter school	NA	NA	NA	NA	NA	279	281	283	284
Private	271	281	285	286	292	S	293	296	296

NA = not available; S = suppressed, estimate unreliable.

NAEP = National Assessment of Educational Progress.

[a] Other racial and ethnic groups are included in the rows for All grade 4 students and All grade 8 students but are not shown separately in the table.
[b] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[c] Information on students' eligibility for free/reduced-price lunch, a measure of family poverty, was first collected in 1996.
[d] From 1996 on, students with a disability and English language learners were allowed to use testing accommodation (e.g., extended time, one-on-one testing, bilingual dictionary). More information about testing accommodation is available at http://nces.ed.gov/nationsreportcard/about/inclusion.asp.
[e] Scores for percentile rows are not averages but the actual scores that mark each percentile listed. For example, a score at the 10th percentile indicates that 10% of students perform at or below this score.
[f] Information on charter school status was first collected in 2003 for grade 4 and in 2005 for grade 8.

NOTES: NAEP grade 4 and grade 8 mathematics assessment scores range from 0 to 500. From 1996 on, data shown here are for students allowed to use testing accommodations.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of NAEP 1990, 1992, 1996, 2000, 2003, 2005, 2007, 2009, and 2011 mathematics assessments, National Center for Education Statistics.

Science and Engineering Indicators 2014

Appendix table 1-3

Students in grades 4 and 8 scoring at or above NAEP's proficient level in mathematics for their grade, by student and school characteristics: 1990–2011

(Percent)

Grade/student and school characteristic	1990	1992	1996	2000	2003	2005	2007	2009	2011
All grade 4 students	12.7	17.9	20.8	23.8	32.5	36.3	39.4	39.1	40.5
Sex									
Male	13.2	19.5	21.5	25.9	34.9	38.4	41.5	40.9	41.8
Female	12.2	16.2	20.0	21.6	29.9	34.2	37.3	37.2	39.1
Race or ethnicity[a]									
American Indian or Alaska Native	S	S	10.1	8.2	16.8	20.9	24.8	21.2	22.4
Asian or Pacific Islander	22.4	27.7	27.2	S	48.3	54.6	58.4	60.3	62.1
Black	1.1	2.5	3.1	4.7	9.9	12.8	15.4	15.9	17.4
Hispanic[b]	4.8	5.6	7.2	7.2	15.6	19.5	22.0	21.6	23.9
White	15.9	22.4	27.0	31.3	42.9	47.2	50.9	50.7	52.1
Sex by race or ethnicity[a]									
Male									
American Indian or Alaska Native	S	S	S	S	17.2	22.7	25.4	21.8	23.9
Asian or Pacific Islander	S	28.6	25.6	S	50.3	55.5	60.9	60.5	61.7
Black	0.8	3.4	3.3	4.0	10.2	12.8	15.0	15.9	17.2
Hispanic[b]	6.2	5.0	8.6	7.0	17.6	21.5	23.8	23.2	25.4
White	16.5	24.3	28.3	34.8	45.8	49.8	53.6	53.0	54.0
Female									
American Indian or Alaska Native	S	S	S	S	16.4	19.2	24.1	20.6	20.8
Asian or Pacific Islander	S	26.9	28.7	S	46.1	53.7	56.1	60.1	62.5
Black	1.4	1.6	2.9	5.4	9.6	12.8	15.7	16.0	17.6
Hispanic[b]	2.8	6.2	5.9	7.4	13.5	17.5	20.2	19.9	22.3
White	15.2	20.4	25.8	27.6	39.9	44.6	48.0	48.2	50.1
Free/reduced-price lunch[c]									
Eligible	NA	NA	7.5	7.6	15.2	19.1	21.5	21.7	23.9
Not eligible	NA	NA	27.5	32.0	44.7	49.4	52.8	53.9	56.7
English language learner status[d]									
English language learner	S	S	4.2	3.8	9.3	11.4	12.9	12.0	13.8
Not English language learner	S	S	21.6	25.0	34.7	38.7	42.2	41.9	43.6
Student disability status[d]									
Has a disability	S	S	5.1	6.4	12.6	16.0	19.3	19.1	17.1
Does not have a disability	S	S	22.1	25.5	34.8	38.8	41.8	41.6	43.4
School type									
Public	11.8	17.3	19.4	22.5	31.2	35.3	38.6	38.4	39.7
Charter school[e]	NA	NA	NA	NA	25.3	29.1	31.9	28.3	33.8
Noncharter school	NA	NA	NA	NA	32.6	36.4	39.6	39.3	40.6
Private	20.1	22.5	31.5	35.2	44.4	S	47.9	47.2	49.5
All grade 8 students	15.3	20.9	23.3	25.7	28.8	29.8	32.2	33.9	34.7
Sex									
Male	16.8	21.3	24.7	27.4	30.3	31.1	34.2	35.6	35.7
Female	13.7	20.6	21.8	23.9	27.1	28.4	30.2	32.1	33.7
Race or ethnicity[a]									
American Indian or Alaska Native	S	S	S	9.8	14.6	13.9	16.3	18.2	17.1
Asian or Pacific Islander	28.9	43.3	S	40.6	43.0	47.3	49.6	53.8	55.3
Black	4.7	2.5	3.8	5.2	7.3	8.7	11.0	12.3	13.3
Hispanic[b]	7.0	6.8	7.8	8.4	11.7	13.4	15.4	17.2	20.3
White	18.2	26.0	30.2	33.8	37.5	38.6	41.8	43.6	44.4
Sex by race or ethnicity[a]									
Male									
American Indian or Alaska Native	S	S	S	15.0	17.5	14.9	17.5	19.5	17.6
Asian or Pacific Islander	30.7	44.2	S	39.2	43.4	48.2	50.5	55.2	53.4
Black	3.8	2.7	3.5	5.5	7.9	8.9	11.4	12.1	12.8
Hispanic[b]	8.7	8.7	9.2	8.8	13.3	14.6	16.9	19.0	21.2
White	20.1	26.2	31.3	36.1	39.1	39.9	44.2	45.5	45.9

Appendix table 1-3

Students in grades 4 and 8 scoring at or above NAEP's proficient level in mathematics for their grade, by student and school characteristics: 1990–2011

(Percent)

Grade/student and school characteristic	1990	1992	1996	2000	2003	2005	2007	2009	2011
Female									
American Indian or Alaska Native	S	S	S	4.0	11.7	12.9	15.0	16.8	16.5
Asian or Pacific Islander	S	42.2	S	42.1	42.6	46.4	48.7	52.3	57.2
Black	5.5	2.2	4.0	4.8	6.7	8.4	10.7	12.6	13.9
Hispanic[b]	5.3	5.0	6.4	8.0	10.1	12.3	13.8	15.4	19.3
White	16.1	25.8	29.0	31.5	35.8	37.3	39.4	41.6	42.8
Free/reduced-price lunch[c]									
Eligible	NA	NA	8.5	9.4	12.1	13.4	15.4	16.7	18.8
Not eligible	NA	NA	28.3	33.7	37.2	38.8	42.1	44.8	47.3
English language learner status[d]									
English language learner	S	S	1.5	2.0	4.7	5.9	7.0	5.0	5.0
Not English language learner	S	S	23.8	26.4	30.0	31.1	33.7	35.4	36.4
Student disability status[d]									
Has a disability	S	S	2.6	4.1	6.2	7.2	8.1	9.2	9.2
Does not have a disability	S	S	24.8	27.3	31.4	32.2	34.5	36.5	37.6
Type of school									
Public	15.1	19.7	22.1	24.7	27.3	S	31.0	32.6	33.5
Charter school[e]	NA	NA	NA	NA	NA	20.8	25.3	26.2	30.7
Noncharter school	NA	NA	NA	NA	NA	29.9	32.3	34.1	34.8
Private	S	30.9	33.8	36.0	42.7	S	44.7	47.4	47.8

NA = not available; S = suppressed, estimate unreliable.

NAEP = National Assessment of Educational Progress.

[a] Other racial and ethnic groups are included in the rows for All grade 4 students and All grade 8 students but are not shown separately in the table.
[b] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[c] Information on students' eligibility for free/reduced-price lunch, a measure of family poverty, was first collected in 1996.
[d] From 1996 on, students with a disability and English language learners were allowed to use testing accommodations (e.g., extended time, one-on-one testing, bilingual dictionary). More information about testing accommodation is available at http://nces.ed.gov/nationsreportcard/about/inclusion.asp.
[e] Information on charter school status was first collected in 2003 for grade 4 and in 2005 for grade 8.

NOTE: From 1996 on, data shown here are for students allowed to use testing accommodations.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of NAEP 1990, 1992, 1996, 2000, 2003, 2005, 2007, 2009, and 2011 mathematics assessments, National Center for Education Statistics.

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Appendix table 1-4

Average NAEP science scores of students in grade 8, by student and school characteristics: 2009 and 2011

Student and school characteristic	2009	2011
All grade 8 students	150	152
Sex		
Male	152	154
Female	148	149
Race or ethnicity[a]		
American Indian or Alaska Native	137	141
Asian or Pacific Islander	160	159
Black	126	129
Hispanic[b]	132	137
White	162	163
Sex by race or ethnicity[a]		
Male		
American Indian or Alaska Native	141	143
Asian or Pacific Islander	162	161
Black	125	130
Hispanic[b]	134	140
White	164	166
Female		
American Indian or Alaska Native	133	139
Asian or Pacific Islander	158	157
Black	126	128
Hispanic[b]	130	134
White	160	161
Free/reduced-price lunch		
Eligible	133	137
Not eligible	161	164
English language learner status[c]		
English language learner	103	106
Not English language learner	153	154
Student disability status[c]		
Has a disability	123	124
Does not have a disability	153	155
Score at percentile[d]		
10th	103	106
25th	128	131
50th	153	155
75th	175	176
90th	192	193
School type		
Public	149	151

Appendix table 1-4

Average NAEP science scores of students in grade 8, by student and school characteristics: 2009 and 2011

Student and school characteristic	2009	2011
Charter school	141	146
Noncharter school	150	152
Private	164	163

NAEP = National Assessment of Educational Progress.

[a] Other racial and ethnic groups are included in the row for All grade 8 students but are not shown separately in the table.
[b] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[c] Students with a disability and English language learners were allowed to use testing accommodation (e.g., extended time, one-on-one testing, bilingual dictionary). More information about testing accommodation is available at http://nces.ed.gov/nationsreportcard/about/inclusion.asp.
[d] Scores for percentile rows are not averages but the actual scores that mark each percentile listed. For example, a score at the 10th percentile indicates that 10% of students perform at or below this score.

NOTE: NAEP grade 8 science assessment scores range from 0 to 300.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of NAEP 2009 and 2011 science assessments, National Center for Education Statistics.

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Appendix table 1-5

Students in grade 8 scoring at or above NAEP's proficient level in science for their grade level, by student and school characteristics: 2009 and 2011

(Percent)

Student and school characteristic	2009	2011
All grade 8 students	30.0	32.0
Sex		
Male	34.0	35.0
Female	27.0	28.0
Race or ethnicity[a]		
American Indian or Alaska Native	17.0	20.0
Asian or Pacific Islander	41.0	41.0
Black	8.0	10.0
Hispanic[b]	12.0	16.0
White	42.0	43.0
Sex by race or ethnicity[a]		
Male		
American Indian or Alaska Native	22.0	24.0
Asian or Pacific Islander	44.0	44.0
Black	9.0	11.0
Hispanic[b]	15.0	19.0
White	46.0	47.0
Female		
American Indian or Alaska Native	13.0	15.0
Asian or Pacific Islander	37.0	38.0
Black	8.0	9.0
Hispanic[b]	10.0	13.0
White	37.0	39.0
Free/reduced-price lunch		
Eligible	14.0	16.0
Not eligible	41.0	45.0
English language learner status[c]		
English language learner	2.0	3.0
Not English language learner	32.0	34.0
Student disability status[c]		
Has a disability	11.0	11.0
Does not have a disability	33.0	34.0
School type		
Public	29.0	31.0
Charter school	21.0	24.0
Noncharter school	31.0	32.0
Private	44.0	43.0

NAEP = National Assessment of Educational Progress.

[a] Other racial and ethnic groups are included in the row for All grade 8 students but are not shown separately in the table.
[b] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[c] Students with a disability and English language learners were allowed to use testing accommodation (e.g., extended time, one-on-one testing, bilingual dictionary). More information about testing accommodation is available at http://nces.ed.gov/nationsreportcard/about/inclusion.asp.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of NAEP 2009 and 2011 science assessments, National Center for Education Statistics.

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Appendix table 1-6

Average TIMSS mathematics scores of students in grades 4 and 8, by country/jurisdiction: 2011

Country/jurisdiction	Grade 4	Country/jurisdiction	Grade 8
TIMSS scale average	500 *	TIMSS scale average	500 *
Singapore	606 *	Republic of Korea	613 *
Republic of Korea	605 *	Singapore	611 *
Hong Kong (China)[a]	602 *	Taipei (Taiwan)[b]	609 *
Taipei (Taiwan)[b]	591 *	Hong Kong (China)[a]	586 *
Japan	585 *	Japan	570 *
Northern Ireland	562 *	Russian Federation	539 *
Belgium (Flemish)	549 *	Israel	516
Finland	545	Finland	514
England	542	**United States**	**509**
Russian Federation	542	England	507
United States	**541**	Australia	505
Netherlands	540	Hungary	505
Denmark	537	Slovenia	505
Lithuania	534 *	Lithuania	502
Portugal	532 *	Italy	498 *
Germany	528 *	New Zealand	488 *
Ireland	527 *	Kazakhstan	487 *
Australia	516 *	Sweden	484 *
Serbia	516 *	Ukraine	479 *
Hungary	515 *	Norway	475 *
Slovenia	513 *	Armenia	467 *
Czech Republic	511 *	Romania	458 *
Austria	508 *	United Arab Emirates	456 *
Italy	508 *	Turkey	452 *
Slovak Republic	507 *	Lebanon	449 *
Sweden	504 *	Malaysia	440 *
Kazakhstan	501 *	Georgia	431 *
Malta	496 *	Thailand	427 *
Norway	495 *	Republic of Macedonia[c]	426 *
Croatia	490 *	Tunisia	425 *
New Zealand	486 *	Chile	416 *
Romania	482 *	Islamic Republic of Iran[c]	415 *
Spain	482 *	Qatar[c]	410 *
Poland	481 *	Bahrain[c]	409 *
Turkey	469 *	Jordan[c]	406 *
Azerbaijan	463 *	Palestinian National Authority[c]	404 *
Chile	462 *	Saudi Arabia[c]	394 *
Thailand	458 *	Indonesia[c]	386 *
Armenia	452 *	Syrian Arab Republic[c]	380 *
Georgia	450 *	Morocco[c]	371 *
Bahrain	436 *	Oman[c]	366 *
United Arab Emirates	434 *	Ghana[c]	331 *
Islamic Republic of Iran	431 *		
Qatar	413 *		
Saudi Arabia	410 *		
Oman[c]	385 *		
Tunisia[c]	359 *		

Appendix table 1-6

Average TIMSS mathematics scores of students in grades 4 and 8, by country/jurisdiction: 2011

Country/jurisdiction	Grade 4	Country/jurisdiction	Grade 8
Kuwait[c]	342 *		
Morocco[c]	335 *		
Yemen[c]	248 *		

* = significantly different from the U.S. score at the 0.05 level.

TIMSS = Trends in International Mathematics and Science Study.

[a] Hong Kong is a Special Administrative Region of the People's Republic of China.
[b] Taipei is the capital city of Taiwan.
[c] Estimate may be unreliable due to low participation rates of certain groups in the population.

NOTES: TIMSS mathematics assessment scores range from 0 to 1,000 for grades in 4 and 8. Countries/jurisdictions are ordered by 2011 average score. Countries/jurisdictions with identical rounded estimates are listed alphabetically.

SOURCE: Provasnik S, Kastberg D, Ferraro D, Lemanski N, Roey S, Jenkins F, *Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context*, NCES 2013-009 (2012).

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Appendix table 1-7

Average TIMSS science scores of students in grades 4 and 8, by country/jurisdiction: 2011

Country/jurisdiction	Grade 4	Country/jurisdiction	Grade 8
TIMSS scale average	500 *	TIMSS scale average	500 *
Republic of Korea	587 *	Singapore	590 *
Singapore	583 *	Taipei (Taiwan)[a]	564 *
Finland	570 *	Republic of Korea	560 *
Japan	559 *	Japan	558 *
Russian Federation	552 *	Finland	552 *
Taipei (Taiwan)[a]	552 *	Slovenia	543 *
United States	**544**	Russian Federation	542 *
Czech Republic	536 *	Hong Kong (China)[b]	535 *
Hong Kong (China)[b]	535 *	England	533
Hungary	534 *	**United States**	**525**
Sweden	533 *	Hungary	522
Austria	532 *	Australia	519
Slovak Republic	532 *	Israel	516
Netherlands	531 *	Lithuania	514 *
England	529 *	New Zealand	512 *
Denmark	528 *	Sweden	509 *
Germany	528 *	Italy	501 *
Italy	524 *	Ukraine	501 *
Portugal	522 *	Norway	494 *
Slovenia	520 *	Kazakhstan	490 *
Northern Ireland	517 *	Turkey	483 *
Australia	516 *	Islamic Republic of Iran	474 *
Croatia	516 *	Romania	465 *
Ireland	516 *	United Arab Emirates	465 *
Serbia	516 *	Chile	461 *
Lithuania	515 *	Bahrain	452 *
Belgium (Flemish)	509 *	Thailand	451 *
Poland	505 *	Jordan	449 *
Romania	505 *	Tunisia	439 *
Spain	505 *	Armenia	437 *
New Zealand	497 *	Saudi Arabia	436 *
Kazakhstan	495 *	Malaysia	426 *
Norway	494 *	Syrian Arab Republic	426 *
Chile	480 *	Georgia	420 *
Thailand	472 *	Oman	420 *
Turkey	463 *	Palestinian National Authority	420 *
Georgia	455 *	Qatar	419 *
Islamic Republic of Iran	453 *	Republic of Macedonia	407 *
Bahrain	449 *	Indonesia	406 *
Malta	446 *	Lebanon	406 *
Azerbaijan	438 *	Morocco	376 *
Saudi Arabia	429 *	Ghana[c]	306 *
United Arab Emirates	428 *		
Armenia	416 *		
Qatar	394 *		
Oman	377 *		
Kuwait[c]	347 *		

Appendix table 1-7

Average TIMSS science scores of students in grades 4 and 8, by country/jurisdiction: 2011

Country/jurisdiction	Grade 4	Country/jurisdiction	Grade 8
Tunisia[c]	346 *		
Morocco[c]	264 *		
Yemen[c]	209 *		

* = significantly different from the U.S. score at the 0.05 level.

TIMSS = Trends in International Mathematics and Science Study.

[a] Taipei is the capital city of Taiwan.
[b] Hong Kong is a Special Administrative Region of the People's Republic of China.
[c] Estimate may be unreliable due to low participation rates of certain groups in the population.

NOTES: TIMSS science assessment scores range from 0 to 1,000 for grades in 4 and 8. Countries/jurisdictions with identical rounded estimates are listed alphabetically. Tied countries/jurisdictions are listed alphabetically.

SOURCE: Provasnik S, Kastberg D, Ferraro D, Lemanski N, Roey S, Jenkins F, *Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context*, NCES 2013-009 (2012).

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Appendix table 1-8

Highest-level mathematics course in which ninth graders enrolled, by student and family characteristics: 2009

(Percent distribution)

Student and family characteristic	No mathematics	Basic mathematics/ pre-algebra[a]	Algebra 1	Geometry 1	Algebra 2	Other advanced mathematics[b]
All grade 9 students	10.3	9.0	52.1	21.3	5.9	1.4
Sex						
Male	11.1	9.2	51.7	20.2	6.4	1.5
Female	9.5	8.8	52.4	22.4	5.5	1.4
Race or ethnicity						
Asian	7.3	6.6	28.1	41.0	12.7	4.4
Black	14.1	11.4	56.0	12.0	5.1	1.5
Hispanic[c]	13.3	8.9	53.1	19.6	4.6	0.6
Other[d]	9.3	8.7	55.5	19.4	5.4	1.8
White	8.4	8.6	51.6	23.4	6.4	1.5
Parents' highest education[e]						
Less than high school	18.4	12.6	46.8	18.3	3.6	0.4
High school diploma or equivalent	11.9	10.7	55.5	16.5	4.3	1.1
Associate's degree	8.5	8.9	59.7	17.5	4.4	0.9
Bachelor's degree	7.1	5.4	46.8	30.4	7.8	2.5
Master's degree or higher	5.1	4.0	39.8	36.1	12.1	2.9
Socioeconomic status, by quintile[f]						
Lowest fifth	16.9	12.1	53.3	13.3	3.5	0.9
Middle three-fifths	9.7	9.8	55.3	19.1	5.0	1.2
Highest fifth	5.7	3.7	41.3	35.4	11.1	2.8

[a] Basic mathematics includes review/remedial mathematics.

[b] Other advanced mathematics includes trigonometry, integrated mathematics 2, statistics, analytic geometry, and calculus.

[c] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

[d] Other includes Alaska Native, American Indian, Native Hawaiian, Pacific Islander, more than one race, and those having origins in a race not listed.

[e] The highest level of education achieved by either parent.

[f] Socioeconomic status (SES) is a composite variable derived from parental education level, parental occupation, and family income. The quintile measure divides the SES distribution into five equal groups. Quintile 1 corresponds to the lowest one-fifth of the population, and quintile 5 corresponds to the highest. For this report, the middle three quintiles are combined to form one category.

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of High School Longitudinal Study of 2009 (HSLS:09), National Center for Education Statistics.

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Appendix table 1-9

Highest-level science course in which ninth graders enrolled, by student and family characteristics: 2009

(Percent distribution)

Student and family characteristic	No science	General science	Earth/ environmental science	Physical science	Biology 1	Chemistry 1	Physics 1	Other advanced science[a]
All grade 9 students	18.0	5.1	13.1	18.2	38.7	2.3	2.7	2.0
Sex								
Male	18.9	5.1	13.5	17.8	38.0	2.1	2.8	1.8
Female	17.0	5.2	12.6	18.5	39.4	2.6	2.5	2.1
Race or ethnicity								
Asian	12.9	5.4	6.8	9.9	51.2	4.1	7.5	2.3
Black	25.2	5.5	7.4	19.8	35.1	2.7	2.5	1.9
Hispanic[b]	22.1	3.9	13.5	9.6	43.9	3.2	1.8	2.1
Other[c]	16.2	6.9	13.6	17.6	37.9	1.5	3.4	2.9
White	15.0	5.2	14.7	22.0	36.7	1.9	2.7	1.8
Parents' highest education[d]								
Less than high school	29.3	5.2	11.9	11.9	38.4	0.6	0.9	1.8
High school diploma or equivalent	20.7	5.8	13.4	19.3	34.9	1.9	2.4	1.5
Associate's degree	15.2	7.2	14.1	19.7	37.3	1.5	3.3	1.8
Bachelor's degree	13.4	4.1	14.5	17.2	42.7	2.7	2.7	2.7
Master's degree or higher	10.8	3.7	12.0	15.7	47.2	4.4	3.2	3.1
Socioeconomic status, by quintile[e]								
Lowest fifth	26.7	5.0	12.7	17.3	33.1	1.9	1.9	1.4
Middle three-fifths	17.6	5.8	13.1	19.2	37.7	1.9	2.8	1.8
Highest fifth	10.6	3.4	13.3	15.9	46.9	4.0	2.9	3.1

[a] Other advanced science includes biology 2, Advanced Placement/International Baccalaureate (AP/IB) biology, chemistry 2, AP/IB chemistry, physics 2, and AP/IB physics.
[b] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[c] Other includes Alaska Native, American Indian, Native Hawaiian, Pacific Islander, more than one race, and those having origins in a race not listed.
[d] The highest level of education achieved by either parent.
[e] Socioeconomic status (SES) is a composite variable derived from parental education level, parental occupation, and family income. The quintile measure divides the SES distribution into five equal groups. Quintile 1 corresponds to the lowest one-fifth of the population, and quintile 5 corresponds to the highest. For this report, the middle three quintiles are combined to form one category.

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of High School Longitudinal Study of 2009 (HSLS:09), National Center for Education Statistics.

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Appendix table 1-10

Public school students in graduating class of 2012 who took AP exams in mathematics and science in high school, by sex and race or ethnicity

(Percent)

Sex and race or ethnicity	Mathematics			Science							Overall graduate population in 2012[a]
	Calculus AB	Calculus BC	Statistics	Biology	Chemistry	Computer science A	Environ-mental science	Physics B	Physics C: electricity/ magnetism	Physics C: mechanics	
All exam takers *(n)*	211,570	70,828	129,403	152,742	100,362	19,067	88,683	63,125	12,766	28,923	2,946,541
Sex											
Male	51.0	59.0	48.0	41.0	53.0	81.0	45.0	65.0	77.0	74.0	NA
Female	49.0	41.0	52.0	59.0	47.0	19.0	55.0	35.0	23.0	26.0	NA
Race or ethnicity[b]											
American Indian or Alaskan Native	0.4	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.3	0.4	1.1
Asian or Pacific Islander	16.5	28.7	17.1	19.4	22.8	29.0	12.6	20.5	30.2	25.2	6.0
Black	6.1	2.7	6.5	7.5	5.9	4.5	7.8	5.1	2.5	2.6	14.5
Hispanic[c]	12.6	7.8	10.7	12.0	9.5	8.4	14.9	12.2	6.7	8.0	18.3
White	60.4	56.8	61.2	56.0	57.5	53.7	59.3	57.7	56.6	60.0	58.5

NA = not available.

AP = Advanced Placement.

[a] The College Board's references to the total number of high school graduates and the population percentages for racial and ethnic groups are based on projections supplied by the Western Interstate Commission for Higher Education. The College Board did not supply population percentages for males and females.
[b] Percentages do not sum to 100 because the Other and No response categories are omitted from the table.
[c] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: The College Board reports AP results by graduating class rather than by calendar year. Results include exams taken by graduates throughout their high school career.

SOURCE: The College Board, *The 9th Annual AP® Report to the Nation* (2013) and *The 9th Annual AP® Report to the Nation – Subject Supplement*. Copyright © 2013, www.collegeboard.org. Reproduced with permission.

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Appendix table 1-11

Mathematics and science classes taught by teachers experienced in teaching their subject, by years of experience and school and class characteristics: 2012

(Percent distribution)

School and class characteristic	Mathematics classes taught by teachers with experience in teaching mathematics (years)					Science classes taught by teachers with experience in teaching science (years)				
	≤ 2	3–5	6–10	11–20	> 20	≤ 2	3–5	6–10	11–20	> 20
Students in school eligible for free/reduced-price lunch (%)										
0–25	12	13	24	30	22	10	15	26	34	15
25–50	12	13	24	32	19	11	16	23	30	20
50–75	12	16	22	30	21	16	16	21	30	17
75–100	14	19	21	31	15	23	22	23	21	11
Non-Asian minority students in class (%)										
0–25	12	11	20	32	24	14	15	20	32	19
25–50	8	14	24	34	20	12	14	22	31	21
50–75	15	16	21	27	21	12	15	26	32	15
75–100	14	16	25	32	13	21	19	24	24	11
Achievement level of class										
Mostly high achievers	8	12	22	32	26	12	13	24	31	21
Average/mixed achievers	13	16	23	29	18	15	17	23	29	16
Mostly low achievers	15	14	22	33	16	18	17	27	27	11

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-12

Middle and high school science teachers with various levels of preparation in their subject, by grade level and subject taught: 2012

(Percent distribution)

Grade level and subject taught	Degree in field	No degree in field but ≥ 3 courses beyond introductory science	No degree in field but 1–2 courses beyond introductory science	No degree in field or courses beyond introductory science
Middle school				
Biology/life science	27	31	20	22
Earth science	9	16	10	64
Physical science	8	23	27	42
High school				
Biology/life science	53	37	4	6
Chemistry	25	43	21	11
Physics	20	36	16	29
Earth science	14	24	20	42
Physical science	10	48	25	17
Environmental science	9	19	23	49

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-13

Middle and high school mathematics teachers who completed mathematics courses in college: 2012

(Percent)

Mathematics course completed	Middle school	High school
Calculus	63	93
Statistics	69	83
Linear algebra	39	80
Advanced calculus	37	79
Computer science	61	77
Mathematics content for middle/high school teachers	56	71
Abstract algebra	28	67
Differential equations	22	62
Probability	39	56
Axiomatic geometry	21	55
Number theory	32	54
Analytic/coordinate geometry	26	53
Discrete mathematics	26	52
Real analysis	18	44
Other upper-division mathematics	19	43
Integrated mathematics	40	34
Engineering	9	19

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-14

Middle and high school mathematics and science teachers with an undergraduate or graduate degree in their subject, by school and class characteristics: 2012

(Percent)

School and class characteristic	Mathematics teachers	Science teachers
Students in school eligible for free/reduced-price lunch (%)		
0–25	56	68
25–50	53	57
50–75	54	62
75–100	51	58
Non-Asian minority students in class (%)		
0–25	64	68
25–50	57	65
50–75	54	62
75–100	44	58
Achievement level of class		
Mostly high achievers	61	76
Average/mixed achievers	53	60
Mostly low achievers	49	50

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-15

Elementary teachers' self-assessment of their preparedness to teach selected mathematics and science topics: 2012

(Percent distribution)

Mathematics and science topic	Not adequately prepared	Somewhat prepared	Fairly well prepared	Very well prepared
Mathematics overall	1	3	19	77
Number and operations	0	2	21	77
Measurement and data representation	1	9	33	56
Geometry	3	10	33	54
Early algebra	5	13	36	46
Science overall	2	15	43	39
Life science	4	21	46	29
Earth science	4	26	45	26
Physical science	8	33	42	17
Engineering	73	18	5	4

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-16

Middle and high school science teachers considering themselves very well prepared to teach various science topics: 2012

(Percent)

Science topic	Middle school	High school
Earth/space science		
Earth's features and physical processes	51	47
The solar system and the universe	36	41
Climate and weather	42	39
Biology/life science		
Cell biology	49	68
Structures and functions of organisms	52	64
Genetics	41	63
Ecology/ecosystems	48	56
Evolution	33	52
Chemistry		
Elements, compounds, and mixtures	53	83
The periodic table	49	82
States, classes, and properties of matter	58	80
Atomic structure	45	80
Chemical bonding, equations, nomenclature, and reactions	31	77
Properties of solutions	33	66
Physics		
Forces and motion	42	71
Energy transfers, transformations, and conservation	37	62
Properties and behaviors of waves	23	51
Electricity and magnetism	23	43
Modern physics	5	19
Other		
Environmental and resource issues	35	37
Engineering	6	7

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-17

Middle and high school mathematics teachers considering themselves very well prepared to teach various mathematics topics: 2012

(Percent)

Mathematics topic	Middle school	High school
Algebraic thinking	76	91
Number system and operations	88	90
Functions	60	84
Measurement	66	79
Geometry	62	70
Modeling	49	58
Statistics and probability	48	30
Discrete mathematics	18	25

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-18

School program representatives rating the effect of various school conditions on mathematics and science instruction: 2012

(Percent distribution)

School condition	Effect on mathematics instruction			Effect on science instruction		
	Inhibits	Neutral	Promotes	Inhibits	Neutral	Promotes
Importance that the school places on mathematics or science	8	11	82	18	21	60
Management of mathematics or science instructional resources	13	19	69	22	26	53
District professional development policies and practices	8	26	65	14	35	52
Time provided for subject-focused professional development	20	23	56	29	27	44

NOTES: School program representatives rated the effect of each condition on a 5-point scale ranging from 1 "inhibits effective instruction" to 5 "promotes effective instruction." The inhibits column includes those responding 1 or 2. The Promotes column includes those responding 4 or 5. Detail may not sum to 100 due to rounding.

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2012).

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Appendix table 1-19

Beginning public elementary and secondary school teachers (2007−08) who had left teaching by 2009−10, by teaching level, field, and selected teacher and school characteristics

(Percent)

Selected teacher and school characteristic	2007−08 to 2008−09			2007−08 to 2009−10		
	Elementary teachers[a]	Secondary mathematics/ science teachers[a]	All other secondary teachers[a]	Elementary teachers[a]	Secondary mathematics/ science teachers[a]	All other secondary teachers[a]
All beginning public school teachers	9.6	13.0	9.1	10.5	25.4	9.9
Age in 2007−08						
< 30 years	8.8	7.5	8.7	8.1	19.2	9.4
≥ 30 years	11.9	26.2	9.9	17.7	39.5	11.1
Highest degree earned in 2007−08						
Bachelor's degree	8.4	10.9	7.6	10.0	22.4	9.3
Master's degree or higher	14.8	20.0	10.9	12.5	35.5	10.5
Entered teaching through an alternative certification program[b]						
Yes	7.8	19.1	6.7	8.1	31.6	5.4
No	10.1	8.0	10.1	11.3	20.1	11.7
Had a mentor in 2007−08						
Yes	8.5	9.3	7.4	8.0	20.2	8.8
No	14.6	31.9	15.6	21.5	43.9	13.2
Students in school approved for free/reduced price lunch (%)						
0–10	12.1	14.9	6.4	7.0	S	6.9
10–50	10.1	13.3	8.8	8.5	22.6	9.3
> 50	8.4	11.4	9.7	12.1	27.3	10.8

S = suppressed, estimate unreliable.

[a] Elementary schools are those with any of grades K–6 and none of grades 9–12, and secondary schools have any of grades 7–12 and none of grades K–6.
[b] An alternative program is a program that was designed to expedite the transition of nonteachers to a teaching career; for example, a state, district, or university alternative certification program.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of Beginning Teacher Longitudinal Study (BTLS), First Through Third Wave Preliminary Data File, 2007–08, 2008–09, 2009–10, National Center for Education Statistics.

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Appendix table 1-20

On-time graduation rates of U.S. public high school students, by sex and race or ethnicity: 2006–10

(Percent)

Sex and race or ethnicity	2006	2007	2008	2009	2010
All students	73.2	73.4	74.8	76.5	78.2
Sex					
Male	69.7	69.5	70.9	73.4	NA
Female	77.3	77.0	78.3	80.6	NA
Race or ethnicity					
American Indian or Alaska Native	61.8	60.9	64.4	64.2	69.1
Asian or Pacific Islander	89.3	89.6	91.4	93.0	93.5
Black	59.2	59.0	61.4	63.6	66.1
Hispanic[a]	61.0	60.8	63.4	67.0	71.4
White	80.3	80.4	81.0	81.8	83.0

NA = not available.

[a] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: On-time high school graduation rate is the percentage of entering ninth graders who graduated 4 years later. It is estimated by the number of regular diploma recipients in a given year divided by the average of the membership in grades 8, 9, and 10, reported 5, 4, and 3 years earlier, respectively. For example, the 2009–10 rate equals the total number of diploma recipients in 2009–10 divided by the average membership of the 8th-grade class in 2005–06, the 9th-grade class in 2006–07, and the 10th-grade class in 2007–08.

SOURCES: Stillwell R, Sable J, *Public School Graduates and Dropouts from the Common Core of Data: School Year 2009–10: First Look (Provisional Data)*, NCES 2013-309 (2013), and Common Core Data Table Library, http://nces.ed.gov/ccd/tables/AFGR.asp, accessed February 2013.

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Appendix table 1-21

High school graduation rates, by OECD country: 2010

(Percent)

Country	High school graduation rate
OECD average[a]	84.0
Portugal[b]	103.9
Japan	95.6
Greece	94.1
Korea	94.0
Ireland	93.8
Slovenia	93.8
Finland	93.3
Israel	91.8
United Kingdom	91.6
Iceland	87.9
Norway	87.2
Germany	86.6
Denmark	86.3
Hungary	85.6
Slovak Republic	85.6
Poland	83.5
Chile	83.3
Italy	83.2
Canada[c]	80.5
Spain	80.4
Czech Republic	79.2
United States	**76.8**
Sweden	74.8
Luxembourg	69.7
Turkey	54.2
Mexico	47.0

OECD = Organisation for Economic Co-operation and Development.

[a] Based on all OECD countries with available data.
[b] Portugal introduced the New Opportunities program in 2005 to provide a second chance to individuals who left school early without a secondary diploma. Many students older than 25 went back to school and completed upper secondary education through this program. As a result, the 2010 graduation rate exceeded 100% (i.e., the number of graduates greater than the population at the typical graduation age [17 years old in Portugal]).
[c] Graduation rate was in 2009.

NOTES: To generate estimates that are comparable across countries, OECD calculated high school graduation rates by dividing the number of first-time graduates (of any age) completing upper secondary education programs in the country by the population of the typical graduation age, which OECD refers to the age of the students at the beginning of the school year (e.g., 17 years old in the United States). Countries are ordered by 2010 high school graduation rate. Tied countries/jurisdictions are listed alphabetically.

SOURCE: OECD, *Education at a Glance: OECD Indicators 2012* (2012).

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Appendix table 1-22

High school graduates enrolled in college in October after completing high school, by demographic characteristics and institution type: 1975–2011

(Percent)

Year	All graduates	Sex		Family income[a]			Race or ethnicity[b]			Parents' highest education[d]				Institution type	
		Male	Female	Low	Middle	High	White	Black	Hispanic[c]	Less than high school	High school diploma or equivalent	Some college	Bachelor's degree or higher	2-year	4-year
1975	50.7	52.6	49.0	31.2	46.2	64.5	49.1	44.5	52.7	NA	NA	NA	NA	18.2	32.6
1976	48.8	47.2	50.3	39.1	40.5	63.0	50.3	45.3	53.6	NA	NA	NA	NA	15.6	33.3
1977	50.6	52.1	49.3	27.7	44.2	66.3	50.1	46.8	48.8	NA	NA	NA	NA	17.5	33.1
1978	50.1	51.1	49.3	31.4	44.3	64.0	50.4	47.5	46.1	NA	NA	NA	NA	17.0	33.1
1979	49.3	50.4	48.4	30.5	43.2	63.2	50.1	45.2	46.3	NA	NA	NA	NA	17.5	31.8
1980	49.3	46.7	51.8	32.5	42.5	65.2	51.5	44.0	49.6	NA	NA	NA	NA	19.4	29.9
1981	53.9	54.8	53.1	33.6	49.2	67.6	52.4	40.3	48.7	NA	NA	NA	NA	20.5	33.5
1982	50.6	49.1	52.0	32.8	41.7	70.9	54.2	38.8	49.4	NA	NA	NA	NA	19.1	31.5
1983	52.7	51.9	53.4	34.6	45.2	70.3	55.5	38.0	46.7	NA	NA	NA	NA	19.2	33.5
1984	55.2	56.0	54.5	34.5	48.4	74.0	57.9	39.9	49.3	NA	NA	NA	NA	19.4	35.8
1985	57.7	58.6	56.8	40.2	50.6	74.6	58.6	39.5	46.1	NA	NA	NA	NA	19.6	38.1
1986	53.8	55.8	51.9	33.9	48.5	71.0	58.5	43.5	42.3	NA	NA	NA	NA	19.3	34.5
1987	56.8	58.3	55.3	36.9	50.0	73.8	58.8	44.2	45.0	NA	NA	NA	NA	18.9	37.9
1988	58.9	57.1	60.7	42.5	54.7	72.8	60.1	49.7	48.5	NA	NA	NA	NA	21.9	37.1
1989	59.6	57.6	61.6	48.1	55.4	70.7	61.6	48.0	52.7	NA	NA	NA	NA	20.7	38.9
1990	60.1	58.0	62.2	46.7	54.4	76.6	63.0	48.9	52.5	NA	NA	NA	NA	20.1	40.0
1991	62.5	57.9	67.1	39.5	58.4	78.2	64.2	47.2	52.6	NA	NA	NA	NA	24.9	37.7
1992	61.9	60.0	63.8	40.9	57.0	79.0	64.2	50.0	58.2	33.0	56.0	68.0	81.0	23.0	38.9
1993	62.6	59.9	65.2	50.4	56.9	79.3	63.9	51.3	55.7	47.0	52.0	63.0	88.0	22.8	39.8
1994	61.9	60.6	63.2	43.3	57.8	77.9	64.0	52.4	55.0	43.0	50.0	65.0	83.0	21.0	40.9
1995	61.9	62.6	61.3	34.2	56.0	83.5	65.4	52.9	51.6	27.0	47.0	70.0	88.0	21.5	40.4
1996	65.0	60.1	69.7	48.6	62.7	78.0	66.6	55.4	57.6	45.0	56.0	67.0	85.0	23.1	41.9
1997	67.0	63.6	70.3	57.0	60.7	82.2	68.1	58.8	55.3	51.0	62.0	63.0	86.0	22.8	44.3
1998	65.6	62.4	69.1	46.4	64.7	77.5	67.7	59.8	51.9	50.0	57.0	68.0	82.0	24.4	41.3
1999	62.9	61.4	64.4	47.6	60.2	75.4	66.8	58.6	47.4	36.0	54.0	60.0	82.0	21.0	41.9
2000	63.3	59.9	66.2	49.7	59.5	76.9	65.4	56.4	48.6	44.0	52.0	64.0	81.0	21.4	41.9
2001	61.8	59.7	63.6	43.8	56.4	80.0	66.3	56.4	52.8	39.0	52.0	62.0	81.0	19.6	42.1
2002	65.2	62.1	68.3	56.3	60.9	78.2	66.5	57.3	54.8	43.0	52.0	66.0	83.0	21.6	43.6
2003	63.9	61.2	66.5	52.8	57.6	80.1	68.0	59.9	57.7	43.0	54.0	63.0	82.0	21.5	42.5
2004	66.7	61.4	71.5	47.8	63.3	80.1	69.4	58.8	57.7	40.0	55.0	67.0	86.0	22.4	44.2
2005	68.6	66.5	70.4	53.5	65.1	81.2	70.2	58.2	57.5	43.0	62.0	66.0	89.0	24.0	44.6
2006	66.0	65.8	66.1	50.9	61.4	80.7	70.4	55.6	58.5	43.0	56.0	67.0	78.0	24.7	41.3
2007	67.2	66.1	68.3	58.4	63.3	78.2	70.0	55.7	62.0	45.0	52.0	65.0	86.0	24.1	43.1
2008	68.6	65.9	71.6	55.9	65.2	81.9	70.8	60.3	62.3	44.0	57.0	72.0	82.0	27.7	40.9

Appendix table 1-22

High school graduates enrolled in college in October after completing high school, by demographic characteristics and institution type: 1975–2011

(Percent)

										Parents' highest education[d]					
	All	Sex		Family income[a]			Race or ethnicity[b]			Less than high	High school diploma or	Some	Bachelor's degree	Institution type	
Year	graduates	Male	Female	Low	Middle	High	White	Black	Hispanic[c]	school	equivalent	college	or higher	2-year	4-year
2009	70.1	66.0	73.8	53.9	66.7	84.2	71.2	62.4	60.9	39.9	57.9	74.4	82.2	27.7	42.4
2010	68.1	62.8	74.0	50.7	66.7	82.2	70.1	66.1	62.3	50.8	58.0	70.5	83.7	26.7	41.4
2011	68.2	64.7	72.2	53.5	66.2	82.4	69.4	64.6	63.5	S	54.2	66.8	83.1	25.9	42.3

NA = not available; S = suppressed, estimate unreliable.

[a] Family income is categorized as follows: low income includes families in the lowest 20% of income distribution, middle income includes families in the middle 60%, and high income includes families in the highest 20%.
[b] Due to the small sample size for racial and ethnic categories, data are subject to relatively large sampling errors. Therefore, 3-year moving averages are used to produce more stable estimates. The 3-year moving average is an arithmetic average of the rates in the year indicated, the year immediately preceding, and the year immediately following. For 1975 and 2011, a 2-year moving average is used. Data for 1975 reflect an average of 1975 and 1976, and data for 2011 reflect an average of 2010 and 2011.
[c] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.
[d] The highest level of education achieved by either parent.

NOTES: Includes students ages 16–24 completing high school in the survey year. Before 1992, high school graduates referred to those who had completed 12 years of schooling. As of 1992, high school graduates refer to those who have received a high school diploma or equivalency certificate.

SOURCES: Parents' education: National Center for Education Statistics (NCES) special tabulations (2013) of Current Population Survey, Bureau of Labor Statistics. All other data: Aud S, Wilkinson-Flicker S, Kristapovich P, Rathbun A, Wang X, Zhang J, *The Condition of Education 2013,* NCES 2013-037 (2013).

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Appendix table 1-23

First-time entry rates into university-level education, by OECD country and sex of student: 2010

(Percent)

Country	Both sexes	Male	Female
OECD average	61.7	54.8	68.9
Australia	96.5	83.3	110.3
Iceland	93.2	74.1	113.1
Portugal[a]	89.3	78.3	100.7
Poland	84.2	73.1	95.7
New Zealand	79.6	65.8	93.3
Slovenia	76.7	63.8	90.5
Norway	76.2	63.6	89.3
Sweden	75.9	65.0	87.3
United States	**74.3**	**66.7**	**82.2**
Korea	71.1	70.8	71.4
Finland	68.1	61.3	75.3
Netherlands	65.5	61.0	70.1
Denmark	65.4	53.2	78.2
Slovak Republic	65.2	54.8	76.2
Austria	63.1	56.5	70.1
United Kingdom	63.1	55.8	70.6
Czech Republic	60.3	51.6	69.6
Israel	59.7	53.4	66.2
Ireland	55.9	50.7	61.1
Hungary	53.8	49.7	58.1
Spain	51.5	43.6	59.9
Japan	50.7	56.1	45.1
Italy	49.1	41.8	56.9
Chile[b]	46.6	42.8	50.5
Switzerland	43.7	42.5	45.0
Estonia	42.6	35.4	50.1
Germany	42.5	41.7	43.4
Turkey	40.1	39.8	40.5
Belgium	32.7	31.5	33.9
Mexico	32.6	32.9	32.4
Luxembourg	27.6	26.1	29.3

OECD = Organisation for Economic Co-operation and Development.

[a] Entry rate for Portugal was overestimated because it included students who enrolled in the first year of any postsecondary program, instead of a university-level education program.
[b] Because of late changes, Chile's rate was not included in the OECD average calculation.

NOTES: According to OECD, university-level education (typically referred to as a "tertiary-type A" program) provides education that is largely theoretical and is intended to provide sufficient qualifications for gaining entry to advanced research programs and professions with high-skill requirements. Entry into these programs normally requires successful completion of upper secondary education (e.g., high school); admission is competitive in most cases. OECD calculates entry rates by dividing number of first-time entrants of a specific age in each type of tertiary program by the total population in the corresponding age group and then adding results for each single year of age. Entry rates can be very high, and even greater than 100%, during a period when an unexpected category of people (e.g., international students) decides to enter tertiary education in a particular country. In general, entry rates for countries that are net exporters of students may be underestimated, and entry rates for countries that are net importers may be overestimated.

SOURCE: OECD, *Education at a Glance: OECD Indicators 2012* (2012).

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Appendix table 2-1

S&E degrees awarded, by degree level, Carnegie institution type, and field: 2011

Degree and institution type	All fields	S&E field									
		All S&E	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Mathematics	Physical sciences	Psychology	Social sciences	Engineering
Associate's	949,963	76,021	2,138	3,440	37,675	95	1,645	3,068	3,866	21,100	2,994
Doctorate-granting universities—very high research activity	3237	125	92	0	31	0	0	0	0	2	0
Doctorate-granting universities—high research activity	4,208	235	35	21	157	0	2	5	0	0	15
Doctoral/research universities	41,072	10,268	33	37	3,997	0	0	5	2	6,194	0
Master's colleges and universities	62,015	3,477	21	14	2,707	5	9	62	167	440	52
Baccalaureate colleges	52,083	3,576	207	139	2,461	0	7	224	197	215	126
Associate's colleges	755,571	54,218	1,701	3,213	24,508	90	1,622	2,772	3,493	14,043	2,776
Medical schools and medical centers	568	0	0	0	0	0	0	0	0	0	0
Schools of engineering	10	0	0	0	0	0	0	0	0	0	0
Other specialized institutions	23,571	3,382	0	4	3,336	0	0	0	2	20	20
Tribal colleges	1,657	286	49	12	33	0	5	0	5	180	2
Not classified	5,971	454	0	0	445	0	0	0	0	6	3
Bachelor's	1,734,229	554,365	22,759	93,654	43,586	5,299	18,021	19,198	101,568	172,181	78,099
Doctorate-granting universities—very high research activity	444,695	210,425	10,283	37,626	8,193	2,023	6,682	6,852	28,402	69,114	41,250
Doctorate-granting universities—high research activity	249,963	82,410	3,812	13,668	4,909	869	2,176	2,490	13,832	23,135	17,519
Doctoral/research universities	121,588	30,818	874	4,391	4,231	265	835	964	5,389	10,657	3,212
Master's colleges and universities	647,346	158,483	5,162	24,340	16,319	1,397	5,677	5,614	40,877	47,776	11,321
Baccalaureate colleges	199,039	64,878	2,577	12,804	5,554	728	2,626	3,206	12,620	21,163	3,600
Associate's colleges	6,079	845	33	21	778	0	0	0	6	1	6
Medical schools and medical centers	6,435	66	0	66	0	0	0	0	0	0	0
Schools of engineering	1,329	1,168	0	5	41	14	9	25	0	2	1,072
Other specialized institutions	48,610	3,929	0	623	2,679	0	5	37	320	204	61
Tribal colleges	230	68	18	0	2	0	0	0	3	45	0
Not classified	8,915	1,275	0	110	880	3	11	10	119	84	58
Master's	736,455	150,653	5,148	11,214	19,519	1,789	6,203	4,473	22,363	38,662	41,282
Doctorate-granting universities—very high research activity	195,395	62,589	2,660	5,244	6,986	1,097	3,476	2,672	1,836	15,992	22,626
Doctorate-granting universities—high research activity	107,711	29,427	1,019	1,996	4,315	457	1,288	831	2,514	6,448	10,559
Doctoral/research universities	88,830	14,722	282	570	2,199	44	303	241	5,757	3,763	1,563
Master's colleges and universities	280,098	37,441	1,092	2,395	5,095	168	1,124	676	9,139	11,701	6,051
Baccalaureate colleges	15,968	1,507	87	45	108	12	5	34	771	279	166
Associate's colleges	467	61	0	39	0	0	0	0	22	0	0
Medical schools and medical centers	8,695	1,101	4	888	1	1	0	12	110	58	27
Schools of engineering	496	418	0	0	134	10	0	2	0	0	272
Other specialized institutions	27,434	2,577	4	17	222	0	1	2	2,138	178	15
Tribal colleges	14	2	0	0	0	0	0	0	0	2	0
Not classified	11,347	808	0	20	459	0	6	3	76	241	3

Appendix table 2-1

S&E degrees awarded, by degree level, Carnegie institution type, and field: 2011

		S&E field									
Degree and institution type	All fields	All S&E	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Mathematics	Physical sciences	Psychology	Social sciences	Engineering
Doctorate	59,847	34,205	1,053	7,596	1,562	687	1,590	4,560	3,952	4,727	8,478
Doctorate-granting universities—very high research activity	38,883	25,379	812	5,575	1,183	572	1,339	3,683	1,568	3,721	6,926
Doctorate-granting universities—high research activity	9,898	5,405	184	858	301	110	234	775	914	683	1,346
Doctoral/research universities	6,091	1,659	30	108	65	0	13	42	1,079	223	99
Master's colleges and universities	2,113	309	26	23	12	5	0	26	112	52	53
Baccalaureate colleges	153	41	0	8	0	0	4	5	12	10	2
Associate's colleges	6	4	0	4	0	0	0	0	0	0	0
Medical schools and medical centers	1,759	1,142	1	1,015	1	0	0	26	33	24	42
Schools of engineering	8	8	0	0	0	0	0	0	0	0	8
Other specialized institutions	775	251	0	2	0	0	0	1	234	14	0
Not classified	161	7	0	3	0	0	0	2	0	0	2

NOTES: Medical and other health sciences are included in non-S&E. Carnegie institution type corresponds to the 2010 Carnegie Classification of Academic Institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-2

Degrees awarded by private for-profit academic institutions, by broad field and degree level: 2000–11

Broad field and degree level	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All fields												
Associate's	73,155	77,513	81,054	92,709	98,115	105,484	110,913	116,286	125,514	142,991	160,898	195,892
Bachelor's	21,843	24,937	28,347	33,098	43,828	50,010	63,158	71,743	77,401	85,866	98,087	115,324
Master's	11,342	13,177	16,179	17,162	28,943	35,685	45,763	51,531	55,683	64,425	71,385	78,966
Doctorate	606	802	662	842	1,171	1,488	1,483	1,910	2,374	2,383	2,513	2,802
S&E												
Associate's	8,314	11,113	14,939	19,354	17,942	15,972	14,371	13,010	13,753	16,506	20,016	24,776
Bachelor's	4,195	5,289	7,043	10,132	13,392	13,014	13,818	13,197	13,673	15,450	19,612	23,387
Master's	1,326	1,429	1,354	1,749	2,406	2,222	2,384	2,869	3,931	6,480	6,958	8,224
Doctorate	349	517	367	391	482	652	624	690	720	360	330	520
Non-S&E												
Associate's	64,841	66,400	66,115	73,355	80,173	89,512	96,542	103,276	111,761	126,485	140,882	171,116
Bachelor's	17,648	19,648	21,304	22,966	30,436	36,996	49,340	58,546	63,728	70,416	78,475	91,937
Master's	10,016	11,748	14,825	15,413	26,537	33,463	43,379	48,662	51,752	57,945	64,427	70,742
Doctorate	257	285	295	451	689	836	859	1,220	1,654	2,023	2,183	2,282
	Percent											
All fields												
Associate's	12.8	13.2	13.5	14.5	14.6	15.0	15.4	15.9	16.6	18.0	18.8	20.6
Bachelor's	1.7	2.0	2.2	2.4	3.1	3.4	4.2	4.7	4.9	5.3	5.9	6.6
Master's	2.5	2.8	3.3	3.3	5.1	6.2	7.6	8.4	8.8	9.7	10.2	10.7
Doctorate	1.3	1.8	1.5	1.8	2.4	2.8	2.6	3.1	3.8	3.9	4.4	4.7
S&E												
Associate's	21.6	24.6	29.2	30.8	29.8	29.2	28.8	27.4	28.0	30.4	32.2	32.6
Bachelor's	1.1	1.3	1.7	2.3	2.9	2.8	2.9	2.7	2.8	3.1	3.7	4.2
Master's	1.4	1.4	1.4	1.6	2.0	1.8	2.0	2.4	3.1	4.8	5.0	5.5
Doctorate	1.4	2.0	1.5	1.5	1.8	2.3	2.0	2.1	2.2	1.1	1.0	1.5
Non-S&E												
Associate's	12.1	12.3	12.0	12.8	13.1	13.8	14.4	15.1	15.8	17.1	17.7	19.6
Bachelor's	2.1	2.3	2.4	2.5	3.2	3.8	4.8	5.5	5.9	6.3	6.9	7.8
Master's	2.8	3.2	3.8	3.8	6.0	7.3	9.1	9.9	10.2	10.9	11.5	12.1
Doctorate	1.3	1.5	1.5	2.2	3.1	3.4	3.3	4.3	5.8	7.1	8.8	8.9

NOTE: Medical and other health sciences are included in non-S&E.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-3

Degrees awarded by private for-profit academic institutions, by field and degree level: 2011

Field	Associate's	Bachelor's	Master's	Doctorate
All fields	195,892	115,324	78,966	2,802
S&E	24,776	23,387	8,224	520
Agricultural sciences	0	166	47	0
Biological sciences	5	316	0	0
Computer sciences	18,027	11,953	1,810	15
Mathematics	0	5	0	0
Physical sciences	19	4	0	0
Psychology	71	2,814	3,951	389
Social sciences	6,572	7,753	2,101	116
Engineering	82	376	315	0
Non-S&E	171,116	91,937	70,742	2,282
Architecture and environmental design	0	60	84	0
Arts and music	7,766	8,688	914	0
Business and management	42,520	50,055	37,167	773
Communication and librarianship	157	962	47	0
Education	4,455	2,165	19,884	1,266
Engineering technologies	11,766	2,436	222	0
English and literature	0	103	9	0
Health technologies	49,492	498	1,380	0
History	13	257	301	0
Law	880	426	207	0
Medical and other health sciences	9,308	13,493	7,103	175
Religion and theology	4	152	73	15
Science technologies	17	0	0	0
Social services	0	29	0	3
Vocational studies and home economics	25,600	9,965	3,000	26
Other non-S&E	19,138	2,648	351	24

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-4

Average revenue per FTE by institution type: 1987–2010

(2010 dollars)

Institution type and revenue	1987	1990	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Community colleges[a]																
Net tuition	1,604	1,689	1,976	2,118	2,310	2,320	2,332	2,410	2,593	2,779	2,853	2,924	3,021	3,027	3,137	3,270
State and local appropriations	6,783	6,686	5,785	6,256	6,905	6,882	6,933	6,629	6,220	6,147	6,190	6,520	6,811	7,033	6,572	5,594
State and local grants and contracts	448	529	445	646	746	801	895	902	951	975	884	938	1,002	1,011	1,033	817
Private and affiliated gifts, investment returns, and endowment income	80	100	100	127	151	168	172	179	185	164	228	286	366	278	167	150
Federal appropriations, grants, and contracts	570	556	636	747	805	793	823	820	861	863	837	836	829	881	914	1,001
Auxiliary enterprises[b]	735	719	708	721	775	795	824	876	901	913	903	878	881	883	901	896
Hospitals, independent operations, and other sources[c]	331	360	287	319	391	382	404	509	414	446	349	385	382	426	348	390
4-year and graduate institutions (public)[d]																
Net tuition	2,811	3,009	3,592	3,954	4,242	4,255	4,300	4,462	4,795	5,291	5,584	5,771	5,908	6,025	6,264	6,638
State and local appropriations	8,381	8,039	6,907	7,168	7,905	8,074	8,176	7,945	7,325	6,969	6,803	6,893	7,139	7,335	6,808	6,105
State and local grants and contracts	340	391	446	577	666	694	775	1,006	1,085	1,102	1,091	1,187	1,178	1,206	1,205	1,175
Private and affiliated gifts, investment returns, and endowment income	364	419	467	532	670	700	777	514	639	545	588	672	902	613	329	616
Federal appropriations, grants, and contracts	936	899	990	1,447	1,274	1,314	1,450	1,536	1,558	1,565	1,557	1,532	1,551	1,555	1,515	1,724
Auxiliary enterprises[b]	2,318	2,229	2,209	2,361	2,495	2,606	2,622	2,553	2,481	2,521	2,553	2,607	2,710	2,753	2,847	2,899
Hospitals, independent operations, and other sources[c]	582	634	674	687	720	789	731	1,136	1,147	1,163	1,239	1,146	1,164	1,103	1,183	1,120
Very high research institutions (public)																
Net tuition	3,954	4,348	5,084	5,713	6,085	6,095	6,167	6,326	6,699	7,308	7,798	8,113	8,309	8,564	8,992	9,622
State and local appropriations	13,555	13,855	12,149	12,073	12,895	13,096	13,411	13,108	11,996	11,182	11,015	10,926	11,387	11,733	10,574	9,788
State and local grants and contracts	702	854	849	1,099	1,156	1,288	1,363	3,415	3,520	3,509	3,766	3,873	4,085	4,206	4,556	4,391
Private and affiliated gifts, investment returns, and endowment income	2,074	2,540	2,768	2,913	3,543	3,858	4,119	2,021	2,867	3,769	3,903	4,267	5,994	2,527	-1,609	4,023
Federal appropriations, grants, and contracts	4,790	5,416	6,027	6,857	6,750	6,996	7,333	7,932	8,413	8,863	9,548	9,221	8,939	8,700	8,935	9,379
Auxiliary enterprises[b]	3,591	3,712	3,954	4,219	4,709	4,936	4,961	4,905	4,939	5,115	5,286	5,232	5,560	4,940	4,902	4,897
Hospitals, independent operations, and other sources[c]	5,552	7,113	7,965	8,278	8,497	8,549	8,873	10,656	10,242	11,246	11,818	12,319	12,685	13,658	14,213	13,924
Very high research institutions (private)																
Net tuition	15,886	17,157	18,002	19,652	20,746	20,845	20,956	21,219	21,917	21,918	22,505	22,229	23,013	23,126	23,154	23,257
State and local appropriations	594	532	270	303	295	300	307	285	747	520	477	518	550	592	494	437
State and local grants and contracts	1,731	2,625	2,587	1,957	1,939	1,871	1,824	1,931	1,850	2,001	2,035	2,024	1,969	2,056	2,021	1,711
Private and affiliated gifts, investment returns, and endowment income	14,841	16,512	16,554	16,809	63,869	123,988	14,907	9,708	39,832	79,605	84,177	90,246	124,564	40,852	-86,934	61,573
Federal appropriations, grants, and contracts	17,382	17,172	17,221	18,657	21,021	21,499	22,324	24,277	26,252	28,378	29,644	28,855	28,047	27,000	27,292	28,002

Appendix table 2-4

Average revenue per FTE by institution type: 1987–2010

(2010 dollars)

Institution type and revenue	1987	1990	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Auxiliary enterprises[b]	6,852	7,819	7,916	7,894	7,946	7,333	7,532	7,663	7,693	7,500	7,431	7,657	8,036	7,979	8,002	8,073
Hospitals, independent operations, and other sources[c]	24,678	25,850	28,138	20,145	29,893	30,625	31,005	31,841	32,766	35,418	37,765	38,914	41,741	42,267	40,106	43,415

FTE = full-time equivalent.

[a] Public associate's colleges/universities.
[b] Includes activities that are generally self-supporting, such as residence halls, food services, student health services, and intercollegiate athletics.
[c] Includes revenue generated by hospitals operated by the institution and revenues independent or unrelated to instruction, research, or public services.
[d] Doctorate-granting universities/high research activity, doctoral/research universities, master's colleges/universities, and baccalaureate colleges.

NOTES: Institution type corresponds to the 2005 Carnegie Classification of Institutions. For definitions of standard revenue categories, see http://www.deltacostproject.org/pdfs/Revenue_Trends_Production.pdf.

SOURCE: IPEDS Analytics: Delta Cost Project Database: 1987–2010, special tabulations (2013).

Science and Engineering Indicators 2014

Appendix table 2-5

Average expenditures per FTE by institution type: 1987–2010

(2010 dollars)

Institution type and expenditure	1987	1990	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Community college[a]																
Instruction	4,723	4,744	4,476	4,798	5,251	5,298	5,312	5,119	4,895	4,862	4,874	5,018	5,201	5,296	5,144	4,788
Research	13	14	15	7	5	5	5	8	6	3	4	6	4	4	4	5
Public service	227	243	227	242	285	296	300	293	270	255	250	252	241	248	236	216
Academic support	809	830	754	839	991	996	1,037	993	907	895	906	934	964	989	953	883
Student services	904	910	915	1,048	1,200	1,227	1,198	1,187	1,168	1,157	1,176	1,204	1,256	1,261	1,264	1,181
Institutional support	1,526	1,530	1,409	1,579	1,774	1,799	1,817	1,766	1,678	1,711	1,703	1,773	1,839	1,904	1,857	1,682
Plant operation and maintenance	1,109	1,061	944	1,026	1,097	1,118	1,152	1,162	1,115	1,096	1,110	1,201	1,244	1,229	1,200	1,023
Scholarships and fellowships	855	1,013	1,240	1,316	1,549	1,533	1,643	1,373	1,156	1,065	988	932	904	980	1,126	1,560
Auxiliary enterprises, hospitals, and clinics, and independent and other operations[b]	802	766	751	749	832	844	863	1,146	998	1,060	1,048	1,040	1,121	1,243	1,311	1,333
4-year and graduate institution (public)[c]																
Instruction	5,843	5,833	5,607	5,964	6,330	6,410	6,490	6,452	6,339	6,293	6,288	6,367	6,539	6,727	6,768	6,801
Research	626	688	701	793	847	915	960	951	984	997	1,017	1,009	1,018	1,029	1,037	1,088
Public service	449	483	533	585	715	760	803	804	803	771	780	778	764	755	742	732
Academic support	1,281	1,332	1,269	1,375	1,588	1,638	1,684	1,540	1,513	1,516	1,535	1,563	1,600	1,661	1,685	1,697
Student services	964	979	1,027	1,061	1,255	1,299	1,326	1,323	1,295	1,291	1,308	1,327	1,367	1,422	1,443	1,464
Institutional support	1,698	1,727	1,605	1,816	2,009	2,038	2,064	2,051	2,035	2,034	1,995	2,054	2,117	2,200	2,186	2,179
Plant operation and maintenance	1,529	1,410	1,286	1,355	1,415	1,472	1,535	1,611	1,533	1,548	1,643	1,755	1,773	1,785	1,768	1,463
Scholarships and fellowships	1,215	1,365	1,556	1,936	2,005	2,001	2,156	1,144	1,025	973	947	918	924	958	1,021	1,281
Auxiliary enterprises, hospitals, and clinics, and independent and other operations[b]	2,659	2,535	2,538	2,629	2,733	2,905	2,878	2,866	2,848	2,780	2,802	2,821	2,905	3,240	3,286	3,448
Very high research institution (public)																
Instruction	9,971	10,641	10,418	10,874	11,474	11,699	12,015	11,910	11,797	11,512	12,013	12,085	12,441	12,716	12,780	12,939
Research	5,830	6,722	7,094	7,500	8,209	8,607	8,754	8,858	9,076	9,293	9,700	9,530	9,492	9,625	9,932	10,442
Public service	1,824	2,097	2,242	2,377	2,716	2,847	2,891	2,845	2,798	2,930	2,902	2,884	2,967	3,087	3,050	3,193
Academic support	2,516	2,811	2,718	3,037	3,326	3,362	3,461	3,156	3,069	3,036	3,103	3,196	3,314	3,825	3,907	4,008
Student services	1,031	1,144	1,104	1,185	1,266	1,307	1,327	1,349	1,324	1,311	1,351	1,355	1,396	1,451	1,487	1,522
Institutional support	2,115	2,237	2,090	2,366	2,570	2,552	2,584	2,512	2,503	2,355	2,469	2,506	2,674	2,804	2,760	2,784
Plant operation and maintenance	2,127	2,181	1,992	2,053	2,099	2,205	2,300	2,399	2,277	2,391	2,547	2,663	2,736	2,690	2,610	2,111
Scholarships and fellowships	1,378	1,596	1,942	2,539	2,411	2,446	2,539	1,326	1,169	1,143	1,176	1,182	1,217	1,263	1,276	1,447
Auxiliary enterprises, hospitals, and clinics, and independent and other operations[b]	8,327	9,660	10,957	11,290	11,653	11,511	12,352	11,965	11,764	12,525	13,125	13,693	14,169	15,308	15,600	15,771

Appendix table 2-5

Average expenditures per FTE by institution type: 1987–2010

(2010 dollars)

Institution type and expenditure	1987	1990	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Very high research institution (private)																
Instruction	21,956	23,599	25,230	26,037	29,344	30,052	30,456	32,815	34,565	35,185	36,826	36,894	38,879	39,068	40,322	39,295
Research	14,455	15,557	15,587	16,482	20,095	20,788	21,380	23,344	25,065	26,391	27,218	26,771	26,606	26,391	26,968	27,367
Public service	1,736	1,852	1,850	2,013	1,419	1,183	1,189	1,239	1,563	1,551	1,589	1,611	1,599	1,596	1,651	1,570
Academic support	5,199	5,135	5,160	5,756	7,416	6,873	7,468	7,590	7,751	7,726	7,987	8,409	8,729	9,446	9,842	9,477
Student services	2,111	2,229	2,299	2,638	3,195	3,443	3,664	3,857	3,936	4,011	4,383	4,769	4,821	4,831	5,086	4,957
Institutional support	10,580	10,119	9,316	9,493	10,525	11,044	11,148	11,402	11,784	11,645	11,645	11,359	11,441	11,815	12,139	11,442
Plant operation and maintenance	4,539	4,851	4,980	5,030	5,402	5,605	5,635	6,013	5,741	5,977	6,312	7,119	7,016	7,931	8,538	8,100
Scholarships and fellowships	5,658	6,353	7,557	6,982	663	671	770	829	881	899	857	818	815	818	877	907
Auxiliary enterprises, hospitals, and clinics, and independent and other operations[b]	26,643	29,081	30,544	23,551	31,951	32,108	33,340	33,770	34,509	34,519	35,169	35,893	36,661	36,808	38,873	40,564

FTE = full-time equivalent.

[a] Public associate's colleges/universities.
[b] Includes user-fee activities that do not receive general support. Auxiliary enterprises include dormitories, bookstores, and meal services.
[c] Includes doctorate-granting universities/high research activity, doctoral/research universities, master's colleges/universities, and baccalaureate colleges.

NOTES: Institution type corresponds to the 2005 Carnegie Classification of Institutions. For definitions of standard expense categories, see http://www.deltacostproject.org/resources/pdf/Delta-Spending-Trends-Production.pdf. Changes in financial accounting standards during the late 1990s and early 2000s affected both public and private institutions reporting of scholarships and fellowships in the Integrated Postsecondary Education Data System (IPEDS). For private institutions, scholarship and fellowship data from 1997 on are not comparable with earlier years' data. For public institutions, scholarship, and fellowship data from 2002 on are not comparable with earlier years' data.

SOURCE: IPEDS Analytics: Delta Cost Project Database: 1987–2010, special tabulations (2013).

Science and Engineering Indicators 2014

Appendix table 2-6

Full-time S&E graduate students, by source and mechanism of primary support: 1997–2011

	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support[a]	
Source	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All sources														
1997	327,289	100.0	88,001	26.9	28,956	8.8	14,488	4.4	65,425	20.0	21,678	6.6	108,741	33.2
1998	327,389	100.0	88,097	26.9	29,106	8.9	14,946	4.6	65,173	19.9	21,843	6.7	108,224	33.1
1999	334,423	100.0	91,279	27.3	30,112	9.0	14,707	4.4	66,294	19.8	22,615	6.8	109,416	32.7
2000	341,283	100.0	94,323	27.6	31,330	9.2	14,171	4.2	66,423	19.5	22,604	6.6	112,432	32.9
2001	354,522	100.0	99,923	28.2	32,270	9.1	14,154	4.0	68,267	19.3	23,272	6.6	116,636	32.9
2002	378,991	100.0	108,185	28.5	34,849	9.2	15,006	4.0	70,732	18.7	23,565	6.2	126,654	33.4
2003	397,420	100.0	114,256	28.7	34,460	8.7	15,126	3.8	73,105	18.4	25,743	6.5	134,730	33.9
2004	402,573	100.0	114,768	28.5	35,034	8.7	14,903	3.7	73,009	18.1	27,781	6.9	137,078	34.1
2005	406,620	100.0	114,304	28.1	36,414	9.0	14,570	3.6	74,238	18.3	27,691	6.8	139,403	34.3
2006	419,015	100.0	114,774	27.4	36,689	8.8	14,571	3.5	75,911	18.1	30,464	7.3	146,606	35.0
2007old[b]	430,860	100.0	115,192	26.7	38,340	8.9	13,437	3.1	77,817	18.1	31,781	7.4	154,293	35.8
2007new[b]	427,146	100.0	114,802	26.9	38,033	8.9	13,450	3.1	77,022	18.0	31,569	7.4	152,270	35.6
2008	437,242	100.0	116,979	26.8	37,861	8.7	13,299	3.0	79,595	18.2	29,523	6.8	159,985	36.6
2009	441,744	100.0	120,008	27.2	38,115	8.6	12,799	2.9	78,318	17.7	29,791	6.7	162,713	36.8
2010	446,455	100.0	122,346	27.4	38,984	8.7	12,422	2.8	79,445	17.8	30,027	6.7	163,231	36.6
2011	444,991	100.0	121,010	27.2	40,583	9.1	12,557	2.8	80,719	18.1	29,799	6.7	160,323	36.0
Federal														
1997	64,522	100.0	43,328	67.2	7,074	11.0	9,291	14.4	908	1.4	3,921	6.1	NA	NA
1998	63,759	100.0	41,826	65.6	7,033	11.0	9,658	15.1	1,120	1.8	4,122	6.5	NA	NA
1999	65,796	100.0	43,061	65.4	7,345	11.2	9,725	14.8	997	1.5	4,668	7.1	NA	NA
2000	67,588	100.0	44,620	66.0	7,475	11.1	9,544	14.1	1,371	2.0	4,578	6.8	NA	NA
2001	68,843	100.0	46,205	67.1	7,406	10.8	9,497	13.8	1,077	1.6	4,658	6.8	NA	NA
2002	75,538	100.0	51,621	68.3	7,899	10.5	9,996	13.2	1,227	1.6	4,795	6.3	NA	NA
2003	81,761	100.0	57,255	70.0	7,608	9.3	10,090	12.3	1,531	1.9	5,277	6.5	NA	NA
2004	83,816	100.0	58,559	69.9	7,965	9.5	9,916	11.8	1,533	1.8	5,843	7.0	NA	NA
2005	83,723	100.0	58,197	69.5	8,267	9.9	9,731	11.6	1,596	1.9	5,932	7.1	NA	NA
2006	83,962	100.0	57,547	68.5	8,251	9.8	9,754	11.6	1,659	2.0	6,751	8.0	NA	NA
2007old[b]	81,542	100.0	57,258	70.2	8,568	10.5	8,609	10.6	1,574	1.9	5,533	6.8	NA	NA
2007new[b]	81,602	100.0	57,259	70.2	8,598	10.5	8,606	10.5	1,574	1.9	5,565	6.8	NA	NA
2008	78,215	100.0	55,375	70.8	8,291	10.6	8,206	10.5	1,015	1.3	5,328	6.8	NA	NA
2009	81,205	100.0	58,341	71.8	8,592	10.6	8,068	9.9	1,248	1.5	4,956	6.1	NA	NA
2010	85,877	100.0	62,558	72.8	9,534	11.1	7,649	8.9	1,091	1.3	5,045	5.9	NA	NA
2011	84,816	100.0	61,799	72.9	9,766	11.5	7,600	9.0	1,091	1.3	4,560	5.4	NA	NA

Appendix table 2-6

Full-time S&E graduate students, by source and mechanism of primary support: 1997–2011

	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support[a]	
Source	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Nonfederal														
1997	154,026	100.0	44,673	29.0	21,882	14.2	5,197	3.4	64,517	41.9	17,757	11.5	NA	NA
1998	155,406	100.0	46,271	29.8	22,073	14.2	5,288	3.4	64,053	41.2	17,721	11.4	NA	NA
1999	159,211	100.0	48,218	30.3	22,767	14.3	4,982	3.1	65,297	41.0	17,947	11.3	NA	NA
2000	161,263	100.0	49,703	30.8	23,855	14.8	4,627	2.9	65,052	40.3	18,026	11.2	NA	NA
2001	169,043	100.0	53,718	31.8	24,864	14.7	4,657	2.8	67,190	39.7	18,614	11.0	NA	NA
2002	176,799	100.0	56,564	32.0	26,950	15.2	5,010	2.8	69,505	39.3	18,770	10.6	NA	NA
2003	180,929	100.0	57,001	31.5	26,852	14.8	5,036	2.8	71,574	39.6	20,466	11.3	NA	NA
2004	181,679	100.0	56,209	30.9	27,069	14.9	4,987	2.7	71,476	39.3	21,938	12.1	NA	NA
2005	183,494	100.0	56,107	30.6	28,147	15.3	4,839	2.6	72,642	39.6	21,759	11.9	NA	NA
2006	188,447	100.0	57,227	30.4	28,438	15.1	4,817	2.6	74,252	39.4	23,713	12.6	NA	NA
2007old[b]	195,025	100.0	57,934	29.7	29,772	15.3	4,828	2.5	76,243	39.1	26,248	13.5	NA	NA
2007new[b]	193,274	100.0	57,543	29.8	29,435	15.2	4,844	2.5	75,448	39.0	26,004	13.5	NA	NA
2008	199,042	100.0	61,604	31.0	29,570	14.9	5,093	2.6	78,580	39.5	24,195	12.2	NA	NA
2009	197,826	100.0	61,667	31.2	29,523	14.9	4,731	2.4	77,070	39.0	24,835	12.6	NA	NA
2010	197,347	100.0	59,788	30.3	29,450	14.9	4,773	2.4	78,354	39.7	24,982	12.7	NA	NA
2011	199,852	100.0	59,211	29.6	30,817	15.4	4,957	2.5	79,628	39.8	25,239	12.6	NA	NA

NA = not available.

[a] Includes any loans (including federal) and support from personal or family financial contributions.

[b] In 2007, the survey was redesigned to improve reporting. "2007new" shows data as collected in 2007; "2007old" shows data as they would have been collected in prior years. Because of methodological changes, counts should be used with caution for trend analysis. See http://www.nsf.gov/statistics/nsf10307/ for more detail. S&E excludes fields that were collected in this survey starting in 2007 (architecture, communication, and consumer sciences/human sciences) that are not included in other tables in this report and from other data sources.

NOTES: S&E includes health fields (i.e., medical sciences and other health sciences). These fields are reported separately in National Science Foundation, National Center for Science and Engineering Statistics, Graduate Students and Postdoctorates in Science and Engineering (annual series). Self-support is not included in federal or nonfederal counts. Percentages may not add to 100% because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-7

Full-time S&E graduate students, by field and mechanism of primary support: 2011

Field	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support[a]	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
S&E	444,991	100.0	121,010	27.2	40,583	9.1	12,557	2.8	80,719	18.1	29,799	6.7	160,323	36.0
Engineering	105,381	100.0	40,096	38.0	8,632	8.2	932	0.9	13,002	12.3	6,126	5.8	36,593	34.7
Aerospace	4,251	100.0	1,708	40.2	428	10.1	42	1.0	488	11.5	248	5.8	1,337	31.5
Chemical	7,639	100.0	3,977	52.1	987	12.9	73	1.0	860	11.3	316	4.1	1,426	18.7
Civil	14,363	100.0	4,851	33.8	1,052	7.3	43	0.3	2,042	14.2	886	6.2	5,489	38.2
Electrical	30,735	100.0	10,329	33.6	1,767	5.7	50	0.2	3,890	12.7	1,701	5.5	12,998	42.3
Industrial	8,251	100.0	1,699	20.6	408	4.9	50	0.6	1,008	12.2	978	11.9	4,108	49.8
Materials	5,877	100.0	3,396	57.8	606	10.3	33	0.6	456	7.8	183	3.1	1,203	20.5
Mechanical	16,084	100.0	6,385	39.7	1,331	8.3	96	0.6	2,541	15.8	997	6.2	4,734	29.4
Other	18,181	100.0	7,751	42.6	2,053	11.3	545	3.0	1,717	9.4	817	4.5	5,298	29.1
Science	339,610	100.0	80,914	23.8	31,951	9.4	11,625	3.4	67,717	19.9	23,673	7.0	123,730	36.4
Natural sciences	223,467	100.0	66,937	30.0	19,078	8.5	9,440	4.2	45,063	20.2	14,413	6.4	68,536	30.7
Agricultural sciences	11,448	100.0	5,801	50.7	795	6.9	59	0.5	1,508	13.2	573	5.0	2,712	23.7
Biological sciences[b]	66,684	100.0	25,546	38.3	7,783	11.7	6,488	9.7	10,366	15.5	4,112	6.2	12,389	18.6
Earth, atmospheric, and ocean sciences	12,404	100.0	4,837	39.0	1,384	11.2	69	0.6	2,794	22.5	614	5.0	2,706	21.8
Atmospheric sciences	1,197	100.0	690	57.6	66	5.5	11	0.9	238	19.9	19	1.6	173	14.5
Earth sciences	6,450	100.0	2,356	36.5	707	11.0	49	0.8	1,869	29.0	252	3.9	1,217	18.9
Oceanography	2,199	100.0	1,167	53.1	190	8.6	1	0.0	347	15.8	143	6.5	351	16.0
Other geosciences	2,558	100.0	624	24.4	421	16.5	8	0.3	340	13.3	200	7.8	965	37.7
Mathematics/computer sciences	51,164	100.0	9,951	19.4	3,407	6.7	407	0.8	13,438	26.3	3,274	6.4	20,687	40.4
Computer sciences	32,861	100.0	7,865	23.9	1,653	5.0	195	0.6	4,467	13.6	2,547	7.8	16,134	49.1
Mathematics/statistics	18,303	100.0	2,086	11.4	1,754	9.6	212	1.2	8,971	49.0	727	4.0	4,553	24.9
Medical/other health sciences	46,124	100.0	6,519	14.1	2,112	4.6	1,994	4.3	3,603	7.8	4,763	10.3	27,133	58.8
Medical sciences	23,513	100.0	4,311	18.3	1,287	5.5	1,263	5.4	1,772	7.5	2,356	10.0	12,524	53.3
Other health sciences	22,611	100.0	2,208	9.8	825	3.6	731	3.2	1,831	8.1	2,407	10.6	14,609	64.6
Physical sciences	35,643	100.0	14,283	40.1	3,597	10.1	423	1.2	13,354	37.5	1,077	3.0	2,909	8.2
Astronomy	1,325	100.0	661	49.9	315	23.8	5	0.4	251	18.9	21	1.6	72	5.4
Chemistry	20,403	100.0	7,516	36.8	1,943	9.5	240	1.2	8,388	41.1	553	2.7	1,763	8.6
Physics	13,413	100.0	6,011	44.8	1,267	9.4	129	1.0	4,650	34.7	425	3.2	931	6.9
Other physical sciences	502	100.0	95	18.9	72	14.3	49	9.8	65	12.9	78	15.5	143	28.5
Social/behavioral sciences	112,040	100.0	12,934	11.5	12,496	11.2	2,095	1.9	21,984	19.6	8,980	8.0	53,551	47.8
Psychology	38,548	100.0	5,417	14.1	2,107	5.5	977	2.5	6,484	16.8	2,850	7.4	20,713	53.7
Social sciences	73,492	100.0	7,517	10.2	10,389	14.1	1,118	1.5	15,500	21.1	6,130	8.3	32,838	44.7
Anthropology	6,471	100.0	592	9.1	1,320	20.4	77	1.2	1,919	29.7	505	7.8	2,058	31.8
Economics	14,158	100.0	2,198	15.5	1,958	13.8	195	1.4	3,776	26.7	1,037	7.3	4,994	35.3
History of science	425	100.0	28	6.6	141	33.2	1	0.2	170	40.0	24	5.6	61	14.4
Linguistics	2,589	100.0	223	8.6	456	17.6	27	1.0	872	33.7	194	7.5	817	31.6
Political science/public administration	28,554	100.0	1,995	7.0	3,695	12.9	504	1.8	3,405	11.9	2,798	9.8	16,157	56.6

Appendix table 2-7

Full-time S&E graduate students, by field and mechanism of primary support: 2011

Field	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support[a]	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Sociology	7,321	100.0	975	13.3	1,094	14.9	195	2.7	2,440	33.3	518	7.1	2,099	28.7
Other social sciences	13,974	100.0	1,506	10.8	1,725	12.3	119	0.9	2,918	20.9	1,054	7.5	6,652	47.6
Multidisciplinary/interdisciplinary studies	4,103	100.0	1,043	25.4	377	9.2	90	2.2	670	16.3	280	6.8	1,643	40.0

[a] Includes any loans (including federal) and support from personal or family financial contributions.
[b] Includes neuroscience.

NOTES: Percentages may not add to 100% because of rounding. S&E excludes fields that were collected in this survey (architecture, communication, and family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-8

Full-time S&E graduate students primarily supported by federal government, by field and mechanism of primary support: 2011

(Percent)

Field	All mechanisms	Research assistantship	Fellowship	Traineeship	Teaching assistantship	Other
S&E	19.1	51.1	24.1	60.5	1.4	2.4
Engineering	23.8	51.9	29.6	70.8	1.4	2.1
Aerospace	34.3	66.6	37.1	16.7	1.6	9.1
Chemical	31.4	47.5	41.5	91.8	1.3	1.2
Civil	16.1	38.6	25.7	79.1	1.9	1.6
Electrical	21.6	58.0	20.9	80.0	0.8	1.3
Industrial	13.3	45.9	16.7	90.0	2.0	3.7
Materials	35.4	53.2	36.8	63.6	1.5	1.4
Mechanical	24.3	52.5	30.4	39.6	1.1	1.3
Other	28.7	51.0	31.7	74.9	1.9	2.7
Science	17.6	50.7	22.6	59.7	1.3	2.5
Natural sciences	23.4	55.1	30.3	67.2	1.6	3.0
Agricultural sciences	21.9	37.3	25.8	49.2	2.8	1.9
Biological sciences[a]	33.7	55.2	35.7	70.7	1.7	4.8
Earth, atmospheric, and ocean sciences	27.3	56.6	31.1	40.6	3.6	2.6
Atmospheric sciences	44.6	67.5	50.0	90.9	8.8	2.1
Earth sciences	23.9	53.4	29.7	20.4	1.9	1.8
Oceanography	35.4	57.4	32.6	100.0	4.0	6.5
Other geosciences	20.8	55.1	29.9	87.5	8.8	2.1
Mathematics/computer sciences	15.0	59.7	23.0	62.7	0.7	2.5
Computer sciences	17.4	59.3	22.4	59.5	1.1	2.8
Mathematics/statistics	10.6	61.3	23.5	65.6	0.5	1.3
Medical/other health sciences	10.6	35.5	21.9	59.0	3.0	2.6
Medical sciences	14.5	39.5	26.2	68.9	2.5	3.1
Other health sciences	6.5	27.8	15.2	41.9	3.4	2.2
Physical sciences	31.7	67.4	31.2	63.8	1.4	2.1
Astronomy	46.6	72.0	41.3	80.0	2.0	3.2
Chemistry	28.2	64.8	29.3	72.9	1.2	1.3
Physics	36.0	70.0	32.1	64.3	1.6	3.8
Other physical sciences	23.5	83.2	22.2	16.3	23.1	0.0
Social/behavioral sciences	6.1	27.8	10.9	25.7	0.9	1.9
Psychology	8.0	34.6	22.5	31.7	1.0	1.6
Social sciences	5.1	23.0	8.6	20.4	0.8	2.1
Anthropology	6.2	29.7	11.7	13.0	0.6	2.0
Economics	5.9	26.8	5.9	14.9	0.7	1.2
History of science	2.4	7.1	5.0	0.0	0.0	1.2
Linguistics	6.2	32.3	10.1	40.7	2.1	1.4
Political science/public administration	3.7	12.2	6.9	13.7	0.8	2.4

Appendix table 2-8

Full-time S&E graduate students primarily supported by federal government, by field and mechanism of primary support: 2011

(Percent)

Field	All mechanisms	Research assistantship	Fellowship	Traineeship	Teaching assistantship	Other
Sociology	6.4	21.7	10.8	43.6	0.6	1.5
Other social sciences	6.1	28.8	11.4	20.2	1.0	2.2
Multidisciplinary/interdisciplinary studies	16.2	48.5	17.8	64.4	1.3	1.2

[a] Includes neuroscience.

NOTE: S&E excludes fields that were collected in this survey (architecture, communication, and family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-9

Full-time S&E graduate students primarily supported by federal government, by agency: 1997–2011

	All federal		National Institutes of Health		Department of Health and Human Services (excluding NIH)		National Science Foundation		Department of Defense		Department of Agriculture		National Aeronautics and Space Administration		Department of Energy		Other federal agencies	
Year	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1997	64,522	100.0	18,087	28.0	4,443	6.9	13,362	20.7	9,021	14.0	2,646	4.1	2,586	4.0	NA	NA	14,377	22.3
1998	63,759	100.0	18,215	28.6	4,489	7.0	13,459	21.1	8,259	13.0	2,485	3.9	2,646	4.2	NA	NA	14,206	22.3
1999	65,796	100.0	19,019	28.9	4,423	6.7	13,835	21.0	8,026	12.2	2,634	4.0	2,579	3.9	2,749	4.2	12,531	19.0
2000	67,588	100.0	19,472	28.8	4,018	5.9	14,599	21.6	8,141	12.0	2,630	3.9	2,780	4.1	2,995	4.4	12,953	19.2
2001	68,843	100.0	19,904	28.9	4,433	6.4	15,429	22.4	7,960	11.6	2,735	4.0	2,819	4.1	3,116	4.5	12,447	18.1
2002	75,538	100.0	22,129	29.3	4,830	6.4	17,135	22.7	7,977	10.6	3,100	4.1	3,082	4.1	3,548	4.7	13,737	18.2
2003	81,761	100.0	24,309	29.7	4,922	6.0	19,308	23.6	9,204	11.3	3,468	4.2	3,230	4.0	4,024	4.9	13,296	16.3
2004	83,816	100.0	26,689	31.8	4,211	5.0	19,975	23.8	9,007	10.7	3,563	4.3	2,916	3.5	4,135	4.9	13,320	15.9
2005	83,723	100.0	26,868	32.1	3,912	4.7	20,387	24.4	8,993	10.7	3,351	4.0	2,691	3.2	4,392	5.2	13,129	15.7
2006	83,962	100.0	27,587	32.9	3,662	4.4	20,339	24.2	8,867	10.6	3,000	3.6	2,364	2.8	4,480	5.3	13,663	16.3
2007old[a]	81,542	100.0	26,982	33.1	3,067	3.8	19,747	24.2	8,874	10.9	2,796	3.4	2,314	2.8	4,281	5.3	13,481	16.5
2007new[a]	81,602	100.0	26,965	33.0	3,066	3.8	19,763	24.2	8,865	10.9	2,798	3.4	2,317	2.8	4,282	5.2	13,546	16.6
2008	78,215	100.0	25,949	33.2	2,481	3.2	19,845	25.4	8,200	10.5	2,736	3.5	2,344	3.0	4,334	5.5	12,326	15.8
2009	81,205	100.0	26,443	32.6	2,183	2.7	21,617	26.6	8,653	10.7	2,689	3.3	2,426	3.0	4,603	5.7	12,591	15.5
2010	85,877	100.0	27,547	32.1	2,228	2.6	23,149	27.0	9,202	10.7	3,037	3.5	2,470	2.9	5,493	6.4	12,751	14.8
2011	84,816	100.0	25,612	30.2	2,173	2.6	24,138	28.5	9,076	10.7	2,835	3.3	2,391	2.8	5,725	6.7	12,866	15.2

NA = not available.

[a] In 2007, the survey was redesigned to improve reporting. "2007new" shows data as collected in 2007; "2007old" shows data as they would have been collected in prior years. Because of methodological changes, counts should be used with caution for trend analysis. See http://www.nsf.gov/statistics/nsf10307/ for more detail. S&E excludes fields that were collected in this survey starting in 2007 (architecture, communication, and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.

NOTES: S&E includes health fields (i.e., medical sciences and other health sciences). Percentages may not add to 100% because of rounding. Data were not reported until first year given.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-10

Full-time S&E graduate students primarily supported by federal government, by field and agency: 2011

Field	All federal		National Institutes of Health		Department of Health and Human Services (excluding NIH)		National Science Foundation		Department of Defense		Department of Agriculture		National Aeronautics and Space Administration		Department of Energy		Other federal agencies	
	Total	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
S&E	84,816	100.0	25,612	30.2	2,173	2.6	24,138	28.5	9,076	10.7	2,835	3.3	2,391	2.8	5,725	6.7	12,866	15.2
Engineering	25,093	100.0	2,952	11.8	226	0.9	8,516	33.9	5,354	21.3	284	1.1	1,005	4.0	2,827	11.3	3,929	15.7
Aerospace	1,456	100.0	8	0.5	0	0.0	176	12.1	681	46.8	1	0.1	373	25.6	72	4.9	145	10.0
Chemical	2,400	100.0	291	12.1	47	2.0	1,039	43.3	223	9.3	42	1.8	31	1.3	487	20.3	240	10.0
Civil	2,317	100.0	31	1.3	5	0.2	846	36.5	183	7.9	54	2.3	81	3.5	136	5.9	981	42.3
Electrical	6,629	100.0	414	6.2	31	0.5	2,830	42.7	2,025	30.5	9	0.1	183	2.8	361	5.4	776	11.7
Industrial	1,100	100.0	96	8.7	18	1.6	304	27.6	367	33.4	5	0.5	21	1.9	96	8.7	193	17.5
Materials	2,079	100.0	86	4.1	17	0.8	775	37.3	405	19.5	33	1.6	27	1.3	454	21.8	282	13.6
Mechanical	3,902	100.0	181	4.6	34	0.9	1,387	35.5	887	22.7	14	0.4	193	4.9	571	14.6	635	16.3
Other	5,210	100.0	1,845	35.4	74	1.4	1,159	22.2	583	11.2	126	2.4	96	1.8	650	12.5	677	13.0
Science	59,723	100.0	22,660	37.9	1,947	3.3	15,622	26.2	3,722	6.2	2,551	4.3	1,386	2.3	2,898	4.9	8,937	15.0
Natural sciences	52,185	100.0	20,913	40.1	1,646	3.2	13,863	26.6	3,197	6.1	2,225	4.3	1,264	2.4	2,812	5.4	6,265	12.0
Agricultural sciences	2,504	100.0	52	2.1	18	0.7	373	14.9	32	1.3	1,219	48.7	30	1.2	56	2.2	724	28.9
Biological sciences[a]	22,444	100.0	15,907	70.9	607	2.7	2,776	12.4	493	2.2	788	3.5	70	0.3	186	0.8	1,617	7.2
Earth, atmospheric, and ocean sciences	3,385	100.0	22	0.6	5	0.1	1,695	50.1	151	4.5	45	1.3	487	14.4	219	6.5	761	22.5
Atmospheric sciences	534	100.0	0	0.0	1	0.2	199	37.3	25	4.7	5	0.9	148	27.7	49	9.2	107	20.0
Earth sciences	1,541	100.0	10	0.6	3	0.2	890	57.8	30	1.9	17	1.1	234	15.2	127	8.2	230	14.9
Oceanography	779	100.0	1	0.1	0	0.0	393	50.4	60	7.7	15	1.9	41	5.3	22	2.8	247	31.7
Other geosciences	531	100.0	11	2.1	1	0.2	213	40.1	36	6.8	8	1.5	64	12.1	21	4.0	177	33.3
Mathematics/computer sciences	7,663	100.0	543	7.1	57	0.7	4,394	57.3	1,416	18.5	56	0.7	78	1.0	255	3.3	864	11.3
Computer sciences	5,722	100.0	346	6.0	44	0.8	3,197	55.9	1,260	22.0	17	0.3	60	1.0	191	3.3	607	10.6
Mathematics/statistics	1,941	100.0	197	10.1	13	0.7	1,197	61.7	156	8.0	39	2.0	18	0.9	64	3.3	257	13.2
Medical/other health sciences	4,885	100.0	2,327	47.6	828	16.9	197	4.0	201	4.1	94	1.9	11	0.2	20	0.4	1,207	24.7
Medical sciences	3,409	100.0	1,806	53.0	601	17.6	93	2.7	187	5.5	81	2.4	7	0.2	20	0.6	614	18.0
Other health sciences	1,476	100.0	521	35.3	227	15.4	104	7.0	14	0.9	13	0.9	4	0.3	0	0.0	593	40.2
Physical sciences	11,304	100.0	2,062	18.2	131	1.2	4,428	39.2	904	8.0	23	0.2	588	5.2	2,076	18.4	1,092	9.7
Astronomy	618	100.0	3	0.5	0	0.0	277	44.8	7	1.1	0	0.0	202	32.7	66	10.7	63	10.2
Chemistry	5,744	100.0	1,808	31.5	96	1.7	2,118	36.9	392	6.8	15	0.3	84	1.5	715	12.4	516	9.0
Physics	4,824	100.0	207	4.3	35	0.7	2,009	41.6	497	10.3	8	0.2	289	6.0	1,288	26.7	491	10.2
Other physical sciences	118	100.0	44	37.3	0	0.0	24	20.3	8	6.8	0	0.0	13	11.0	7	5.9	22	18.6
Social/behavioral sciences	6,875	100.0	1,633	23.8	257	3.7	1,537	22.4	450	6.5	302	4.4	105	1.5	49	0.7	2,542	37.0
Psychology	3,094	100.0	1,336	43.2	132	4.3	536	17.3	200	6.5	7	0.2	7	0.2	1	0.0	875	28.3
Social sciences	3,781	100.0	297	7.9	125	3.3	1,001	26.5	250	6.6	295	7.8	98	2.6	48	1.3	1,667	44.1
Anthropology	403	100.0	14	3.5	5	1.2	188	46.7	11	2.7	6	1.5	0	0.0	3	0.7	176	43.7
Economics	833	100.0	53	6.4	9	1.1	202	24.2	30	3.6	249	29.9	3	0.4	20	2.4	267	32.1
History of science	10	100.0	1	10.0	0	0.0	6	60.0	0	0.0	0	0.0	0	0.0	0	0.0	3	30.0
Linguistics	161	100.0	20	12.4	1	0.6	93	57.8	5	3.1	1	0.6	0	0.0	2	1.2	39	24.2

Appendix table 2-10

Full-time S&E graduate students primarily supported by federal government, by field and agency: 2011

Field	All federal		National Institutes of Health		Department of Health and Human Services (excluding NIH)		National Science Foundation		Department of Defense		Department of Agriculture		National Aeronautics and Space Administration		Department of Energy		Other federal agencies	
	Total	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Political science/public administration	1,054	100.0	56	5.3	49	4.6	159	15.1	155	14.7	7	0.7	6	0.6	5	0.5	617	58.5
Sociology	468	100.0	110	23.5	45	9.6	160	34.2	16	3.4	16	3.4	0	0.0	3	0.6	118	25.2
Other social sciences	852	100.0	43	5.0	16	1.9	193	22.7	33	3.9	16	1.9	89	10.4	15	1.8	447	52.5
Multidisciplinary/interdisciplinary studies	663	100.0	114	17.2	44	6.6	222	33.5	75	11.3	24	3.6	17	2.6	37	5.6	130	19.6

[a] Includes neuroscience.

NOTES: S&E excludes fields that were collected in this survey (architecture, communication, and family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources. Percentages may not add to 100% because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-11

Primary support mechanisms for S&E doctorate recipients, by citizenship, sex, and race or ethnicity: 2011

Support mechanism	All doctorate recipients	Temporary residents	Unknown citizenship	U.S. citizens and permanent residents[a]						
				Total	Male	Female	White	Asian	Underrepresented minority	Other/unknown race or ethnicity
All mechanisms										
Number	36,654	12,240	2,213	22,201	11,519	10,682	16,330	2,333	3,191	347
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Research assistantship[b]										
Number	12,196	6,166	123	5,907	3,558	2,349	4,489	744	615	59
Percent	33.3	50.4	5.6	26.6	30.9	22.0	27.5	31.9	19.3	17.0
Fellowship or traineeship[c]										
Number	7,675	1,768	68	5,839	2,757	3,082	4,004	632	1,129	74
Percent	20.9	14.4	3.1	26.3	23.9	28.9	24.5	27.1	35.4	21.3
Teaching assistantship										
Number	5,912	2,475	49	3,388	1,828	1,560	2,643	334	358	53
Percent	16.1	20.2	2.2	15.3	15.9	14.6	16.2	14.3	11.2	15.3
Grant/stipend										
Number	2,332	428	16	1,888	965	923	1,424	226	215	23
Percent	6.4	3.5	0.7	8.5	8.4	8.6	8.7	9.7	6.7	6.6
Personal[d]										
Number	3,532	304	33	3,195	1,323	1,872	2,415	175	564	41
Percent	9.6	2.5	1.5	14.4	11.5	17.5	14.8	7.5	17.7	11.8
Other[e]										
Number	1,196	365	11	820	511	309	618	104	90	8
Percent	3.3	3.0	0.5	3.7	4.4	2.9	3.8	4.5	2.8	2.3
Unknown										
Number	3,811	734	1,913	1,164	577	587	737	118	220	89
Percent	10.4	6.0	86.4	5.2	5.0	5.5	4.5	5.1	6.9	25.6

[a] Total includes unknown sex. Underrepresented minority includes American Indians or Alaska Natives, blacks, Hispanics, Native Hawaiians or Other Pacific Islanders, and persons reporting more than one race or ethnicity.
[b] Research assistantships and other assistantships.
[c] Traineeships include internships and residencies.
[d] Personal savings, other personal earnings in graduate school, other family earnings or savings, and loans.
[e] Employer reimbursement or assistance, foreign support, and other sources.

NOTE: S&E includes health fields (i.e., medical sciences and other health sciences).

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Earned Doctorates.

Science and Engineering Indicators 2014

Appendix table 2-12

Amount of undergraduate and graduate debt of S&E doctorate recipients, by field: 2011

(Percent)

Field	Doctorates (*n*)	Debt										
		None	≤ $10,000	$10,001–$20,000	$20,001–$30,000	$30,001–$40,000	$40,001–$50,000	$50,001–$60,000	$60,001–$70,000	$70,001–$80,000	$80,001–$90,000	≥ $90,001
Cumulative debt												
All fields	45,081	52.3	9.6	8.3	6.2	4.1	3.6	2.8	2.5	1.9	2.3	6.6
S&E	33,755	55.5	9.7	8.3	5.9	3.8	3.2	2.3	2.2	1.7	2.0	5.6
Engineering	7,371	66.8	10.3	6.8	4.2	2.5	2.1	1.5	1.2	0.9	1.1	2.7
Sciences	26,384	52.3	9.6	8.7	6.4	4.1	3.5	2.5	2.4	1.9	2.3	6.4
Agricultural sciences	1,033	53.0	11.1	8.5	6.3	3.8	4.5	3.5	2.8	2.1	1.5	2.8
Biological sciences	7,612	55.2	10.5	10.2	7.2	4.0	3.3	1.8	1.9	1.5	1.1	3.4
Computer sciences	1,554	71.6	7.9	5.5	3.5	2.1	1.4	1.8	1.5	1.0	1.0	2.8
Earth, atmospheric, and ocean sciences	796	56.4	10.9	9.7	6.8	4.4	2.6	1.8	1.9	1.0	1.3	3.3
Mathematics	1,497	66.9	8.5	8.4	5.3	2.7	1.5	1.3	1.1	1.1	0.9	2.2
Medical/other health sciences	1,927	46.5	9.0	7.3	5.4	5.9	4.4	3.8	3.0	2.6	3.8	8.1
Physical sciences	4,203	60.3	10.0	9.6	6.0	3.6	2.7	1.4	1.6	1.0	1.4	2.4
Psychology	3,134	29.5	7.0	7.8	7.5	4.8	5.2	5.0	4.3	3.8	5.9	19.3
Social sciences	4,628	46.0	9.9	7.6	6.5	4.7	4.2	3.0	3.3	2.4	3.2	9.2
Non-S&E	11,326	42.9	9.1	8.2	6.9	5.0	4.8	4.2	3.5	2.5	3.0	9.9
Undergraduate debt												
All fields	44,931	72.1	7.4	7.8	5.1	2.9	1.8	1.0	0.6	0.4	0.4	0.4
S&E	33,657	72.3	7.4	7.9	5.1	2.8	1.7	1.0	0.6	0.4	0.4	0.4
Engineering	7,344	80.1	6.2	5.2	3.1	1.8	1.4	0.8	0.4	0.3	0.5	0.3
Sciences	26,313	70.2	7.8	8.7	5.7	3.0	1.8	1.0	0.6	0.4	0.4	0.4
Agricultural sciences	1,028	72.2	7.9	7.6	5.5	3.8	1.6	0.8	D	D	D	0.0
Biological sciences	7,604	67.1	8.9	10.2	6.2	2.9	1.9	1.0	0.6	0.4	0.3	0.4
Computer sciences	1,550	84.9	4.4	4.3	2.6	1.5	0.6	0.5	D	D	0.4	D
Earth, atmospheric, and ocean sciences	796	71.4	7.9	8.8	4.6	3.4	1.6	0.8	D	D	D	D
Mathematics	1,492	76.8	6.2	7.2	4.5	1.7	1.2	0.7	0.4	0.4	D	D
Medical/other health sciences	1,913	74.9	6.6	5.4	4.9	3.0	2.1	1.2	0.4	0.5	0.5	0.4
Physical sciences	4,196	70.4	7.7	9.8	5.4	3.0	1.5	0.7	0.7	0.2	0.5	0.2
Psychology	3,121	61.9	8.8	10.2	7.9	4.5	2.3	2.0	0.7	0.6	0.6	0.5
Social sciences	4,613	71.0	7.4	7.7	5.6	3.1	2.0	0.9	1.0	0.5	0.3	0.6
Non-S&E	11,274	71.3	7.2	7.6	5.0	3.2	2.1	1.2	0.8	0.5	0.5	0.6
Graduate debt												
All fields	44,862	64.0	8.3	5.4	4.2	3.3	2.7	2.3	1.9	1.6	2.1	4.2
S&E	33,594	68.1	8.2	4.9	3.7	2.9	2.2	1.9	1.5	1.3	1.8	3.5
Engineering	7,337	76.7	8.7	4.2	2.7	1.7	1.4	1.2	0.7	0.8	0.9	1.0
Sciences	26,257	65.8	8.1	5.1	3.9	3.2	2.5	2.0	1.7	1.5	2.1	4.2
Agricultural sciences	1,029	62.6	11.4	5.3	5.1	4.3	3.2	2.4	D	1.5	1.2	D
Biological sciences	7,575	74.6	7.6	4.2	3.2	2.8	1.8	1.2	1.0	0.8	1.0	1.9

Appendix table 2-12

Amount of undergraduate and graduate debt of S&E doctorate recipients, by field: 2011

(Percent)

Field	Doctorates (*n*)	Debt										
		None	≤ $10,000	$10,001–$20,000	$20,001–$30,000	$30,001–$40,000	$40,001–$50,000	$50,001–$60,000	$60,001–$70,000	$70,001–$80,000	$80,001–$90,000	≥ $90,001
Computer sciences	1,550	79.1	6.9	3.1	2.4	1.7	0.8	1.2	1.2	1.1	0.8	1.7
Earth, atmospheric, and ocean sciences	793	71.2	9.1	5.4	3.3	3.5	1.9	1.5	D	0.9	1.1	D
Mathematics	1,490	80.1	7.4	4.6	1.7	1.9	1.1	0.9	0.5	0.5	0.6	0.8
Medical/other health sciences	1,912	54.6	7.9	6.7	5.2	4.5	3.6	3.4	2.6	2.6	3.8	5.0
Physical sciences	4,183	77.1	8.1	4.1	2.8	1.9	1.5	1.0	1.0	0.5	0.9	1.1
Psychology	3,126	38.8	7.2	6.7	5.7	4.6	4.8	4.2	3.9	3.7	5.6	14.7
Social sciences	4,599	54.6	9.4	6.2	5.5	4.3	3.3	2.9	2.4	2.2	3.0	6.2
Non-S&E	11,268	51.5	8.4	7.0	6.0	4.6	4.1	3.6	3.1	2.3	2.8	6.5

D = suppressed to avoid disclosure of confidential information.

NOTES: Of doctorate recipients, 4,079 did not report undergraduate debt and 4,148 did not report graduate debt. Percentages may not add to 100% because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Earned Doctorates.

Science and Engineering Indicators 2014

Appendix table 2-13

Doctorate recipients with graduate education-related debt, by broad field of study: 2001–11

(Number)

Debt level and field of study	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All doctorate recipients	31,048	35,563	36,557	37,772	38,780	41,023	42,987	44,072	45,133	43,897	44,862
No debt	19,927	22,432	23,098	24,825	26,018	27,888	27,878	28,227	28,439	28,104	28,691
$10,000 or less	2,982	3,406	3,384	3,057	2,933	3,123	3,591	3,929	3,915	3,511	3,711
$10,001–$30,000	3,412	4,017	3,994	3,605	3,582	3,470	4,264	4,461	4,582	4,238	4,326
$30,001 or more	4,727	5,708	6,081	6,285	6,247	6,542	7,254	7,455	8,197	8,044	8,134
S&E	20,532	23,553	24,419	25,341	26,824	28,724	30,540	31,670	32,542	32,352	33,594
No debt	13,716	15,516	16,155	17,341	18,902	20,543	21,023	21,604	21,995	22,090	22,893
$10,000 or less	1,948	2,226	2,206	2,053	1,973	2,155	2,506	2,762	2,796	2,559	2,763
$10,001–$30,000	2,051	2,458	2,410	2,257	2,242	2,217	2,702	2,900	2,974	2,869	2,865
$30,001 or more	2,817	3,353	3,648	3,690	3,707	3,809	4,309	4,404	4,777	4,834	5,073
Engineering	4,220	4,583	4,847	5,250	5,750	6,455	6,924	7,130	7,034	6,960	7,337
No debt	3,132	3,358	3,670	3,990	4,485	5,096	5,355	5,416	5,340	5,321	5,624
$10,000 or less	408	447	387	461	433	532	540	643	609	581	637
$10,001–$30,000	309	364	358	358	358	381	491	526	550	527	505
$30,001 or more	371	414	432	441	474	446	538	545	535	531	571
Science	16,312	18,970	19,572	20,091	21,074	22,269	23,616	24,540	25,508	25,392	26,257
No debt	10,584	12,158	12,485	13,351	14,417	15,447	15,668	16,188	16,655	16,769	17,269
$10,000 or less	1,540	1,779	1,819	1,592	1,540	1,623	1,966	2,119	2,187	1,978	2,126
$10,001–$30,000	1,742	2,094	2,052	1,899	1,884	1,836	2,211	2,374	2,424	2,342	2,360
$30,001 or more	2,446	2,939	3,216	3,249	3,233	3,363	3,771	3,859	4,242	4,303	4,502
Agricultural sciences	713	881	931	913	911	924	1,026	986	1,058	892	1,029
No debt	447	560	566	599	618	613	648	618	677	575	644
$10,000 or less	87	115	93	87	94	90	115	107	136	99	117
$10,001–$30,000	72	88	111	94	87	92	109	122	110	103	107
$30,001 or more	107	118	161	133	112	129	154	139	135	115	161
Biological sciences	4,420	5,188	5,271	5,473	5,846	6,118	6,687	7,205	7,459	7,501	7,575
No debt	3,124	3,639	3,741	4,027	4,342	4,655	4,897	5,258	5,407	5,535	5,648
$10,000 or less	433	482	497	427	431	434	528	597	597	555	573
$10,001–$30,000	444	571	473	476	504	430	588	610	675	615	564
$30,001 or more	419	496	560	543	569	599	674	740	780	796	790
Computer sciences	637	735	776	857	1,002	1,318	1,488	1,635	1,475	1,495	1,550
No debt	509	579	599	675	828	1,103	1,208	1,324	1,167	1,190	1,226
$10,000 or less	51	59	59	70	59	77	95	114	89	86	107
$10,001–$30,000	30	48	47	42	43	53	76	85	99	81	85
$30,001 or more	47	49	71	70	72	85	109	112	120	138	132
Earth, atmospheric, and ocean sciences	524	629	636	633	654	697	808	794	825	808	793
No debt	382	452	452	462	475	525	566	562	592	585	565
$10,000 or less	57	71	65	73	64	57	105	86	90	84	72

Appendix table 2-13

Doctorate recipients with graduate education-related debt, by broad field of study: 2001–11

(Number)

Debt level and field of study	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
$10,001–$30,000	47	52	77	42	57	60	66	71	67	80	69
$30,001 or more	38	54	42	56	58	55	71	75	76	59	87
Mathematics	761	850	906	1,012	1,094	1,228	1,255	1,274	1,436	1,491	1,490
No debt	597	645	685	801	884	986	1,003	1,011	1,168	1,194	1,193
$10,000 or less	61	80	88	80	78	84	81	95	104	89	110
$10,001–$30,000	55	68	68	54	64	71	94	70	65	91	93
$30,001 or more	48	57	65	77	68	87	77	98	99	117	94
Medical/other health sciences	1,178	1,439	1,479	1,528	1,587	1,676	1,879	1,871	1,879	1,913	1,912
No debt	764	948	903	942	1,042	1,067	1,127	1,074	1,007	1,049	1,044
$10,000 or less	113	124	138	110	94	114	159	177	185	174	152
$10,001–$30,000	117	148	169	168	165	179	213	218	218	207	227
$30,001 or more	184	219	269	308	286	316	380	402	469	483	489
Physical sciences	2,568	2,891	3,035	3,077	3,330	3,571	3,658	3,682	3,924	3,877	4,183
No debt	1,907	2,112	2,223	2,378	2,611	2,790	2,797	2,810	2,999	3,030	3,226
$10,000 or less	260	307	292	246	238	289	323	329	344	307	337
$10,001–$30,000	221	266	250	217	242	226	259	281	281	258	287
$30,001 or more	180	206	270	236	239	266	279	262	300	282	333
Psychology	2,426	2,764	2,801	2,800	2,874	2,817	2,810	2,885	2,999	2,993	3,126
No debt	1,064	1,201	1,199	1,240	1,340	1,330	1,157	1,149	1,176	1,157	1,212
$10,000 or less	146	200	215	173	160	141	173	207	202	181	224
$10,001–$30,000	332	366	369	345	315	304	337	374	356	368	390
$30,001 or more	884	997	1,018	1,042	1,059	1,042	1,143	1,155	1,265	1,287	1,300
Social sciences	3,085	3,593	3,737	3,798	3,776	3,920	4,005	4,208	4,453	4,422	4,599
No debt	1,790	2,022	2,117	2,227	2,277	2,378	2,265	2,382	2,462	2,454	2,511
$10,000 or less	332	341	372	326	322	337	387	407	440	403	434
$10,001–$30,000	424	487	488	461	407	421	469	543	553	539	538
$30,001 or more	539	743	760	784	770	784	884	876	998	1,026	1,116

Appendix table 2-13

Doctorate recipients with graduate education-related debt, by broad field of study: 2001–11

(Number)

Debt level and field of study	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Non-S&E	10,516	12,010	12,138	12,431	11,956	12,299	12,447	12,402	12,591	11,545	11,268
No debt	6,211	6,916	6,943	7,484	7,116	7,345	6,855	6,623	6,444	6,014	5,798
$10,000 or less	1,034	1,180	1,178	1,004	960	968	1,085	1,167	1,119	952	948
$10,001–$30,000	1,361	1,559	1,584	1,348	1,340	1,253	1,562	1,561	1,608	1,369	1,461
$30,001 or more	1,910	2,355	2,433	2,595	2,540	2,733	2,945	3,051	3,420	3,210	3,061

NOTE: The counts of doctorate recipients who did not report graduate debt are 2001: 9,696; 2002: 4,468; 2003: 4,209; 2004: 4,351; 2005: 4,605; 2006: 4,599; 2007: 5,144; 2008: 4,703; 2009: 4,419; 2010: 4,137; and 2011: 4,148.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the 2011 Survey of Earned Doctorates.

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Appendix table 2-14

Undergraduate and total enrollment in higher education, by Carnegie institution type: 1996–2011

Year	All institutions	Doctorate-granting universities—very high research activity	Doctorate-granting universities—high research activity	Doctoral/research universities	Master's colleges/universities	Baccalaureate colleges	Associate's colleges	Medical schools/medical centers	Schools of engineering	Other special-focus institutions	Tribal colleges	Not classified
Undergraduate enrollment												
1996	12,492,977	1,644,593	1,070,468	437,218	2,612,051	1,020,698	5,267,882	16,734	8,478	140,561	16,239	258,055
1997	12,612,475	1,657,573	1,081,126	436,854	2,631,151	1,034,249	5,327,041	15,974	8,647	156,608	12,612	250,640
1998	12,624,375	1,685,713	1,095,420	442,904	2,639,439	1,050,440	5,243,080	15,710	8,045	165,752	12,919	264,953
2000	13,329,803	1,719,504	1,125,321	462,975	2,723,233	1,081,439	5,739,088	13,491	9,169	190,714	13,603	251,266
2001	13,895,335	1,764,724	1,156,958	489,260	2,826,759	1,117,917	6,104,082	13,268	9,244	210,579	13,835	188,709
2002	14,444,738	1,802,603	1,187,781	511,419	2,928,162	1,158,480	6,424,455	12,634	9,217	228,511	15,343	166,133
2003	14,666,119	1,824,259	1,202,071	536,510	3,006,325	1,182,415	6,485,355	12,563	9,295	242,865	17,527	146,934
2004	14,974,136	1,830,746	1,215,495	577,482	3,087,511	1,204,451	6,611,034	13,331	9,237	268,907	17,180	138,762
2005	15,157,730	1,845,961	1,220,299	580,383	3,231,039	1,219,702	6,638,361	13,325	9,291	286,259	16,879	96,231
2006	15,379,340	1,867,178	1,235,926	629,485	3,264,180	1,225,916	6,733,782	13,281	9,599	298,458	17,071	84,464
2007	15,799,911	1,889,120	1,255,393	691,830	3,345,697	1,235,007	6,947,933	13,315	9,557	310,276	17,222	84,561
2008	16,570,857	1,933,487	1,276,090	774,634	3,511,605	1,285,197	7,368,489	13,939	9,487	326,798	16,798	54,333
2009	17,778,741	1,966,982	1,309,390	866,197	3,702,312	1,355,993	8,155,018	14,113	9,377	356,043	19,507	23,809
2010	18,312,649	1,995,701	1,340,538	830,631	3,797,734	1,407,205	8,401,309	14,559	9,158	372,277	21,014	122,523
2011	18,299,791	2,023,129	1,369,440	836,182	3,836,672	1,417,598	8,211,697	14,873	9,041	355,331	18,777	207,051
Total enrollment												
1996	14,550,056	2,347,141	1,428,519	610,253	3,192,552	1,055,057	5,269,455	75,914	9,078	243,649	16,390	302,048
1997	14,680,488	2,356,066	1,440,299	607,876	3,228,823	1,069,883	5,328,274	76,861	9,359	258,231	12,734	292,082
1998	14,711,280	2,382,444	1,451,533	616,107	3,254,684	1,087,531	5,244,783	76,653	8,799	271,358	13,273	304,115
2000	15,506,922	2,424,538	1,484,966	643,689	3,388,391	1,121,015	5,740,898	76,973	10,213	303,793	13,680	298,766
2001	16,129,629	2,483,646	1,526,997	685,362	3,521,101	1,157,008	6,105,526	78,162	10,455	324,681	13,996	222,695
2002	16,822,915	2,558,455	1,577,560	730,727	3,685,743	1,198,815	6,426,331	80,595	10,663	351,093	15,468	187,465
2003	17,118,126	2,593,906	1,599,392	778,843	3,781,023	1,224,072	6,488,052	82,081	10,830	374,566	17,776	167,585
2004	17,492,964	2,604,610	1,615,367	844,762	3,882,875	1,246,922	6,613,895	87,260	10,765	409,349	17,605	159,554
2005	17,710,640	2,620,649	1,618,433	863,683	4,042,334	1,263,421	6,642,190	90,647	10,773	430,521	17,167	110,822
2006	17,985,045	2,651,949	1,636,192	921,489	4,101,270	1,270,345	6,737,208	93,438	11,094	445,196	17,255	99,609
2007	18,474,977	2,691,983	1,665,194	998,984	4,205,276	1,281,708	6,951,546	96,616	11,016	459,801	17,418	95,435
2008	19,338,981	2,748,682	1,695,467	1,110,746	4,406,031	1,336,829	7,372,093	101,675	10,883	479,510	17,014	60,051
2009	20,671,503	2,809,366	1,746,651	1,219,751	4,640,495	1,415,001	8,159,022	106,789	10,809	516,766	19,686	27,167
2010	21,280,059	2,854,408	1,785,934	1,193,468	4,741,662	1,471,538	8,406,072	111,305	10,681	540,877	21,225	142,889
2011	21,260,978	2,886,167	1,810,490	1,195,172	4,745,798	1,483,886	8,214,689	114,420	10,582	525,754	18,920	255,100

NOTES: Data are not available for 1999. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs. Carnegie institution type corresponds to the 2010 classification.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey (various years); and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-15

Projections of U.S. population age 20–24, by sex and race or ethnicity: 2015–60

(Thousands)

	All races and ethnicities		White		Hispanic		Black		Asian		Other race or ethnicity	
Sex	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Both sexes												
2015	22,580	100.0	12,393	54.9	4,884	21.6	3,367	14.9	1,104	4.9	831	3.7
2020	21,651	100.0	11,539	53.3	5,079	23.5	3,003	13.9	1,127	5.2	902	4.2
2025	21,646	100.0	11,012	50.9	5,528	25.5	2,876	13.3	1,242	5.7	989	4.6
2030	21,940	100.0	10,496	47.8	6,065	27.6	2,941	13.4	1,312	6.0	1,125	5.1
2035	22,979	100.0	10,535	45.8	6,631	28.9	3,102	13.5	1,427	6.2	1,284	5.6
2040	23,863	100.0	10,577	44.3	7,117	29.8	3,231	13.5	1,532	6.4	1,406	5.9
2045	24,263	100.0	10,303	42.5	7,574	31.2	3,255	13.4	1,609	6.6	1,520	6.3
2050	24,463	100.0	9,843	40.2	8,061	33.0	3,246	13.3	1,682	6.9	1,632	6.7
2055	24,775	100.0	9,402	37.9	8,586	34.7	3,266	13.2	1,765	7.1	1,757	7.1
2060	25,305	100.0	9,084	35.9	9,122	36.0	3,344	13.2	1,849	7.3	1,906	7.5
Male												
2015	11,603	100.0	6,352	54.7	2,568	22.1	1,707	14.7	558	4.8	417	3.6
2020	11,109	100.0	5,912	53.2	2,660	23.9	1,519	13.7	561	5.0	456	4.1
2025	11,103	100.0	5,635	50.8	2,899	26.1	1,453	13.1	616	5.5	500	4.5
2030	11,274	100.0	5,366	47.6	3,191	28.3	1,485	13.2	660	5.9	572	5.1
2035	11,822	100.0	5,384	45.5	3,492	29.5	1,569	13.3	722	6.1	655	5.5
2040	12,278	100.0	5,408	44.0	3,743	30.5	1,633	13.3	776	6.3	719	5.9
2045	12,485	100.0	5,268	42.2	3,979	31.9	1,645	13.2	816	6.5	777	6.2
2050	12,590	100.0	5,033	40.0	4,229	33.6	1,641	13.0	853	6.8	835	6.6
2055	12,751	100.0	4,807	37.7	4,499	35.3	1,651	12.9	896	7.0	899	7.1
2060	13,022	100.0	4,645	35.7	4,773	36.7	1,690	13.0	939	7.2	975	7.5
Female												
2015	10,977	100.0	6,041	55.0	2,315	21.1	1,659	15.1	546	5.0	415	3.8
2020	10,541	100.0	5,627	53.4	2,418	22.9	1,484	14.1	566	5.4	446	4.2
2025	10,543	100.0	5,377	51.0	2,629	24.9	1,423	13.5	626	5.9	489	4.6
2030	10,666	100.0	5,130	48.1	2,874	26.9	1,456	13.7	652	6.1	555	5.2
2035	11,157	100.0	5,152	46.2	3,139	28.1	1,533	13.7	705	6.3	629	5.6
2040	11,585	100.0	5,169	44.6	3,374	29.1	1,598	13.8	756	6.5	687	5.9
2045	11,777	100.0	5,035	42.8	3,595	30.5	1,610	13.7	794	6.7	743	6.3

Appendix table 2-15

Projections of U.S. population age 20–24, by sex and race or ethnicity: 2015–60

(Thousands)

	All races and ethnicities		White		Hispanic		Black		Asian		Other race or ethnicity	
Sex	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
2050	11,873	100.0	4,810	40.5	3,831	32.3	1,605	13.5	829	7.0	797	6.7
2055	12,024	100.0	4,594	38.2	4,087	34.0	1,615	13.4	869	7.2	858	7.1
2060	12,283	100.0	4,439	36.1	4,349	35.4	1,654	13.5	910	7.4	931	7.6

NOTES: Detail may not add to total because of rounding. Asian, black, and white refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race. Other race or ethnicity includes persons not of Hispanic origin who reported American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and persons reporting more than one race.

SOURCE: Census Bureau, Population Division, 2012 National Population Projections: Downloadable File (NP2012-D1), http://www.census.gov/population/projections/data/national/2012/downloadablefiles.html, accessed 13 January 2013.

Science and Engineering Indicators 2014

Appendix table 2-16

Freshmen intending S&E major, by field, sex, and race or ethnicity: 1998–2012

(Percent)

Field, sex, and race or ethnicity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All intending S&E major	32.0	33.7	33.1	33.5	33.5	32.6	33.1	30.9	32.0	31.9	34.7	36.2	38.4	40.1	39.2
Physical sciences	1.8	1.9	1.8	1.9	2.0	2.0	2.3	2.8	2.3	2.4	2.4	2.5	2.7	2.8	2.5
Biological/agricultural sciences	8.1	8.2	7.5	7.5	7.8	7.7	8.3	8.1	8.8	9.1	9.8	10.4	11.6	11.4	12.9
Mathematics/statistics/computer sciences	5.2	5.7	5.9	5.4	3.8	3.1	2.7	2.0	2.4	2.5	2.3	2.5	2.4	2.6	3.1
Social/behavioral sciences	8.7	8.9	9.2	9.6	10.4	10.5	10.2	9.6	10.5	10.4	10.9	11.1	11.4	11.3	10.4
Engineering	8.2	9.0	8.7	9.1	9.5	9.3	9.6	8.4	8.0	7.5	9.3	9.7	10.3	12.0	10.3
Male	39.1	42.4	41.4	42.2	41.2	39.6	40.8	37.0	37.9	37.3	41.1	43.4	44.1	47.0	45.8
Physical sciences	2.2	2.4	2.3	2.4	2.4	2.5	2.9	2.7	2.8	2.9	3.1	3.3	3.4	3.4	3.1
Biological/agricultural sciences	7.4	7.3	6.5	6.5	6.6	6.7	7.4	7.2	8.1	8.2	8.8	9.7	10.0	9.9	10.8
Mathematics/statistics/computer sciences	8.6	9.8	10.1	9.5	6.8	5.6	5.1	4.0	3.9	4.4	4.0	4.1	4.0	4.3	5.2
Social/behavioral sciences	6.2	6.4	6.6	7.1	7.5	7.7	7.5	7.5	8.6	8.1	8.2	8.7	8.8	8.4	8.4
Engineering	14.7	16.5	15.9	16.7	17.9	17.1	17.9	15.6	14.5	13.7	17.0	17.6	17.9	21.0	18.3
Female	26.4	26.8	26.2	26.7	26.7	26.2	26.3	27.0	27.2	27.7	29.5	30.3	33.3	34.8	33.5
Physical sciences	1.5	1.5	1.5	1.5	1.6	1.7	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.1	1.9
Biological/agricultural sciences	8.8	9.0	7.9	8.3	8.5	8.5	9.0	8.7	9.6	9.7	10.4	11.0	12.4	12.8	14.3
Mathematics/statistics/computer sciences	2.5	2.4	2.5	2.2	1.6	1.1	1.0	1.5	1.0	1.1	1.1	1.1	1.1	1.2	1.4
Social/behavioral sciences	10.9	11.0	11.3	11.7	12.0	12.0	11.5	12.3	12.1	12.3	12.8	12.8	13.6	14.5	12.0
Engineering	2.7	2.9	3.0	3.0	3.0	2.9	2.9	2.6	2.5	2.6	3.1	3.3	4.0	4.2	3.9
White or Caucasian	30.6	31.8	30.7	31.8	31.3	30.1	30.2	29.1	29.6	29.3	32.9	34.0	37.0	38.3	37.0
Physical sciences	1.9	2.0	2.0	2.1	2.1	2.1	2.3	2.4	2.5	2.5	2.6	2.8	2.8	2.9	2.6
Biological/agricultural sciences	7.9	8.0	6.7	7.1	7.1	6.5	7.1	7.1	7.6	7.7	8.6	9.0	10.8	10.5	11.8
Mathematics/statistics/computer sciences	4.5	4.8	5.0	4.7	3.6	3.1	2.7	2.3	2.3	2.4	2.3	2.4	2.3	2.7	2.8
Social/behavioral sciences	8.4	8.5	8.7	9.0	9.3	9.5	9.1	9.3	9.5	9.5	9.8	10.1	10.6	10.3	9.4
Engineering	7.9	8.5	8.3	8.9	9.2	8.9	9.0	8.0	7.7	7.2	9.6	9.7	10.5	11.9	10.4
Male	38.8	40.1	39.8	41.0	39.8	38.5	38.9	36.1	36.6	35.8	40.2	41.5	43.8	46.6	44.0
Physical sciences	2.5	2.4	2.5	2.5	2.8	2.8	3.0	3.0	3.0	3.3	3.3	3.7	3.6	3.6	3.5
Biological/agricultural sciences	7.7	7.3	6.2	6.3	6.4	6.0	6.7	6.7	7.2	7.3	8.0	8.3	10.0	9.4	9.8
Mathematics/statistics/computer sciences	7.8	8.4	9.1	8.4	6.4	5.6	4.9	4.0	4.0	4.2	3.8	3.9	3.8	4.3	4.5
Social/behavioral sciences	6.0	6.3	6.6	7.0	7.2	7.7	7.3	7.5	8.1	7.9	7.8	8.3	8.4	8.1	8.2
Engineering	14.8	15.7	15.4	16.8	17.0	16.4	17.0	14.9	14.3	13.1	17.3	17.3	18.0	21.2	18.0
Female	24.2	24.8	24.0	24.1	23.8	23.8	23.8	23.1	24.0	24.7	26.2	27.6	31.1	31.5	30.6
Physical sciences	1.5	1.6	1.5	1.5	1.5	1.6	1.9	1.8	1.9	2.0	2.0	2.1	2.4	2.3	2.0
Biological/agricultural sciences	8.4	8.8	7.7	7.6	7.6	7.4	7.7	7.3	8.0	8.3	9.0	9.5	11.2	11.7	13.2
Mathematics/statistics/computer sciences	1.8	1.7	1.7	1.4	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.2	1.1	1.3	1.2
Social/behavioral sciences	10.1	10.3	10.6	11.1	11.0	11.2	10.6	11.0	10.9	11.1	11.3	11.6	12.4	12.2	10.5
Engineering	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.0	2.2	2.3	2.9	3.2	4.0	4.0	3.7
Asian American or Asian[a]	45.4	48.3	45.3	43.2	43.8	44.5	46.1	42.3	45.7	44.7	46.6	50.4	49.0	48.6	52.7
Physical sciences	2.0	1.5	1.4	1.7	1.9	2.2	2.3	2.2	2.7	2.6	2.8	2.9	3.0	2.7	2.8
Biological/agricultural sciences	11.8	11.2	10.5	10.5	12.2	15.0	16.8	15.8	18.5	17.8	17.7	19.5	18.3	17.3	20.3
Mathematics/statistics/computer sciences	10.2	13.8	12.1	10.3	5.6	4.0	3.1	2.4	2.5	3.0	3.0	2.9	3.4	3.9	5.6
Social/behavioral sciences	6.7	6.4	6.9	7.0	7.8	8.4	8.4	8.1	10.0	9.0	9.5	10.0	9.6	9.1	9.0

Appendix table 2-16

Freshmen intending S&E major, by field, sex, and race or ethnicity: 1998–2012

(Percent)

Field, sex, and race or ethnicity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Engineering	14.7	15.4	14.4	13.7	16.3	14.9	15.5	13.8	12.0	12.3	13.6	15.1	14.7	15.6	15.0
Male	55.4	60.4	56.8	54.6	55.3	53.6	54.3	49.6	50.8	50.6	52.7	56.7	54.5	55.5	60.0
Physical sciences	2.1	1.7	1.6	1.8	2.1	2.5	2.4	2.7	3.0	2.9	3.1	3.2	3.3	3.2	3.2
Biological/agricultural sciences	10.3	9.0	8.7	8.5	10.5	13.4	14.8	14.4	16.5	16.0	15.6	17.6	16.2	15.3	17.8
Mathematics/statistics/computer sciences	15.1	20.4	18.8	16.4	9.3	6.5	4.7	3.7	3.7	4.8	4.9	4.2	4.8	5.6	8.4
Social/behavioral sciences	4.2	4.5	5.0	5.4	5.7	6.2	6.6	5.9	8.0	7.1	7.2	8.1	7.6	6.7	7.2
Engineering	23.7	24.9	22.8	22.6	27.8	25.2	25.9	23.0	19.7	19.9	22.0	23.6	22.7	24.7	23.4
Female	35.9	35.8	35.1	33.0	33.9	36.6	37.9	36.0	41.0	39.4	40.6	44.1	43.1	42.3	45.4
Physical sciences	1.8	1.2	1.3	1.5	1.6	1.9	2.0	2.2	2.8	2.4	2.3	2.6	2.6	2.5	2.5
Biological/agricultural sciences	13.2	13.4	12.0	12.1	14.0	16.7	18.6	17.4	20.0	19.7	20.0	21.1	19.9	19.0	22.5
Mathematics/statistics/computer sciences	5.6	7.1	6.2	4.9	2.5	1.8	1.4	1.1	1.4	1.5	1.3	1.6	1.9	2.1	2.9
Social/behavioral sciences	9.1	8.1	8.6	8.5	9.6	10.5	10.2	10.2	11.8	10.6	11.5	11.6	11.5	11.3	10.5
Engineering	6.2	6.0	7.0	6.0	6.2	5.7	5.7	5.1	5.0	5.2	5.5	7.2	7.2	7.4	7.0
African American or black	35.1	37.1	37.5	35.0	35.5	33.6	34.4	32.1	33.6	33.8	32.8	35.7	36.5	36.4	36.4
Physical sciences	1.2	1.0	1.2	1.0	1.3	1.3	1.6	1.8	1.6	1.5	1.6	1.8	1.8	2.0	1.6
Biological/agricultural sciences	7.3	8.0	7.8	7.7	8.4	8.6	9.6	8.7	9.3	9.7	9.8	11.2	10.9	10.9	12.5
Mathematics/statistics/computer sciences	9.3	9.1	9.0	7.8	5.3	3.9	3.9	3.2	2.8	3.5	2.8	2.9	3.1	2.2	3.2
Social/behavioral sciences	11.2	11.3	10.9	12.3	11.9	12.1	11.4	11.5	12.7	12.8	12.5	13.3	13.3	11.9	11.6
Engineering	6.1	7.7	8.6	6.2	8.6	7.7	7.9	6.9	7.2	6.3	6.1	6.5	7.4	9.4	7.5
Male	37.4	42.0	42.1	37.5	40.3	36.4	38.1	34.3	35.7	34.6	33.6	37.1	39.4	40.0	37.8
Physical sciences	1.4	1.2	1.3	1.0	1.3	1.3	1.6	1.8	1.6	1.8	1.8	1.5	2.2	2.2	1.7
Biological/agricultural sciences	5.6	6.1	6.0	5.6	5.8	5.5	7.4	6.6	6.9	7.0	7.0	9.0	8.2	8.2	8.6
Mathematics/statistics/computer sciences	13.4	14.0	13.1	12.6	8.6	6.9	6.8	5.5	4.5	5.4	4.9	4.8	5.4	3.6	5.8
Social/behavioral sciences	7.1	7.4	6.4	7.3	8.1	7.8	7.1	7.2	8.4	8.2	8.1	9.4	9.0	8.2	8.1
Engineering	9.9	13.3	15.3	11.0	16.5	14.9	15.2	13.2	14.3	12.2	11.8	12.4	14.6	17.8	13.6
Female	33.6	34.5	34.2	33.3	32.6	31.4	31.9	30.3	31.9	33.8	32.3	34.5	35.3	34.5	35.4
Physical sciences	0.9	1.1	1.1	1.1	1.3	1.4	1.7	1.7	1.6	1.5	1.6	2.0	1.7	2.0	1.5
Biological/agricultural sciences	8.4	9.2	8.7	9.0	10.2	10.2	11.2	10.0	11.1	11.6	11.3	12.7	12.8	12.8	15.0
Mathematics/statistics/computer sciences	6.7	6.0	6.2	4.7	3.1	2.1	2.0	1.6	1.6	2.0	1.4	1.5	1.6	1.3	1.4
Social/behavioral sciences	14.1	13.9	13.8	15.2	14.1	14.5	14.1	14.1	15.3	16.1	15.4	15.9	16.0	14.6	14.3
Engineering	3.5	4.3	4.4	3.3	3.9	3.2	2.9	2.9	2.3	2.6	2.6	2.4	3.2	3.8	3.2
Hispanic or Latino[b]	33.7	37.0	34.1	34.4	36.4	35.8	38.0	34.2	36.8	34.8	38.2	39.7	40.7	43.8	41.6
Physical sciences	1.1	1.0	1.1	1.2	1.6	1.6	1.6	1.4	1.8	1.4	1.6	1.8	1.9	1.9	1.6
Biological/agricultural sciences	8.2	8.3	7.3	7.6	8.2	8.1	9.8	8.0	10.1	9.5	10.0	11.0	11.7	12.7	12.9
Mathematics/statistics/computer sciences	4.8	4.7	4.8	4.6	3.2	3.0	2.8	1.9	2.1	2.2	1.9	1.7	2.2	2.0	2.9
Social/behavioral sciences	10.6	11.1	12.6	11.6	14.0	13.6	13.1	13.5	15.8	14.6	15.6	15.3	15.6	16.2	14.1
Engineering	9.0	11.9	8.3	9.4	9.4	9.5	10.7	9.4	7.0	7.1	9.1	9.9	9.3	11.0	10.1
Male	38.9	45.3	42.5	42.8	42.7	41.8	45.3	39.4	41.3	38.8	41.7	47.2	44.4	48.1	48.4
Physical sciences	1.6	1.0	1.4	1.4	1.8	2.1	1.9	1.4	2.4	1.6	2.1	2.6	2.3	2.3	2.3
Biological/agricultural sciences	7.2	6.7	7.5	6.8	7.2	6.3	8.1	6.6	9.6	9.1	9.0	10.9	9.7	10.9	10.9
Mathematics/statistics/computer sciences	6.3	8.1	8.6	8.5	5.9	5.4	5.1	3.5	4.3	3.6	3.2	2.9	3.5	3.3	5.2

Appendix table 2-16

Freshmen intending S&E major, by field, sex, and race or ethnicity: 1998–2012

(Percent)

Field, sex, and race or ethnicity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Social/behavioral sciences	7.1	7.1	7.9	7.9	8.8	8.8	9.0	8.0	10.8	9.8	9.3	11.2	10.7	10.7	9.8
Engineering	16.7	22.4	17.1	18.2	19.0	19.2	21.2	19.9	14.2	14.7	18.1	19.6	18.2	20.9	20.2
Female	29.0	29.8	28.2	28.4	32.0	31.9	33.4	30.6	34.0	32.2	36.1	35.3	38.1	40.7	37.1
Physical sciences	0.7	0.7	1.0	1.1	1.5	1.1	1.3	1.1	1.5	1.3	1.2	1.5	1.7	1.7	1.1
Biological/agricultural sciences	8.7	9.7	7.3	8.1	9.3	9.6	10.9	8.8	10.7	9.8	10.9	11.4	12.9	14.1	14.1
Mathematics/statistics/computer sciences	3.4	2.0	2.1	1.9	1.3	1.2	1.3	0.8	0.8	1.2	1.1	1.0	1.2	1.1	1.3
Social/behavioral sciences	13.4	14.1	15.7	14.6	17.3	17.1	16.6	17.3	18.7	17.9	19.9	18.2	19.1	20.2	17.2
Engineering	2.8	3.3	2.1	2.7	2.6	2.9	3.3	2.6	2.3	2.0	3.0	3.2	3.2	3.6	3.4
American Indian or Alaska Native[c]	28.5	34.6	30.7	34.7	30.6	30.1	28.4	31.8	35.9	36.3	27.6	25.0	26.6	33.6	33.0
Physical sciences	2.4	1.1	3.8	1.8	1.2	1.1	1.2	1.9	2.8	2.0	2.7	1.4	1.9	3.3	1.7
Biological/agricultural sciences	7.1	11.7	6.5	8.2	8.7	7.2	8.3	12.1	13.3	11.1	8.0	8.6	8.9	10.5	12
Mathematics/statistics/computer sciences	5.0	5.5	4.1	6.3	2.9	2.9	3.2	3.3	0.8	4.1	2.0	2.1	0.6	2.3	0.8
Social/behavioral sciences	9.0	11.8	8.7	9.3	8.8	12.5	8.6	8.3	8.6	9.9	6.7	8.1	9.6	11.7	9.9
Engineering	5.0	4.5	7.6	9.1	9.0	6.4	7.1	6.2	10.4	9.2	8.2	4.8	5.6	5.8	8.6
Male	36.8	43.0	36.7	44.3	39.2	35.7	34.5	34.8	44.5	46.8	33.1	30.1	31.4	41.7	37.8
Physical sciences	1.1	1.5	4.7	1.8	2.3	0.4	1.3	2.0	3.2	2.8	1.9	0.6	3.0	4.7	2.9
Biological/agricultural sciences	7.1	11.3	6.3	7.5	7.2	7.1	8.4	13.2	8.2	11.8	6.9	10.4	7.5	13.3	13.0
Mathematics/statistics/computer sciences	8.9	10.1	6.8	11.0	5.7	6.4	5.0	3.9	1.6	7.7	2.6	3.9	1.3	4.2	0.3
Social/behavioral sciences	9.9	11.8	5.1	6.4	7.3	8.0	7.0	4.0	9.5	6.9	6.5	7.2	8.4	10.0	9.0
Engineering	9.8	8.3	13.8	17.6	16.7	13.8	12.8	11.7	22.0	17.6	15.2	8.0	11.2	9.5	12.6
Female	22.0	28.0	24.6	27.5	23.9	25.9	24.0	29.9	29.8	29.0	22.7	21.5	23.6	27.9	28.2
Physical sciences	3.3	0.8	2.6	1.7	0.3	1.6	1.1	1.9	2.6	1.5	3.1	2.0	1.2	2.4	0.5
Biological/agricultural sciences	7.3	11.8	6.3	8.9	10.1	7.5	8.2	11.5	16.7	10.6	8.6	7.5	10.2	8.4	10.9
Mathematics/statistics/computer sciences	1.9	2.0	1.7	2.6	0.6	0.3	1.9	2.8	0.2	1.7	1.6	0.8	0.1	0.9	1.3
Social/behavioral sciences	8.2	11.8	11.5	11.7	10.4	15.4	9.6	12.1	7.9	11.8	6.8	8.9	10.5	13.0	10.6
Engineering	1.3	1.6	2.5	2.6	2.5	1.1	3.2	1.6	2.4	3.4	2.6	2.3	1.6	3.2	4.9

[a] In 1997, the Asian American or Asian category was broken out into six categories: Chinese American or Chinese, Filipino American or Filipino, Japanese American or Japanese, Korean American or Korean, South East Asian American (Vietnamese, Laotian, Cambodian, etc.), and other Asian American or Asian. In 1998, the Asian American or Asian category used in prior years was restored. In 2001, Native Hawaiian or Pacific Islander was added as a category under Asian American or Asian.

[b] Hispanic or Latino includes Mexican American or Chicano, Puerto Rican, and other Latino.

[c] The category American Indian was changed to American Indian or Alaska Native in 2001.

NOTES: Physical sciences include physics; chemistry; astronomy; and earth, atmospheric, and ocean sciences. Detail does not add to total because students may check more than one race or ethnicity (e.g., white and Hispanic).

SOURCE: Higher Education Research Institute, University of California at Los Angeles, Survey of the American Freshman: National Norms, special tabulations (2013).

Science and Engineering Indicators 2014

Appendix table 2-17

Earned bachelor's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Both sexes												
All fields	1,254,618	1,260,308	1,308,970	1,365,694	1,417,421	1,456,401	1,502,922	1,541,704	1,580,413	1,619,028	1,668,227	1,734,229
S&E	398,602	400,435	415,983	442,755	458,658	470,214	478,858	485,772	496,168	505,435	525,374	554,365
Engineering	59,487	59,214	60,605	63,789	64,680	66,152	68,227	68,274	69,908	70,600	74,399	78,099
Aerospace	1,267	1,498	1,747	2,017	2,318	2,384	2,753	2,828	2,934	3,037	3,207	3,342
Chemical	6,219	6,088	5,946	5,545	5,185	4,889	4,857	5,081	5,504	5,894	6,692	7,535
Civil	9,571	8,949	8,891	9,367	9,400	9,800	10,663	11,318	12,243	12,787	13,482	14,840
Electrical	17,675	18,359	18,957	20,757	21,374	21,459	19,933	18,547	17,357	16,184	16,290	16,485
Industrial	3,937	3,812	3,977	3,937	3,808	3,936	3,890	3,529	3,566	3,879	4,184	4,293
Materials	972	930	933	950	865	906	1,006	1,025	1,150	1,070	1,138	1,140
Mechanical	13,091	13,139	13,353	14,029	14,342	14,880	16,163	16,911	17,685	17,643	18,858	19,470
Other	6,755	6,439	6,801	7,187	7,388	7,898	8,962	9,035	9,469	10,106	10,548	10,994
Science	339,115	341,221	355,378	378,966	393,978	404,062	410,631	417,498	426,260	434,835	450,975	476,266
Natural sciences	150,962	152,623	158,975	170,068	173,633	173,460	173,966	176,275	177,601	181,914	190,158	202,517
Agricultural sciences	18,245	17,465	17,359	17,703	17,058	17,120	17,307	17,696	18,474	19,152	20,400	22,759
Biological sciences	64,887	62,010	61,675	63,517	64,750	67,972	72,972	79,348	82,398	85,574	89,615	93,654
Earth, atmospheric, and ocean sciences	4,019	3,968	3,984	3,949	3,903	3,959	3,987	4,077	4,314	4,542	4,802	5,299
Atmospheric sciences	490	456	525	562	572	677	651	745	736	721	691	678
Earth sciences	3,359	3,334	3,234	3,252	3,170	3,146	3,231	3,193	3,453	3,679	3,931	4,410
Oceanography	170	178	225	135	161	136	105	139	125	142	180	211
Mathematics/computer sciences	49,233	55,034	61,960	70,789	73,703	69,404	63,310	58,147	54,763	54,704	56,939	61,607
Computer sciences	37,519	43,597	49,706	57,926	59,968	54,588	48,000	42,596	38,922	38,496	40,107	43,586
Mathematics/statistics	11,714	11,437	12,254	12,863	13,735	14,816	15,310	15,551	15,841	16,208	16,832	18,021
Physical sciences	14,578	14,146	13,997	14,110	14,219	15,005	16,390	17,007	17,652	17,942	18,402	19,198
Astronomy	160	240	276	271	292	331	366	332	346	335	388	364
Chemistry	10,388	9,815	9,439	9,329	9,300	9,923	10,887	11,250	11,832	12,144	12,338	12,888
Physics	3,362	3,447	3,641	3,913	4,140	4,199	4,566	4,870	4,876	4,842	5,000	5,221
Other physical sciences	668	644	641	597	487	552	571	555	598	621	676	725
Social/behavioral sciences	188,153	188,598	196,403	208,898	220,345	230,602	236,665	241,223	248,659	252,921	260,817	273,749
Psychology	74,656	74,124	77,297	79,163	82,606	86,031	88,551	90,498	92,989	94,743	97,746	101,568
Social sciences	113,497	114,474	119,106	129,735	137,739	144,571	148,114	150,725	155,670	158,178	163,071	172,181
Anthropology	7,057	6,898	7,198	7,543	7,631	7,742	8,100	8,086	8,853	9,153	9,566	10,022
Area/ethnic studies	5,614	5,557	5,835	5,745	6,244	6,612	6,975	7,120	7,323	7,598	7,364	7,817
Economics	19,400	20,371	21,823	23,866	24,927	25,160	24,707	24,825	26,281	27,628	29,090	30,013
History of science	92	101	103	103	140	117	113	114	103	100	110	138
Linguistics	716	757	847	914	1,047	1,053	1,201	1,340	1,505	1,478	1,682	1,808
Political science/public administration	36,384	36,650	38,565	43,796	47,509	51,540	53,589	54,598	55,889	55,319	57,649	59,752
Sociology	25,685	25,357	25,296	26,200	27,020	28,556	28,541	29,050	28,908	28,836	29,000	29,614
Other social sciences	18,549	18,783	19,439	21,568	23,221	23,791	24,888	25,592	26,808	28,066	28,610	33,017
Non-S&E	856,016	859,873	892,987	922,939	958,763	986,187	1,024,064	1,055,932	1,084,245	1,113,593	1,142,853	1,179,864
Engineering technologies	15,410	15,366	15,637	15,591	15,341	15,649	15,327	15,894	16,164	16,454	16,843	17,790

Appendix table 2-17

Earned bachelor's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Male												
All fields	536,059	537,421	555,640	578,937	601,588	618,758	636,559	655,393	673,788	691,428	713,336	740,357
S&E	197,650	197,771	204,675	219,815	227,861	233,924	238,029	241,697	246,719	250,742	261,091	275,258
Engineering	47,281	47,302	47,923	50,809	51,417	52,949	54,889	55,621	56,987	57,850	60,706	63,441
Aerospace	1,029	1,194	1,435	1,633	1,905	1,980	2,252	2,376	2,493	2,600	2,744	2,903
Chemical	4,016	4,033	3,823	3,532	3,352	3,113	3,179	3,338	3,670	3,977	4,543	5,228
Civil	7,246	6,908	6,667	7,118	7,121	7,451	8,241	8,819	9,491	10,032	10,589	11,562
Electrical	15,325	15,817	16,240	17,839	18,331	18,614	17,346	16,438	15,450	14,578	14,550	14,744
Industrial	2,630	2,589	2,636	2,625	2,543	2,666	2,716	2,473	2,557	2,823	3,048	3,129
Materials	704	667	648	674	595	624	737	753	878	807	844	819
Mechanical	11,309	11,401	11,574	12,170	12,395	12,933	14,050	14,894	15,592	15,671	16,695	17,262
Other	5,022	4,693	4,900	5,218	5,175	5,568	6,368	6,530	6,856	7,362	7,693	7,794
Science	150,369	150,469	156,752	169,006	176,444	180,975	183,140	186,076	189,732	192,892	200,385	211,817
Natural sciences	80,832	82,030	85,578	92,543	95,462	95,606	94,589	95,924	96,002	97,915	102,530	109,549
Agricultural sciences	9,780	8,975	8,725	8,740	8,336	8,383	8,398	8,781	9,017	9,334	9,691	10,904
Biological sciences	26,936	24,972	24,030	24,023	24,319	25,698	27,917	31,347	33,136	34,477	36,737	37,860
Earth, atmospheric, and ocean sciences	2,413	2,346	2,282	2,298	2,256	2,299	2,341	2,399	2,559	2,774	2,913	3,219
Atmospheric sciences	376	324	374	386	369	436	432	483	473	486	455	461
Earth sciences	1,950	1,934	1,788	1,846	1,812	1,795	1,873	1,857	2,023	2,209	2,365	2,650
Oceanography	87	88	120	66	75	68	36	59	63	79	93	108
Mathematics/computer sciences	33,113	37,500	42,518	49,251	52,330	50,636	46,496	43,376	40,922	40,839	42,385	46,162
Computer sciences	26,997	31,549	36,016	42,258	44,902	42,429	38,061	34,652	32,038	31,602	32,801	35,886
Mathematics/statistics	6,116	5,951	6,502	6,993	7,428	8,207	8,435	8,724	8,884	9,237	9,584	10,276
Physical sciences	8,590	8,237	8,023	8,231	8,221	8,590	9,437	10,021	10,368	10,491	10,804	11,404
Astronomy	106	145	160	161	169	188	235	200	226	189	248	228
Chemistry	5,483	5,041	4,716	4,649	4,548	4,779	5,253	5,636	5,923	6,038	6,176	6,560
Physics	2,638	2,692	2,817	3,076	3,233	3,299	3,621	3,846	3,888	3,917	3,985	4,220
Other physical sciences	363	359	330	345	271	324	328	339	331	347	395	396
Social/behavioral sciences	69,537	68,439	71,174	76,463	80,982	85,369	88,551	90,152	93,730	94,977	97,855	102,268
Psychology	17,542	16,694	17,389	17,629	18,322	19,099	19,975	20,446	21,307	21,579	22,410	23,401
Social sciences	51,995	51,745	53,785	58,834	62,660	66,270	68,576	69,706	72,423	73,398	75,445	78,867
Anthropology	2,315	2,192	2,272	2,313	2,350	2,362	2,494	2,456	2,733	2,723	2,863	2,998
Area/ethnic studies	2,043	1,904	2,032	2,055	2,163	2,345	2,463	2,561	2,626	2,732	2,663	2,763
Economics	13,016	13,450	14,436	15,773	16,650	17,021	17,043	17,195	18,237	19,282	20,195	20,826
History of science	40	45	40	49	67	53	46	44	51	48	34	60
Linguistics	226	245	243	290	330	324	447	461	502	503	558	573
Political science/public administration	18,063	17,999	18,822	21,274	23,101	25,130	26,462	27,053	27,734	27,184	27,850	28,975
Sociology	7,657	7,437	7,299	7,558	7,718	8,430	8,548	8,698	8,787	8,707	8,858	8,988
Other social sciences	8,635	8,473	8,641	9,522	10,281	10,605	11,073	11,238	11,753	12,219	12,424	13,684
Non-S&E	338,409	339,650	350,965	359,122	373,727	384,834	398,530	413,696	427,069	440,686	452,245	465,099
Engineering technologies	13,448	13,286	13,480	13,276	13,195	13,425	13,274	13,989	14,160	14,487	14,788	15,590

Appendix table 2-17

Earned bachelor's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female												
All fields	718,559	722,887	753,330	786,757	815,833	837,643	866,363	886,311	906,625	927,600	954,891	993,872
S&E	200,952	202,664	211,308	222,940	230,797	236,290	240,829	244,075	249,449	254,693	264,283	279,107
Engineering	12,206	11,912	12,682	12,980	13,263	13,203	13,338	12,653	12,921	12,750	13,693	14,658
Aerospace	238	304	312	384	413	404	501	452	441	437	463	439
Chemical	2,203	2,055	2,123	2,013	1,833	1,776	1,678	1,743	1,834	1,917	2,149	2,307
Civil	2,325	2,041	2,224	2,249	2,279	2,349	2,422	2,499	2,752	2,755	2,893	3,278
Electrical	2,350	2,542	2,717	2,918	3,043	2,845	2,587	2,109	1,907	1,606	1,740	1,741
Industrial	1,307	1,223	1,341	1,312	1,265	1,270	1,174	1,056	1,009	1,056	1,136	1,164
Materials	268	263	285	276	270	282	269	272	272	263	294	321
Mechanical	1,782	1,738	1,779	1,859	1,947	1,947	2,113	2,017	2,093	1,972	2,163	2,208
Other	1,733	1,746	1,901	1,969	2,213	2,330	2,594	2,505	2,613	2,744	2,855	3,200
Science	188,746	190,752	198,626	209,960	217,534	223,087	227,491	231,422	236,528	241,943	250,590	264,449
Natural sciences	70,130	70,593	73,397	77,525	78,171	77,854	79,377	80,351	81,599	83,999	87,628	92,968
Agricultural sciences	8,465	8,490	8,634	8,963	8,722	8,737	8,909	8,915	9,457	9,818	10,709	11,855
Biological sciences	37,951	37,038	37,645	39,494	40,431	42,274	45,055	48,001	49,262	51,097	52,878	55,794
Earth, atmospheric, and ocean sciences	1,606	1,622	1,702	1,651	1,647	1,660	1,646	1,678	1,755	1,768	1,889	2,080
Atmospheric sciences	114	132	151	176	203	241	219	262	263	235	236	217
Earth sciences	1,409	1,400	1,446	1,406	1,358	1,351	1,358	1,336	1,430	1,470	1,566	1,760
Oceanography	83	90	105	69	86	68	69	80	62	63	87	103
Mathematics/computer sciences	16,120	17,534	19,442	21,538	21,373	18,768	16,814	14,771	13,841	13,865	14,554	15,445
Computer sciences	10,522	12,048	13,690	15,668	15,066	12,159	9,939	7,944	6,884	6,894	7,306	7,700
Mathematics/statistics	5,598	5,486	5,752	5,870	6,307	6,609	6,875	6,827	6,957	6,971	7,248	7,745
Physical sciences	5,988	5,909	5,974	5,879	5,998	6,415	6,953	6,986	7,284	7,451	7,598	7,794
Astronomy	54	95	116	110	123	143	131	132	120	146	140	136
Chemistry	4,905	4,774	4,723	4,680	4,752	5,144	5,634	5,614	5,909	6,106	6,162	6,328
Physics	724	755	824	837	907	900	945	1,024	988	925	1,015	1,001
Other physical sciences	305	285	311	252	216	228	243	216	267	274	281	329
Social/behavioral sciences	118,616	120,159	125,229	132,435	139,363	145,233	148,114	151,071	154,929	157,944	162,962	171,481
Psychology	57,114	57,430	59,908	61,534	64,284	66,932	68,576	70,052	71,682	73,164	75,336	78,167
Social sciences	61,502	62,729	65,321	70,901	75,079	78,301	79,538	81,019	83,247	84,780	87,626	93,314
Anthropology	4,742	4,706	4,926	5,230	5,281	5,380	5,606	5,630	6,120	6,430	6,703	7,024
Area/ethnic studies	3,571	3,653	3,803	3,690	4,081	4,267	4,512	4,559	4,697	4,866	4,701	5,054
Economics	6,384	6,921	7,387	8,093	8,277	8,139	7,664	7,630	8,044	8,346	8,895	9,187
History of science	52	56	63	54	73	64	67	70	52	52	76	78
Linguistics	490	512	604	624	717	729	754	879	1,003	975	1,124	1,235
Political science/public administration	18,321	18,651	19,743	22,522	24,408	26,410	27,127	27,545	28,155	28,135	29,799	30,777
Sociology	18,028	17,920	17,997	18,642	19,302	20,126	19,993	20,352	20,121	20,129	20,142	20,626

Appendix table 2-17

Earned bachelor's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other social sciences	9,914	10,310	10,798	12,046	12,940	13,186	13,815	14,354	15,055	15,847	16,186	19,333
Non-S&E	517,607	520,223	542,022	563,817	585,036	601,353	625,534	642,236	657,176	672,907	690,608	714,765
Engineering technologies	1,962	2,080	2,157	2,315	2,146	2,224	2,053	1,905	2,004	1,967	2,055	2,200

NOTES: Engineering technologies are focused more on applied skills than on fundamental science and mathematics. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-18

Freshmen intending to major in selected S&E fields, by sex and race or ethnicity: 1998–2012

(Percent)

Sex, race or ethnicity, and field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Male	55.3	56.1	55.9	55.7	55.6	54.8	55.0	53.6	53.2	52.1	53.3	53.8	52.6	53.3	53.0
Female	44.7	43.9	44.1	44.3	44.4	45.2	45.0	46.4	46.8	47.9	46.7	46.2	47.4	46.7	47.0
White or Caucasian	76.4	74.9	72.9	71.6	72.5	72.0	72.5	71.0	72.4	71.0	69.0	69.7	71.3	68.8	66.7
Physical sciences	84.1	85.6	83.2	81.7	81.2	79.2	80.6	79.7	79.5	80.6	76.7	77.4	78.3	75.4	75.5
Biological/agricultural sciences	78.2	77.1	73.3	70.7	70.0	66.8	66.8	66.2	67.5	66.4	64.7	65.1	69.1	65.8	64.6
Mathematics/statistics/computer sciences	68.3	65.9	66.3	64.9	71.0	73.4	74.1	73.0	76.0	71.8	70.2	72.8	70.1	70.7	63.2
Social/behavioral sciences	76.5	76.9	74.3	71.9	73.0	73.2	74.1	72.3	72.4	71.3	67.7	68.9	69.7	67.3	65.8
Engineering	78.0	74.5	73.3	74.1	72.6	72.8	73.6	71.3	74.9	72.6	72.7	72.7	73.8	71.4	69.0
Asian American or Asian[a]	7.7	9.2	9.6	10.2	11.0	12.4	12.8	12.7	11.9	12.4	13.1	13.4	11.8	13.2	15.5
Physical sciences	6.1	5.8	6.1	6.9	7.6	9.6	9.4	9.7	10.2	9.9	11.0	10.6	10.5	11.6	13.5
Biological/agricultural sciences	8.0	8.7	10.1	11.0	13.0	16.9	17.2	17.2	16.2	16.7	17.1	17.1	14.4	15.5	17.6
Mathematics/statistics/computer sciences	10.2	15.0	13.9	14.6	11.9	11.4	10.0	10.0	9.6	10.9	12.5	11.5	12.7	15.3	20.2
Social/behavioral sciences	4.4	5.0	5.6	6.3	7.1	8.1	8.7	8.2	8.5	8.2	9.5	9.7	8.4	96.0	9.9
Engineering	9.8	10.8	11.1	11.7	13.8	14.4	14.7	15.2	12.7	14.5	14.2	14.7	12.9	14.3	16.9
African American or black	11.3	10.2	11.3	10.8	10.5	9.7	9.9	11.4	10.8	11.1	10.5	10.5	10.6	10.8	10.5
Physical sciences	6.6	6.1	7.1	6.2	6.4	6.9	7.5	8.3	7.4	7.4	7.8	8.2	7.8	9.2	7.5
Biological/agricultural sciences	9.3	8.9	10.6	10.6	10.6	10.3	10.7	11.7	10.6	11.0	11.0	11.4	10.4	10.4	10.7
Mathematics/statistics/computer sciences	17.5	14.5	14.5	14.4	12.8	11.0	12.4	13.8	11.5	13.0	12.5	12.3	13.4	10.3	11.6
Social/behavioral sciences	13.8	11.9	12.1	13.3	12.1	11.3	11.4	13.3	12.7	13.3	13.3	12.9	13.2	13.1	13.5
Engineering	7.6	7.9	9.7	6.9	8.7	7.5	7.6	9.0	9.3	8.7	7.1	7.0	7.9	8.9	7.8
Hispanic or Latino[b]	5.4	6.4	7.0	7.5	6.7	7.4	8.0	8.5	9.1	9.4	12.1	12.0	12.8	14.6	15.6
Physical sciences	3.6	3.7	5.3	5.1	5.1	5.4	5.2	5.3	6.5	5.3	8.4	8.9	10.8	11.0	12.0
Biological/agricultural sciences	5.1	5.9	7.0	7.2	6.6	7.1	7.7	7.7	9.0	9.2	11.4	11.4	11.9	14.8	14.4
Mathematics/statistics/computer sciences	4.8	4.9	5.7	6.1	5.3	6.2	7.0	6.5	6.9	7.6	9.0	8.6	10.5	10.8	13.3
Social/behavioral sciences	6.4	7.5	9.1	9.2	8.7	9.0	9.5	10.8	11.6	12.2	15.6	15.2	16.1	18.8	19.2
Engineering	5.6	7.0	6.1	7.1	5.8	6.7	7.6	8.4	7.0	8.2	10.5	10.6	11.1	12.0	13.8
American Indian or Alaska Native[c]	2.1	2.4	1.9	1.3	1.2	1.3	2.0	1.8	2.4	2.2	2.5	2.3	2.4	2.5	2.5
Physical sciences	2.4	3.1	2.5	1.2	1.1	1.1	2.1	1.8	2.6	2.0	2.8	2.3	2.2	3.3	2.5
Biological/agricultural sciences	2.2	2.6	1.8	1.4	1.3	1.5	2.0	1.8	2.5	2.1	2.7	2.5	2.5	2.4	2.7
Mathematics/statistics/computer sciences	2.0	2.0	1.4	1.1	1.1	1.1	2.0	1.7	2.0	2.0	2.4	1.9	2.0	2.3	2.1
Social/behavioral sciences	2.6	2.6	2.4	1.6	1.5	1.7	2.4	2.1	2.6	2.5	2.7	2.8	2.9	3.2	2.9
Engineering	1.6	2.0	1.7	1.0	1.0	0.9	1.6	1.4	2.1	1.9	1.8	1.8	2.0	1.9	2.1
Other/unknown	3.0	3.8	3.7	3.3	3.1	3.3	3.3	3.1	3.9	3.8	4.3	3.7	3.5	3.7	3.6
Physical sciences	3.0	3.8	3.0	3.1	2.9	3.0	3.2	2.7	3.8	2.9	3.9	2.9	2.9	3.8	3.3
Biological/agricultural sciences	3.2	3.7	3.5	3.7	3.5	4.1	3.9	3.7	4.4	4.3	4.9	4.0	3.7	4.3	3.9

Appendix table 2-18

Freshmen intending to major in selected S&E fields, by sex and race or ethnicity: 1998–2012

(Percent)

Sex, race or ethnicity, and field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mathematics/statistics/computer sciences	2.5	3.9	4.1	3.2	2.7	2.1	2.4	2.4	2.7	3.0	3.9	3.0	3.2	3.1	3.2
Social/behavioral sciences	3.4	4.0	4.2	3.5	3.6	3.6	3.7	3.5	4.5	4.3	4.9	4.3	4.0	4.3	4.0
Engineering	2.6	3.6	3.3	2.9	2.6	2.6	2.8	2.4	3.1	3.1	3.3	3.1	2.8	2.8	3.2

[a] In 1997, the Asian American or Asian category was broken out into six categories: Chinese American or Chinese, Filipino American or Filipino, Japanese American or Japanese, Korean American or Korean, South East Asian American (Vietnamese, Laotian, Cambodian, etc.), and other Asian American or Asian. In 1998, the Asian American or Asian category used in prior years was restored. In 2001, Native Hawaiian or Pacific Islander was added as a category under Asian American or Asian.

[b] Hispanic or Latino includes Mexican American or Chicano, Puerto Rican, and other Latino.

[c] The category American Indian was changed to American Indian or Alaska Native in 2001.

NOTES: Physical sciences include physics; chemistry; astronomy; and earth, atmospheric, and ocean sciences. Detail does not add to total because students may check more than one race or ethnicity (e.g., white and Hispanic).

SOURCE: Higher Education Research Institute, University of California at Los Angeles, Survey of the American Freshman: National Norms, special tabulations (2013).

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Appendix table 2-19

Foreign undergraduate student enrollment in U.S. universities, by field and selected places of origin: November 2011 and November 2012

Place of origin	All fields	S&E									Non-S&E
		Total	Agricultural sciences	Biological sciences	Computer sciences	Engineering	Mathematics	Physical sciences	Psychology	Social sciences	
November 2011											
All locations	297,950	96,400	1,850	11,740	12,170	33,150	6,590	4,920	5,700	20,280	201,560
China	65,860	22,240	550	1,450	2,080	6,990	3,610	1,220	910	5,430	43,620
South Korea	37,110	10,210	130	1,770	910	2,330	630	700	850	2,890	26,900
Saudi Arabia	14,530	6,580	10	250	1,500	4,180	40	250	50	300	7,950
India	10,800	5,660	50	520	1,060	2,960	120	160	150	640	5,140
Canada	14,130	3,520	120	970	170	790	110	180	410	770	10,610
Nepal	6,700	2,910	70	630	720	890	110	240	60	210	3,790
Vietnam	10,910	2,710	30	500	550	730	110	240	50	510	8,200
Malaysia	4,110	2,610	70	350	120	1,120	490	110	130	220	1,490
Japan	9,420	1,990	80	260	190	220	70	90	250	840	7,430
Nigeria	3,830	1,830	30	390	300	700	20	90	50	260	2,000
Mexico	5,910	1,760	50	170	130	910	30	70	140	260	4,150
Hong Kong	4,870	1,560	40	170	150	250	140	80	210	520	3,310
Taiwan	5,530	1,470	40	240	200	400	80	110	120	280	4,070
Turkey	3,340	1,440	10	40	290	670	30	20	60	320	1,900
Indonesia	3,930	1,290	90	110	180	610	40	60	50	150	2,640
Kuwait	2,090	1,130	0	40	20	990	0	20	10	60	960
United Kingdom	4,940	1,050	30	150	70	140	60	50	190	370	3,890
Brazil	4,730	990	30	110	130	280	10	30	90	310	3,740
Venezuela	3,430	940	10	80	120	430	10	20	90	180	2,490
Kenya	2,680	790	20	200	120	190	50	50	40	120	1,890
Other locations	79,120	23,720	410	3,360	3,190	7,370	820	1,140	1,810	5,630	55,400
November 2012											
All locations	351,030	116,640	2,140	13,210	14,360	42,220	8,120	5,900	6,540	24,150	234,390
China	92,700	31,980	680	2,040	3,020	10,080	5,090	1,790	1,290	7,990	60,720
South Korea	40,670	11,360	140	1,860	980	2,600	620	760	990	3,430	29,300
Saudi Arabia	23,200	10,750	20	580	2,240	6,950	50	340	70	510	12,450
India	10,930	5,740	50	480	1,010	3,020	120	180	160	720	5,200
Canada	14,850	3,730	130	1,000	170	840	130	210	450	810	11,120
Vietnam	12,170	3,060	50	530	630	870	140	280	60	510	9,110
Malaysia	4,450	2,790	80	380	140	1,190	460	150	140	260	1,670
Nepal	5,400	2,450	60	450	640	820	90	190	40	170	2,950
Nigeria	4,110	2,070	30	450	300	840	30	90	50	270	2,040
Mexico	6,770	2,020	60	250	160	1,000	40	70	160	290	4,740
Japan	9,470	1,920	70	230	210	190	70	110	250	800	7,550
Kuwait	3,090	1,820	10	50	20	1,620	10	30	10	90	1,270
Hong Kong	5,460	1,770	30	180	170	310	160	90	250	580	3,700
Taiwan	6,060	1,650	50	260	230	450	90	120	140	320	4,410
Turkey	3,570	1,530	10	60	300	760	30	30	60	290	2,040

Appendix table 2-19

Foreign undergraduate student enrollment in U.S. universities, by field and selected places of origin: November 2011 and November 2012

		S&E									
Place of origin	All fields	Total	Agricultural sciences	Biological sciences	Computer sciences	Engineering	Mathematics	Physical sciences	Psychology	Social sciences	Non-S&E
Indonesia	4,680	1,520	110	130	210	700	50	60	80	180	3,150
United Kingdom	5,410	1,180	30	160	80	160	60	60	200	430	4,230
Venezuela	4,330	1,170	10	110	140	580	30	30	90	190	3,160
Brazil	5,140	1,110	20	130	150	350	20	30	90	330	4,030
Singapore	2,170	810	20	70	90	230	40	30	90	250	1,360
Other locations	86,420	26,220	500	3,820	3,490	8,700	820	1,250	1,880	5,760	60,190

NOTES: Data include active foreign national students on F-1 visas and exclude those on optional practical training. Undergraduate enrollment includes associate's and bachelor's degrees. Numbers are rounded to the nearest 10. Countries are ordered by number of S&E students. Detail may not add to total because of rounding.

SOURCE: Bureau of Citizenship and Immigration Services, special tabulations (2013) of the Student and Exchange Visitor Information System database.

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Appendix table 2-20

Undergraduate enrollment in engineering and engineering technology programs: 1997–2011

Enrollment level	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Engineering															
Students	365,358	366,991	361,395	390,803	409,557	421,178	421,791	411,635	409,326	405,489	431,910	442,952	468,139	488,435	511,306
Full time	326,458	329,657	323,713	353,118	367,954	383,109	384,612	377,040	375,112	371,720	399,429	411,345	435,752	454,202	471,920
Freshman	90,882	94,909	93,951	101,773	106,825	107,086	103,834	102,395	100,411	100,228	110,558	111,006	114,704	119,144	121,766
Sophomore	67,879	69,608	69,941	76,706	78,348	81,854	82,542	80,704	79,664	78,418	87,018	92,364	96,561	98,560	102,622
Junior	68,812	67,638	66,975	74,055	76,938	79,806	80,703	78,014	78,891	77,970	82,094	86,894	93,317	98,111	101,811
Senior or fifth year	98,885	97,502	92,846	100,584	105,843	114,363	117,533	115,927	116,146	115,104	119,759	121,081	131,170	138,387	145,721
Part time	38,900	37,334	37,682	37,685	41,603	38,069	37,179	34,595	34,214	33,769	32,481	31,607	32,387	34,233	39,386
Engineering technologies															
Students	108,459	108,993	108,754	107,165	108,886	112,654	110,250	107,931	97,052	96,371	98,857	102,848	109,399	115,528	108,556
Full time	67,864	68,545	69,173	66,771	71,147	72,704	72,040	69,584	62,241	61,977	61,457	65,316	70,829	73,079	67,608
First year, associate and bachelor	30,227	28,367	29,490	29,531	31,588	30,252	28,033	27,938	25,388	23,195	26,299	28,123	30,320	31,791	27,695
Second year, associate and bachelor	19,106	18,426	17,326	18,318	19,171	20,360	21,009	19,364	17,465	17,641	16,466	16,944	18,753	19,377	18,462
Third and fourth years, bachelor	15,089	15,672	17,068	16,448	18,181	19,306	19,278	19,455	17,566	18,439	16,282	18,256	19,696	19,432	19,099
Other years, associate	3,442	6,080	5,289	2,474	2,207	2,786	3,720	2,827	1,822	2,702	2,410	1,993	2,060	2,479	2,352
Part time	40,595	40,448	39,581	40,394	37,739	39,950	38,210	38,347	34,811	34,394	37,400	37,532	38,570	42,449	40,948

SOURCE: Engineering Workforce Commission, Engineering & Technology Enrollments, Fall 2011 American Association of Engineering Societies (2012).

Science and Engineering Indicators 2014

Appendix table 2-21

Earned associate's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Both sexes												
All fields	573,496	585,610	600,294	637,953	670,335	701,734	718,182	733,151	755,598	793,279	856,381	949,963
S&E	38,434	45,226	51,194	62,805	60,246	54,750	49,850	47,485	49,166	54,284	62,211	76,021
Engineering	1,794	1,898	1,781	2,278	2,843	2,557	2,291	2,272	2,403	2,329	2,665	2,994
Aerospace	1	0	0	0	0	0	2	0	0	0	2	0
Chemical	16	18	28	7	305	2	7	3	1	10	9	31
Civil	58	53	46	62	58	52	43	64	37	62	47	71
Electrical	280	309	182	672	910	691	531	459	422	242	236	199
Industrial	84	77	62	73	72	68	74	80	98	109	132	132
Materials	11	14	10	12	12	13	10	8	9	5	10	6
Mechanical	60	122	83	77	47	84	51	53	59	95	77	76
Other	1,284	1,305	1,370	1,375	1,439	1,647	1,573	1,605	1,777	1,806	2,152	2,479
Science	36,640	43,328	49,413	60,527	57,403	52,193	47,559	45,213	46,763	51,955	59,546	73,027
Natural sciences	29,130	35,718	41,243	52,130	48,289	42,494	37,622	34,536	35,299	37,536	40,801	48,061
Agricultural sciences	1,976	2,106	2,001	2,018	1,966	1,908	1,934	1,790	1,762	1,811	1,952	2,138
Biological sciences	1,484	1,536	1,577	1,786	1,753	1,979	2,028	2,224	2,379	2,546	2,881	3,440
Earth, atmospheric, and ocean sciences	82	82	58	52	41	45	67	69	67	98	99	95
Atmospheric sciences	0	1	0	0	2	2	7	10	5	4	16	10
Earth sciences	28	38	28	34	25	23	40	41	39	59	55	50
Oceanography	54	43	30	18	14	20	20	18	23	35	28	35
Mathematics/computer sciences	24,251	30,809	36,264	47,135	42,955	36,947	31,923	28,507	29,182	30,980	33,565	39,320
Computer sciences	23,576	30,113	35,578	46,400	42,153	36,140	31,170	27,680	28,327	30,050	32,514	37,675
Mathematics/statistics	675	696	686	735	802	807	753	827	855	930	1,051	1,645
Physical sciences	1,337	1,185	1,343	1,139	1,574	1,615	1,670	1,946	1,909	2,101	2,304	3,068
Astronomy	1	1	2	2	1	3	4	2	2	4	3	1
Chemistry	301	183	201	251	279	304	298	354	387	422	404	459
Physics	171	167	177	191	193	196	143	164	151	184	248	260
Other physical sciences	864	834	963	695	1,101	1,112	1,225	1,426	1,369	1,491	1,649	2,348
Social/behavioral sciences	7,510	7,610	8,170	8,397	9,114	9,699	9,937	10,677	11,464	14,419	18,745	24,966
Psychology	1,454	1,553	1,704	1,785	1,887	1,942	1,944	2,213	2,412	3,949	6,582	3,866
Social sciences	6,056	6,057	6,466	6,612	7,227	7,757	7,993	8,464	9,052	10,470	12,163	21,100
Anthropology	52	80	83	76	95	120	114	117	153	149	191	231
Area/ethnic studies	250	299	314	121	98	106	114	148	163	170	208	216
Economics	210	209	221	222	268	298	316	281	311	361	387	357
Linguistics	0	0	0	0	0	6	1	4	1	1	3	0
Political science/public administration	1,033	913	926	1,159	1,402	1,566	1,749	1,788	1,746	1,831	2,052	4,592
Sociology	366	371	416	456	552	500	475	510	546	599	658	862
Other social sciences	4,145	4,185	4,506	4,578	4,812	5,161	5,224	5,616	6,132	7,359	8,664	14,842
Non-S&E	535,062	540,384	549,100	575,148	610,089	646,984	668,332	685,666	706,432	738,995	794,170	873,942
Engineering technologies	40,470	39,732	37,901	39,600	37,020	32,488	29,710	30,097	31,643	33,243	34,553	38,222
Male												
All fields	228,913	234,384	239,864	254,633	261,845	269,283	271,951	277,006	284,443	300,266	325,486	363,998

Appendix table 2-21

Earned associate's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
S&E	20,101	24,722	29,609	38,126	36,955	33,964	30,680	29,069	30,266	32,506	36,468	43,490
Engineering	1,545	1,582	1,483	1,905	2,247	2,185	1,970	1,944	2,089	2,002	2,308	2,557
Aerospace	1	0	0	0	0	0	2	0	0	0	2	0
Chemical	11	16	26	6	117	1	5	2	1	8	5	24
Civil	38	34	29	48	41	39	31	44	31	48	40	55
Electrical	250	269	144	554	766	600	475	403	387	221	215	172
Industrial	69	60	56	62	66	62	65	71	91	102	122	124
Materials	10	11	9	8	10	11	7	7	8	5	7	5
Mechanical	52	115	74	70	43	82	48	47	50	76	62	61
Other	1,114	1,077	1,145	1,157	1,204	1,390	1,337	1,370	1,521	1,542	1,855	2,116
Science	18,556	23,140	28,126	36,221	34,708	31,779	28,710	27,125	28,177	30,504	34,160	40,933
Natural sciences	16,356	21,000	25,834	33,749	32,187	29,026	25,889	24,056	24,826	26,465	29,003	34,432
Agricultural sciences	1,185	1,319	1,237	1,244	1,257	1,259	1,194	1,116	1,127	1,124	1,157	1,364
Biological sciences	496	501	500	580	608	667	702	751	741	823	942	1,192
Earth, atmospheric, and ocean sciences	45	48	37	30	21	25	38	44	34	65	65	63
Atmospheric sciences	0	1	0	0	1	1	4	8	2	3	13	7
Earth sciences	12	26	17	15	12	11	24	22	18	42	31	29
Oceanography	33	21	20	15	8	13	10	14	14	20	21	27
Mathematics/computer sciences	14,011	18,534	23,362	31,299	29,417	26,115	22,965	21,040	21,818	23,243	25,455	30,140
Computer sciences	13,603	18,084	22,916	30,833	28,914	25,586	22,482	20,492	21,243	22,608	24,730	29,115
Mathematics/statistics	408	450	446	466	503	529	483	548	575	635	725	1,025
Physical sciences	619	598	698	596	884	960	990	1,105	1,106	1,210	1,384	1,673
Astronomy	1	1	1	1	1	3	4	1	2	3	3	0
Chemistry	126	99	108	121	125	156	153	150	183	197	214	222
Physics	94	107	109	132	134	132	117	131	118	145	189	194
Other physical sciences	398	391	480	342	624	669	716	823	803	865	978	1,257
Social/behavioral sciences	2,200	2,140	2,292	2,472	2,521	2,753	2,821	3,069	3,351	4,039	5,157	6,501
Psychology	326	360	370	441	434	445	446	517	554	744	1,271	896
Social sciences	1,874	1,780	1,922	2,031	2,087	2,308	2,375	2,552	2,797	3,295	3,886	5,605
Anthropology	21	30	28	35	26	40	26	33	44	50	61	67
Area/ethnic studies	56	44	63	33	40	40	36	53	59	52	88	66
Economics	116	114	90	113	141	158	178	154	165	220	233	209
Linguistics	0	0	0	0	0	3	0	0	0	0	1	0
Political science/public administration	251	204	225	271	286	372	367	361	386	437	475	811
Sociology	89	104	111	126	130	123	134	133	142	158	166	221
Other social sciences	1,341	1,284	1,405	1,453	1,464	1,572	1,634	1,818	2,001	2,378	2,862	4,231
Non-S&E	208,812	209,662	210,255	216,507	224,890	235,319	241,271	247,937	254,177	267,760	289,018	320,508
Engineering technologies	34,511	33,581	32,084	33,146	31,393	27,632	25,295	25,788	27,183	28,505	29,864	33,301
Female												
All fields	344,583	351,226	360,430	383,320	408,490	432,451	446,231	456,145	471,155	493,013	530,895	585,965
S&E	18,333	20,504	21,585	24,679	23,291	20,786	19,170	18,416	18,900	21,778	25,743	32,531
Engineering	249	316	298	373	596	372	321	328	314	327	357	437

Appendix table 2-21

Earned associate's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	5	2	2	1	188	1	2	1	0	2	4	7
Civil	20	19	17	14	17	13	12	20	6	14	7	16
Electrical	30	40	38	118	144	91	56	56	35	21	21	27
Industrial	15	17	6	11	6	6	9	9	7	7	10	8
Materials	1	3	1	4	2	2	3	1	1	0	3	1
Mechanical	8	7	9	7	4	2	3	6	9	19	15	15
Other	170	228	225	218	235	257	236	235	256	264	297	363
Science	18,084	20,188	21,287	24,306	22,695	20,414	18,849	18,088	18,586	21,451	25,386	32,094
Natural sciences	12,774	14,718	15,409	18,381	16,102	13,468	11,733	10,480	10,473	11,071	11,798	13,629
Agricultural sciences	791	787	764	774	709	649	740	674	635	687	795	774
Biological sciences	988	1,035	1,077	1,206	1,145	1,312	1,326	1,473	1,638	1,723	1,939	2,248
Earth, atmospheric, and ocean sciences	37	34	21	22	20	20	29	25	33	33	34	32
Atmospheric sciences	0	0	0	0	1	1	3	2	3	1	3	3
Earth sciences	16	12	11	19	13	12	16	19	21	17	24	21
Oceanography	21	22	10	3	6	7	10	4	9	15	7	8
Mathematics/computer sciences	10,240	12,275	12,902	15,836	13,538	10,832	8,958	7,467	7,364	7,737	8,110	9,180
Computer sciences	9,973	12,029	12,662	15,567	13,239	10,554	8,688	7,188	7,084	7,442	7,784	8,560
Mathematics/statistics	267	246	240	269	299	278	270	279	280	295	326	620
Physical sciences	718	587	645	543	690	655	680	841	803	891	920	1,395
Astronomy	0	0	1	1	0	0	0	1	0	1	0	1
Chemistry	175	84	93	130	154	148	145	204	204	225	190	237
Physics	77	60	68	59	59	64	26	33	33	39	59	66
Other physical sciences	466	443	483	353	477	443	509	603	566	626	671	1,091
Social/behavioral sciences	5,310	5,470	5,878	5,925	6,593	6,946	7,116	7,608	8,113	10,380	13,588	18,465
Psychology	1,128	1,193	1,334	1,344	1,453	1,497	1,498	1,696	1,858	3,205	5,311	2,970
Social sciences	4,182	4,277	4,544	4,581	5,140	5,449	5,618	5,912	6,255	7,175	8,277	15,495
Anthropology	31	50	55	41	69	80	88	84	109	99	130	164
Area/ethnic studies	194	255	251	88	58	66	78	95	104	118	120	150
Economics	94	95	131	109	127	140	138	127	146	141	154	148
Linguistics	0	0	0	0	0	3	1	4	1	1	2	0
Political science/public administration	782	709	701	888	1,116	1,194	1,382	1,427	1,360	1,394	1,577	3,781
Sociology	277	267	305	330	422	377	341	377	404	441	492	641

Appendix table 2-21

Earned associate's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other social sciences	2,804	2,901	3,101	3,125	3,348	3,589	3,590	3,798	4,131	4,981	5,802	10,611
Non-S&E	326,250	330,722	338,845	358,641	385,199	411,665	427,061	437,729	452,255	471,235	505,152	553,434
Engineering technologies	5,959	6,151	5,817	6,454	5,627	4,856	4,415	4,309	4,460	4,738	4,689	4,921

NOTES: Engineering technologies focused more on applied skills than on fundamental science and mathematics. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All citizenships, races, and ethnicities												
All fields	573,496	585,610	600,294	637,953	670,335	701,734	718,182	733,151	755,598	793,279	856,381	949,963
S&E	38,434	45,226	51,194	62,805	60,246	54,750	49,850	47,485	49,166	54,284	62,211	76,021
Engineering	1,794	1,898	1,781	2,278	2,843	2,557	2,291	2,272	2,403	2,329	2,665	2,994
Aerospace	1	0	0	0	0	0	2	0	0	0	2	0
Chemical	16	18	28	7	305	2	7	3	1	10	9	31
Civil	58	53	46	62	58	52	43	64	37	62	47	71
Electrical	280	309	182	672	910	691	531	459	422	242	236	199
Industrial	67	132	80	81	49	88	57	56	57	83	72	69
Materials	11	14	10	12	12	13	10	8	9	5	10	6
Mechanical	77	67	65	69	70	64	68	77	100	121	137	139
Other	1,284	1,305	1,370	1,375	1,439	1,647	1,573	1,605	1,777	1,806	2,152	2,479
Science	36,640	43,328	49,413	60,527	57,403	52,193	47,559	45,213	46,763	51,955	59,546	73,027
Natural sciences	29,130	35,718	41,243	52,130	48,289	42,494	37,622	34,536	35,299	37,536	40,801	48,061
Agricultural sciences	1,976	2,106	2,001	2,018	1,966	1,908	1,934	1,790	1,762	1,811	1,952	2,138
Biological sciences	1,484	1,536	1,577	1,786	1,753	1,979	2,028	2,224	2,379	2,546	2,881	3,440
Earth, atmospheric, and ocean sciences	82	82	58	52	41	45	67	69	67	98	99	95
Atmospheric sciences	0	1	0	0	2	2	7	10	5	4	16	10
Earth sciences	28	38	28	34	25	23	40	41	39	59	55	50
Oceanography	54	43	30	18	14	20	20	18	23	35	28	35
Mathematics/computer sciences	24,251	30,809	36,264	47,135	42,955	36,947	31,923	28,507	29,182	30,980	33,565	39,320
Computer sciences	23,576	30,113	35,578	46,400	42,153	36,140	31,170	27,680	28,327	30,050	32,514	37,675
Mathematics	675	696	686	735	802	807	753	827	855	930	1,051	1,645
Physical sciences	1,337	1,185	1,343	1,139	1,574	1,615	1,670	1,946	1,909	2,101	2,304	3,068
Astronomy	1	1	2	2	1	3	4	2	2	4	3	1
Chemistry	301	183	201	251	279	304	298	354	387	422	404	459
Physics	171	167	177	191	193	196	143	164	151	184	248	260
Other physical sciences	864	834	963	695	1,101	1,112	1,225	1,426	1,369	1,491	1,649	2,348
Social/behavioral sciences	7,510	7,610	8,170	8,397	9,114	9,699	9,937	10,677	11,464	14,419	18,745	24,966
Psychology	1,454	1,553	1,704	1,785	1,887	1,942	1,944	2,213	2,412	3,949	6,582	3,866
Social sciences	6,056	6,057	6,466	6,612	7,227	7,757	7,993	8,464	9,052	10,470	12,163	21,100
Anthropology	52	80	83	76	95	120	114	117	153	149	191	231
Area/ethnic studies	250	299	314	121	98	106	114	148	163	170	208	216
Economics	210	209	221	222	268	298	316	281	311	361	387	357
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	6	1	4	1	1	3	0
Political science/public administration	1,033	913	926	1,159	1,402	1,566	1,749	1,788	1,746	1,831	2,052	4,592
Sociology	366	371	416	456	552	500	475	510	546	599	658	862
Other social sciences	4,145	4,185	4,506	4,578	4,812	5,161	5,224	5,616	6,132	7,359	8,664	14,842
Non-S&E	535,062	540,384	549,100	575,148	610,089	646,984	668,332	685,666	706,432	738,995	794,170	873,942
Engineering technologies	40,470	39,732	37,901	39,600	37,020	32,488	29,710	30,097	31,643	33,243	34,553	38,222

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
U.S. citizen or permanent resident												
All fields	563,380	574,008	588,000	624,467	655,767	687,613	704,750	719,324	741,153	778,055	840,221	933,331
S&E	37,585	44,071	49,778	61,190	58,625	53,398	48,751	46,590	48,212	53,128	60,911	74,500
Engineering	1,726	1,801	1,724	2,197	2,725	2,435	2,204	2,179	2,314	2,180	2,514	2,810
Aerospace	1	0	0	0	0	0	1	0	0	0	2	0
Chemical	14	17	26	7	302	2	5	2	1	6	7	22
Civil	54	53	44	56	57	52	39	63	34	55	41	65
Electrical	277	271	181	668	896	682	529	452	416	227	228	189
Industrial	66	130	78	80	49	85	55	53	57	83	72	69
Materials	11	14	10	12	12	13	10	8	9	5	10	6
Mechanical	76	67	64	68	69	62	68	76	95	118	120	127
Other	1,227	1,249	1,321	1,306	1,340	1,539	1,497	1,525	1,702	1,686	2,034	2,332
Science	35,859	42,270	48,054	58,993	55,900	50,963	46,547	44,411	45,898	50,948	58,397	71,690
Natural sciences	28,500	34,841	40,055	50,791	47,015	41,475	36,791	33,910	34,627	36,761	39,955	47,075
Agricultural sciences	1,953	2,060	1,949	2,007	1,923	1,893	1,892	1,782	1,746	1,799	1,939	2,128
Biological sciences	1,457	1,501	1,547	1,737	1,696	1,921	1,964	2,163	2,296	2,474	2,773	3,348
Earth, atmospheric, and ocean sciences	81	78	57	52	39	45	65	65	64	98	96	93
Atmospheric sciences	0	1	0	0	2	2	7	9	5	4	16	9
Earth sciences	27	34	27	34	23	23	38	38	36	59	52	49
Oceanography	54	43	30	18	14	20	20	18	23	35	28	35
Mathematics/computer sciences	23,727	30,050	35,203	45,914	41,869	36,118	31,327	28,059	28,744	30,455	33,009	38,696
Computer sciences	23,085	29,396	34,553	45,225	41,114	35,371	30,628	27,261	27,934	29,567	32,019	37,126
Mathematics	642	654	650	689	755	747	699	798	810	888	990	1,570
Physical sciences	1,282	1,152	1,299	1,081	1,488	1,498	1,543	1,841	1,777	1,935	2,138	2,810
Astronomy	1	1	2	2	1	3	4	2	1	4	3	1
Chemistry	269	174	196	238	266	285	279	336	377	399	383	431
Physics	163	164	172	175	184	185	131	160	137	174	242	251
Other physical sciences	849	813	929	666	1,037	1,025	1,129	1,343	1,262	1,358	1,510	2,127
Social/behavioral sciences	7,359	7,429	7,999	8,202	8,885	9,488	9,756	10,501	11,271	14,187	18,442	24,615
Psychology	1,432	1,528	1,668	1,742	1,843	1,904	1,922	2,192	2,382	3,897	6,501	3,810
Social sciences	5,927	5,901	6,331	6,460	7,042	7,584	7,834	8,309	8,889	10,290	11,941	20,805
Anthropology	49	78	82	76	93	119	111	113	150	148	187	228
Area/ethnic studies	234	278	299	115	95	104	110	148	161	164	196	205
Economics	192	182	201	191	230	266	287	262	279	326	338	312
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	2	1	4	1	1	2	0
Political science/public administration	1,021	899	915	1,149	1,379	1,553	1,723	1,767	1,723	1,812	2,032	4,558
Sociology	362	361	410	450	531	481	460	491	528	592	649	850
Other social sciences	4,069	4,103	4,424	4,479	4,714	5,059	5,142	5,524	6,047	7,247	8,537	14,652
Non-S&E	525,795	529,937	538,222	563,277	597,142	634,215	655,999	672,734	692,941	724,927	779,310	858,831
Engineering technologies	40,133	38,894	37,459	39,140	36,513	32,131	29,391	29,800	31,315	32,966	34,210	37,934

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
White												
All fields	396,145	396,412	401,199	417,683	431,419	449,935	456,951	461,859	467,389	487,473	513,086	560,422
S&E	23,837	28,362	31,883	37,939	35,655	32,581	29,621	28,050	28,652	31,177	34,712	41,359
Engineering	1,177	1,278	1,265	1,387	1,569	1,488	1,354	1,316	1,453	1,384	1,621	1,797
Aerospace	1	0	0	0	0	0	1	0	0	0	2	0
Chemical	11	17	22	6	175	2	3	2	1	4	5	14
Civil	31	40	25	43	35	35	26	35	17	16	25	45
Electrical	157	159	123	288	337	287	196	180	168	115	133	94
Industrial	58	92	59	66	43	79	42	38	46	71	64	49
Materials	8	12	8	11	12	13	10	7	8	5	8	5
Mechanical	52	46	40	48	50	43	47	45	60	79	77	69
Other	859	912	988	925	917	1,029	1,029	1,009	1,153	1,094	1,307	1,521
Science	22,660	27,084	30,618	36,552	34,086	31,093	28,267	26,734	27,199	29,793	33,091	39,562
Natural sciences	18,573	22,788	26,034	32,049	29,249	25,958	23,025	21,286	21,426	22,835	24,222	27,932
Agricultural sciences	1,741	1,840	1,725	1,795	1,695	1,716	1,686	1,556	1,557	1,571	1,618	1,838
Biological sciences	937	989	1,047	1,132	1,084	1,219	1,115	1,178	1,260	1,300	1,432	1,628
Earth, atmospheric, and ocean sciences	76	73	54	48	35	39	52	59	57	82	87	80
Atmospheric sciences	0	1	0	0	2	2	7	8	5	4	16	8
Earth sciences	24	30	25	31	21	18	32	33	30	47	43	37
Oceanography	52	42	29	17	12	19	13	18	22	31	28	35
Mathematics/computer sciences	15,020	19,133	22,317	28,386	25,519	22,032	19,213	17,415	17,537	18,801	19,880	23,039
Computer sciences	14,638	18,772	21,933	28,012	25,081	21,621	18,835	16,990	17,136	18,339	19,413	22,348
Mathematics	382	361	384	374	438	411	378	425	401	462	467	691
Physical sciences	799	753	891	688	916	952	959	1,078	1,015	1,081	1,205	1,347
Astronomy	0	1	2	0	0	2	4	1	1	2	0	1
Chemistry	144	98	133	128	153	158	158	156	184	170	183	200
Physics	65	72	77	80	89	92	66	86	67	90	100	112
Other physical sciences	590	582	679	480	674	700	731	835	763	819	922	1,034
Social/behavioral sciences	4,087	4,296	4,584	4,503	4,837	5,135	5,242	5,448	5,773	6,958	8,869	11,630
Psychology	959	1,012	1,121	1,121	1,152	1,130	1,148	1,268	1,355	2,165	3,493	2,003
Social sciences	3,128	3,284	3,463	3,382	3,685	4,005	4,094	4,180	4,418	4,793	5,376	9,627
Anthropology	32	51	63	44	62	75	79	64	96	85	117	130
Area/ethnic studies	59	209	211	16	15	17	16	26	23	14	31	40
Economics	81	92	88	85	102	116	142	124	146	131	140	143
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	1	0	0	1	0	2	0
Political science/public administration	371	353	338	497	650	761	812	813	862	836	881	2,041
Sociology	203	187	210	219	235	201	202	196	217	240	253	332
Other social sciences	2,382	2,392	2,553	2,521	2,621	2,834	2,843	2,957	3,073	3,487	3,952	6,941
Non-S&E	372,308	368,050	369,316	379,744	395,764	417,354	427,330	433,809	438,737	456,296	478,374	519,063
Engineering technologies	27,820	26,801	25,386	25,909	24,352	22,157	20,433	20,659	21,323	22,249	22,511	24,791

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Asian or Pacific Islander												
All fields	27,313	27,919	30,322	31,597	31,908	32,498	33,800	35,623	36,754	38,619	41,472	43,221
S&E	2,649	2,907	3,381	4,075	3,694	3,129	2,769	2,715	2,877	3,314	3,706	4,448
Engineering	160	132	101	142	169	147	132	175	140	177	216	220
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	0	0	2	1	8	0	0	0	0	0	0	2
Civil	3	4	5	6	2	1	1	2	2	5	6	3
Electrical	38	18	5	36	40	14	10	59	10	7	15	13
Industrial	0	2	0	0	1	2	1	3	1	3	5	0
Materials	0	0	0	0	0	0	0	0	0	0	0	0
Mechanical	2	0	0	2	0	1	3	3	3	6	7	12
Other	117	108	89	97	118	129	117	108	124	156	183	190
Science	2,489	2,775	3,280	3,933	3,525	2,982	2,637	2,540	2,737	3,137	3,490	4,228
Natural sciences	2,010	2,342	2,802	3,432	2,955	2,359	2,002	1,822	1,935	2,176	2,308	2,693
Agricultural sciences	19	9	10	9	18	12	10	21	20	24	24	28
Biological sciences	109	94	93	143	148	204	224	257	319	337	340	457
Earth, atmospheric, and ocean sciences	1	0	0	1	0	0	1	0	0	6	1	4
Atmospheric sciences	0	0	0	0	0	0	0	0	0	0	0	0
Earth sciences	1	0	0	1	0	0	1	0	0	5	1	4
Oceanography	0	0	0	0	0	0	0	0	0	1	0	0
Mathematics/computer sciences	1,736	2,158	2,613	3,174	2,599	1,968	1,559	1,290	1,323	1,527	1,659	1,810
Computer sciences	1,646	2,052	2,522	3,072	2,499	1,871	1,474	1,212	1,205	1,397	1,521	1,584
Mathematics	90	106	91	102	100	97	85	78	118	130	138	226
Physical sciences	145	81	86	105	190	175	208	254	273	282	284	394
Astronomy	0	0	0	0	1	0	0	0	0	1	0	0
Chemistry	51	29	15	35	43	45	45	80	89	97	89	105
Physics	15	9	18	17	26	21	20	16	19	17	18	21
Other physical sciences	79	43	53	53	120	109	143	158	165	167	177	268
Social/behavioral sciences	479	433	478	501	570	623	635	718	802	961	1,182	1,535
Psychology	51	54	51	75	76	74	79	92	113	159	227	192
Social sciences	428	379	427	426	494	549	556	626	689	802	955	1,343
Anthropology	1	5	0	4	2	9	1	12	6	12	7	16
Area/ethnic studies	3	6	2	3	1	11	3	6	2	10	6	4
Economics	41	32	36	29	27	47	41	35	38	60	49	39
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	1	0	2	0	0	0	0
Political science/public administration	89	71	68	51	100	94	94	64	65	70	80	104
Sociology	24	12	12	18	26	31	28	46	33	54	40	64
Other social sciences	270	253	309	321	338	356	389	461	545	596	773	1,116
Non-S&E	24,664	25,012	26,941	27,522	28,214	29,369	31,031	32,908	33,877	35,305	37,766	38,773
Engineering technologies	2,200	2,120	2,192	2,375	1,687	1,255	1,055	1,125	1,230	1,204	1,291	1,109

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Black or African American												
All fields	58,408	61,658	64,745	72,051	76,930	81,825	84,527	85,944	89,074	94,440	105,503	119,153
S&E	4,629	5,328	6,120	8,198	7,727	6,891	6,499	5,890	6,064	6,597	7,816	9,541
Engineering	131	117	134	217	289	288	215	190	227	169	165	183
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	0	0	0	0	14	0	0	0	0	0	1	1
Civil	5	3	3	2	8	9	3	5	2	7	3	4
Electrical	27	30	32	121	161	146	97	79	96	32	16	23
Industrial	1	3	3	3	2	2	2	3	3	5	0	3
Materials	0	0	1	1	0	0	0	0	1	0	0	0
Mechanical	0	0	1	0	0	0	1	0	4	2	3	1
Other	98	81	94	90	104	131	112	103	121	123	142	151
Science	4,498	5,211	5,986	7,981	7,438	6,603	6,284	5,700	5,837	6,428	7,651	9,358
Natural sciences	3,497	4,263	4,990	6,899	6,272	5,384	4,956	4,367	4,507	4,667	5,221	6,017
Agricultural sciences	20	4	14	13	19	8	18	28	18	17	25	12
Biological sciences	139	131	138	145	135	142	185	207	172	183	243	272
Earth, atmospheric, and ocean sciences	0	0	1	1	0	1	4	0	2	0	1	2
Atmospheric sciences	0	0	0	0	0	0	0	0	0	0	0	0
Earth sciences	0	0	0	1	0	1	1	0	2	0	1	2
Oceanography	0	0	1	0	0	0	3	0	0	0	0	0
Mathematics/computer sciences	3,253	4,048	4,760	6,677	6,043	5,154	4,652	4,032	4,214	4,351	4,826	5,369
Computer sciences	3,215	3,998	4,733	6,636	6,007	5,119	4,617	3,988	4,171	4,316	4,778	5,278
Mathematics	38	50	27	41	36	35	35	44	43	35	48	91
Physical sciences	85	80	77	63	75	79	97	100	101	116	126	362
Astronomy	0	0	0	0	0	0	0	0	0	0	0	0
Chemistry	17	12	9	15	15	22	16	17	15	22	15	13
Physics	2	1	1	6	5	3	5	4	7	3	11	20
Other physical sciences	66	67	67	42	55	54	76	79	79	91	100	329
Social/behavioral sciences	1,001	948	996	1,082	1,166	1,219	1,328	1,333	1,330	1,761	2,430	3,341
Psychology	136	144	141	146	158	173	198	203	214	370	730	314
Social sciences	865	804	855	936	1,008	1,046	1,130	1,130	1,116	1,391	1,700	3,027
Anthropology	3	1	1	1	0	6	3	2	0	4	3	5
Area/ethnic studies	16	7	13	24	17	23	19	15	26	25	37	22
Economics	7	5	9	9	19	14	22	23	21	22	27	18
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	0	0	0	0	0	0	0
Political science/public administration	276	254	248	292	312	350	449	449	395	434	531	1,069
Sociology	55	66	73	77	100	76	67	67	64	90	79	108
Other social sciences	508	471	511	533	560	577	570	574	610	816	1,023	1,805
Non-S&E	53,779	56,330	58,625	63,853	69,203	74,934	78,028	80,054	83,010	87,843	97,687	109,612
Engineering technologies	4,040	4,143	3,860	4,364	3,864	3,454	3,167	3,168	3,295	3,575	3,889	4,319

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hispanic[a]												
All fields	57,971	61,364	62,072	67,476	72,626	78,555	80,417	84,462	89,899	96,387	110,056	123,212
S&E	4,361	5,105	5,582	6,994	6,910	6,615	6,006	6,118	6,376	7,157	8,412	9,845
Engineering	181	196	143	339	558	373	345	344	350	326	348	409
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	3	0	2	0	89	0	2	0	0	1	0	3
Civil	5	2	6	2	5	2	6	19	9	25	6	11
Electrical	48	57	14	195	320	199	171	110	124	64	51	45
Industrial	7	33	11	8	3	0	9	8	5	1	1	3
Materials	0	0	1	0	0	0	0	1	0	0	1	1
Mechanical	21	19	23	18	17	14	17	27	20	29	28	35
Other	97	85	86	116	124	158	140	179	192	206	261	311
Science	4,180	4,909	5,439	6,655	6,352	6,242	5,661	5,774	6,026	6,831	8,064	9,436
Natural sciences	2,986	3,653	4,081	5,149	4,772	4,493	3,914	3,772	3,709	3,940	4,501	4,972
Agricultural sciences	77	109	86	68	54	43	58	59	47	44	63	67
Biological sciences	186	222	189	218	208	229	279	352	377	438	522	649
Earth, atmospheric, and ocean sciences	1	3	1	1	2	5	3	3	1	4	7	3
Atmospheric sciences	0	0	0	0	0	0	0	1	0	0	0	0
Earth sciences	1	3	1	1	1	4	1	2	1	3	7	3
Oceanography	0	0	0	0	1	1	2	0	0	1	0	0
Mathematics/computer sciences	2,550	3,158	3,654	4,717	4,347	4,042	3,416	3,151	3,065	3,193	3,581	3,852
Computer sciences	2,453	3,058	3,549	4,593	4,216	3,888	3,261	2,980	2,897	2,995	3,337	3,511
Mathematics	97	100	105	124	131	154	155	171	168	198	244	341
Physical sciences	172	161	151	145	161	174	158	207	219	261	328	401
Astronomy	1	0	0	2	0	0	0	0	0	1	3	0
Chemistry	42	27	24	42	37	48	40	56	62	61	60	74
Physics	76	70	68	59	50	61	30	34	31	45	92	75
Other physical sciences	53	64	59	42	74	65	88	117	126	154	173	252
Social/behavioral sciences	1,194	1,256	1,358	1,506	1,580	1,749	1,747	2,002	2,317	2,891	3,563	4,464
Psychology	193	222	260	298	338	384	366	447	492	678	942	944
Social sciences	1,001	1,034	1,098	1,208	1,242	1,365	1,381	1,555	1,825	2,213	2,621	3,520
Anthropology	8	11	13	16	17	14	11	15	29	24	29	49
Area/ethnic studies	17	7	15	24	12	20	18	28	29	31	39	41
Economics	50	43	55	50	58	65	60	58	55	84	85	82
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	0	0	1	0	1	0	0
Political science/public administration	249	195	219	250	223	241	259	287	280	308	358	574
Sociology	63	79	92	109	124	123	123	138	167	160	207	270
Other social sciences	614	699	704	759	808	902	910	1,028	1,265	1,605	1,903	2,504
Non-S&E	53,610	56,259	56,490	60,482	65,716	71,940	74,411	78,344	83,523	89,230	101,644	113,367
Engineering technologies	4,724	4,560	4,220	4,174	4,160	3,652	3,230	3,466	3,841	3,944	4,420	4,488

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
American Indian or Alaska Native												
All fields	6,282	6,392	6,565	7,134	7,692	8,001	8,068	8,076	8,256	8,235	9,589	9,451
S&E	608	605	703	811	825	839	801	851	870	835	909	1,051
Engineering	17	18	17	24	41	38	26	34	29	20	21	42
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	0	0	0	0	9	0	0	0	0	0	0	0
Civil	2	1	1	1	4	2	0	0	1	2	0	0
Electrical	0	2	2	5	7	11	2	4	4	1	0	1
Industrial	0	0	0	2	0	2	0	0	0	2	1	2
Materials	0	0	0	0	0	0	0	0	0	0	0	0
Mechanical	0	1	0	0	0	0	0	0	1	0	1	0
Other	15	14	14	16	21	23	24	30	23	15	19	39
Science	591	587	686	787	784	801	775	817	841	815	888	1,009
Natural sciences	384	417	444	546	524	504	498	446	474	459	531	509
Agricultural sciences	74	53	55	70	65	68	72	56	64	64	125	66
Biological sciences	39	33	43	27	47	44	65	55	59	52	54	46
Earth, atmospheric, and ocean sciences	0	0	0	1	0	0	0	1	1	2	0	0
Atmospheric sciences	0	0	0	0	0	0	0	0	0	0	0	0
Earth sciences	0	0	0	0	0	0	0	1	0	2	0	0
Oceanography	0	0	0	1	0	0	0	0	1	0	0	0
Mathematics/computer sciences	258	314	329	431	388	365	335	305	313	304	315	350
Computer sciences	251	302	322	418	377	352	325	291	298	293	308	328
Mathematics	7	12	7	13	11	13	10	14	15	11	7	22
Physical sciences	13	17	17	17	24	27	26	29	37	37	37	47
Astronomy	0	0	0	0	0	1	0	0	0	0	0	0
Chemistry	1	4	4	2	2	3	6	2	3	2	2	3
Physics	0	2	0	3	0	2	1	5	3	2	0	2
Other physical sciences	12	11	13	12	22	21	19	22	31	33	35	42
Social/behavioral sciences	207	170	242	241	260	297	277	371	367	356	357	500
Psychology	38	34	32	31	36	56	41	73	67	71	95	81
Social sciences	169	136	210	210	224	241	236	298	300	285	262	419
Anthropology	1	2	0	1	0	2	3	3	1	3	3	5
Area/ethnic studies	32	23	30	48	42	30	52	67	75	78	75	86
Economics	2	1	3	2	1	1	0	2	0	1	2	2
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	0	0	0	0	0	0	0
Political science/public administration	21	5	10	22	35	34	37	48	43	40	36	74
Sociology	1	4	4	6	5	17	10	20	9	11	6	7
Other social sciences	112	101	163	131	141	157	134	158	172	152	140	245
Non-S&E	5,674	5,787	5,862	6,323	6,867	7,162	7,267	7,225	7,386	7,400	8,680	8,400
Engineering technologies	367	299	295	366	415	330	313	289	315	355	340	399

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other/unknown race or ethnicity												
All fields	17,261	20,263	23,097	28,526	35,192	36,799	40,987	43,360	49,781	52,901	60,515	77,872
S&E	1,501	1,764	2,109	3,173	3,814	3,343	3,055	2,966	3,373	4,048	5,356	8,256
Engineering	60	60	64	88	99	101	132	120	115	104	143	159
Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
Chemical	0	0	0	0	7	0	0	0	0	1	1	2
Civil	8	3	4	2	3	3	3	2	3	0	1	2
Electrical	7	5	5	23	31	25	53	20	14	8	13	13
Industrial	0	0	5	1	0	0	1	1	2	1	1	12
Materials	3	2	0	0	0	0	0	0	0	0	1	0
Mechanical	1	1	0	0	2	4	0	1	7	2	4	10
Other	41	49	50	62	56	69	75	96	89	92	122	120
Science	1,441	1,704	2,045	3,085	3,715	3,242	2,923	2,846	3,258	3,944	5,213	8,097
Natural sciences	1,050	1,378	1,704	2,716	3,243	2,777	2,396	2,217	2,576	2,684	3,172	4,952
Agricultural sciences	22	45	59	52	72	46	48	62	40	79	84	117
Biological sciences	47	32	37	72	74	83	96	114	109	164	182	296
Earth, atmospheric, and ocean sciences	3	2	1	0	2	0	5	2	3	4	0	4
Atmospheric sciences	0	0	0	0	0	0	0	0	0	0	0	1
Earth sciences	1	1	1	0	1	0	3	2	3	2	0	3
Oceanography	2	1	0	0	1	0	2	0	0	2	0	0
Mathematics/computer sciences	910	1,239	1,530	2,529	2,973	2,557	2,152	1,866	2,292	2,279	2,748	4,276
Computer sciences	882	1,214	1,494	2,494	2,934	2,520	2,116	1,800	2,227	2,227	2,662	4,077
Mathematics	28	25	36	35	39	37	36	66	65	52	86	199
Physical sciences	68	60	77	63	122	91	95	173	132	158	158	259
Astronomy	0	0	0	0	0	0	0	1	0	0	0	0
Chemistry	14	4	11	16	16	9	14	25	24	47	34	36
Physics	5	10	8	10	14	6	9	15	10	17	21	21
Other physical sciences	49	46	58	37	92	76	72	132	98	94	103	202
Social/behavioral sciences	391	326	341	369	472	465	527	629	682	1,260	2,041	3,145
Psychology	55	62	63	71	83	87	90	109	141	454	1,014	276
Social sciences	336	264	278	298	389	378	437	520	541	806	1,027	2,869
Anthropology	4	8	5	10	12	13	14	17	18	20	28	23
Area/ethnic studies	107	26	28	0	8	3	2	6	6	6	8	12
Economics	11	9	10	16	23	23	22	20	19	28	35	28
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	0	1	1	0	0	0	0
Political science/public administration	15	21	32	37	59	73	72	106	78	124	146	696
Sociology	16	13	19	21	41	33	30	24	38	37	64	69
Other social sciences	183	187	184	214	246	233	296	346	382	591	746	2,041
Non-S&E	15,760	18,499	20,988	25,353	31,378	33,456	37,932	40,394	46,408	48,853	55,159	69,616
Engineering technologies	982	971	1,506	1,952	2,035	1,283	1,193	1,093	1,311	1,639	1,759	2,828

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Temporary resident												
All fields	10,116	11,602	12,294	13,486	14,568	14,121	13,432	13,827	14,445	15,224	16,160	16,632
S&E	849	1,155	1,416	1,615	1,621	1,352	1,099	895	954	1,156	1,300	1,521
Engineering	68	97	57	81	118	122	87	93	89	149	151	184
Aerospace	0	0	0	0	0	0	1	0	0	0	0	0
Chemical	2	1	2	0	3	0	2	1	0	4	2	9
Civil	4	0	2	6	1	0	4	1	3	7	6	6
Electrical	3	38	1	4	14	9	2	7	6	15	8	10
Industrial	1	2	2	1	0	3	2	3	0	0	0	0
Materials	0	0	0	0	0	0	0	0	0	0	0	0
Mechanical	1	0	1	1	1	2	0	1	5	3	17	12
Other	57	56	49	69	99	108	76	80	75	120	118	147
Science	781	1,058	1,359	1,534	1,503	1,230	1,012	802	865	1,007	1,149	1,337
Natural sciences	630	877	1,188	1,339	1,274	1,019	831	626	672	775	846	986
Agricultural sciences	23	46	52	11	43	15	42	8	16	12	13	10
Biological sciences	27	35	30	49	57	58	64	61	83	72	108	92
Earth, atmospheric, and ocean sciences	1	4	1	0	2	0	2	4	3	0	3	2
Atmospheric sciences	0	0	0	0	0	0	0	1	0	0	0	1
Earth sciences	1	4	1	0	2	0	2	3	3	0	3	1
Oceanography	0	0	0	0	0	0	0	0	0	0	0	0
Mathematics/computer sciences	524	759	1,061	1,221	1,086	829	596	448	438	525	556	624
Computer sciences	491	717	1,025	1,175	1,039	769	542	419	393	483	495	549
Mathematics	33	42	36	46	47	60	54	29	45	42	61	75
Physical sciences	55	33	44	58	86	117	127	105	132	166	166	258
Astronomy	0	0	0	0	0	0	0	0	1	0	0	0
Chemistry	32	9	5	13	13	19	19	18	10	23	21	28
Physics	8	3	5	16	9	11	12	4	14	10	6	9
Other physical sciences	15	21	34	29	64	87	96	83	107	133	139	221
Social/behavioral sciences	151	181	171	195	229	211	181	176	193	232	303	351
Psychology	22	25	36	43	44	38	22	21	30	52	81	56
Social sciences	129	156	135	152	185	173	159	155	163	180	222	295
Anthropology	3	2	1	0	2	1	3	4	3	1	4	3
Area/ethnic studies	16	21	15	6	3	2	4	0	2	6	12	11
Economics	18	27	20	31	38	32	29	19	32	35	49	45
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	4	0	0	0	0	1	0
Political science/public administration	12	14	11	10	23	13	26	21	23	19	20	34
Sociology	4	10	6	6	21	19	15	19	18	7	9	12

Appendix table 2-22

Earned associate's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other social sciences	76	82	82	99	98	102	82	92	85	112	127	190
Non-S&E	9,267	10,447	10,878	11,871	12,947	12,769	12,333	12,932	13,491	14,068	14,860	15,111
Engineering technologies	337	838	442	460	507	357	319	297	328	277	343	288

[a] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: Racial and ethnic breakouts include U.S. citizens and permanent residents only; temporary resident includes all racial and ethnic groups. Engineering technologies are focused more on applied skills than on fundamental science and mathematics. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All citizenships, races and ethnicities												
All fields	1,254,618	1,260,308	1,308,970	1,365,694	1,417,421	1,456,401	1,502,922	1,541,704	1,580,413	1,619,028	1,668,227	1,734,229
S&E	398,602	400,435	415,983	442,755	458,658	470,214	478,858	485,772	496,168	505,435	525,374	554,365
Engineering	59,487	59,214	60,605	63,789	64,680	66,152	68,227	68,274	69,908	70,600	74,399	78,099
Aerospace	1,267	1,498	1,747	2,017	2,318	2,384	2,753	2,828	2,934	3,037	3,207	3,342
Chemical	6,219	6,088	5,946	5,545	5,185	4,889	4,857	5,081	5,504	5,894	6,692	7,535
Civil	9,571	8,949	8,891	9,367	9,400	9,800	10,663	11,318	12,243	12,787	13,482	14,840
Electrical	17,675	18,359	18,957	20,757	21,374	21,459	19,933	18,547	17,357	16,184	16,290	16,485
Industrial	3,937	3,812	3,977	3,937	3,808	3,936	3,890	3,529	3,566	3,879	4,184	4,293
Materials	972	930	933	950	865	906	1,006	1,025	1,150	1,070	1,138	1,140
Mechanical	13,091	13,139	13,353	14,029	14,342	14,880	16,163	16,911	17,685	17,643	18,858	19,470
Other	6,755	6,439	6,801	7,187	7,388	7,898	8,962	9,035	9,469	10,106	10,548	10,994
Science	339,115	341,221	355,378	378,966	393,978	404,062	410,631	417,498	426,260	434,835	450,975	476,266
Natural sciences	150,962	152,623	158,975	170,068	173,633	173,460	173,966	176,275	177,601	181,914	190,158	202,517
Agricultural sciences	18,245	17,465	17,359	17,703	17,058	17,120	17,307	17,696	18,474	19,152	20,400	22,759
Biological sciences	64,887	62,010	61,675	63,517	64,750	67,972	72,972	79,348	82,398	85,574	89,615	93,654
Earth, atmospheric, and ocean sciences	4,019	3,968	3,984	3,949	3,903	3,959	3,987	4,077	4,314	4,542	4,802	5,299
Atmospheric sciences	490	456	525	562	572	677	651	745	736	721	691	678
Earth sciences	3,359	3,334	3,234	3,252	3,170	3,146	3,231	3,193	3,453	3,679	3,931	4,410
Oceanography	170	178	225	135	161	136	105	139	125	142	180	211
Mathematics/computer sciences	49,233	55,034	61,960	70,789	73,703	69,404	63,310	58,147	54,763	54,704	56,939	61,607
Computer sciences	37,519	43,597	49,706	57,926	59,968	54,588	48,000	42,596	38,922	38,496	40,107	43,586
Mathematics	11,714	11,437	12,254	12,863	13,735	14,816	15,310	15,551	15,841	16,208	16,832	18,021
Physical sciences	14,578	14,146	13,997	14,110	14,219	15,005	16,390	17,007	17,652	17,942	18,402	19,198
Astronomy	160	240	276	271	292	331	366	332	346	335	388	364
Chemistry	10,388	9,815	9,439	9,329	9,300	9,923	10,887	11,250	11,832	12,144	12,338	12,888
Physics	3,362	3,447	3,641	3,913	4,140	4,199	4,566	4,870	4,876	4,842	5,000	5,221
Other physical sciences	668	644	641	597	487	552	571	555	598	621	676	725
Social/behavioral sciences	188,153	188,598	196,403	208,898	220,345	230,602	236,665	241,223	248,659	252,921	260,817	273,749
Psychology	74,656	74,124	77,297	79,163	82,606	86,031	88,551	90,498	92,989	94,743	97,746	101,568
Social sciences	113,497	114,474	119,106	129,735	137,739	144,571	148,114	150,725	155,670	158,178	163,071	172,181
Anthropology	7,057	6,898	7,198	7,543	7,631	7,742	8,100	8,086	8,853	9,153	9,566	10,022
Area/ethnic studies	5,614	5,557	5,835	5,745	6,244	6,612	6,975	7,120	7,323	7,598	7,364	7,817
Economics	19,400	20,371	21,823	23,866	24,927	25,160	24,707	24,825	26,281	27,628	29,090	30,013
History of science	92	101	103	103	140	117	113	114	103	100	110	138
Linguistics	716	757	847	914	1,047	1,053	1,201	1,340	1,505	1,478	1,682	1,808
Political science/public administration	36,384	36,650	38,565	43,796	47,509	51,540	53,589	54,598	55,889	55,319	57,649	59,752
Sociology	25,685	25,357	25,296	26,200	27,020	28,556	28,541	29,050	28,908	28,836	29,000	29,614
Other social sciences	18,549	18,783	19,439	21,568	23,221	23,791	24,888	25,592	26,808	28,066	28,610	33,017
Non-S&E	856,016	859,873	892,987	922,939	958,763	986,187	1,024,064	1,055,932	1,084,245	1,113,593	1,142,853	1,179,864
Engineering technologies	15,410	15,366	15,637	15,591	15,341	15,649	15,327	15,894	16,164	16,454	16,843	17,790

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
U.S. citizen or permanent resident												
All fields	1,215,514	1,220,465	1,267,462	1,322,430	1,372,577	1,411,002	1,456,517	1,495,740	1,536,007	1,573,094	1,620,629	1,681,535
S&E	383,407	384,714	399,639	424,857	439,833	451,655	460,604	468,379	479,642	488,380	507,143	533,567
Engineering	54,955	54,795	56,339	59,512	60,130	61,412	63,516	63,885	65,728	66,529	69,897	72,848
Aerospace	1,146	1,350	1,625	1,857	2,144	2,213	2,606	2,653	2,783	2,859	2,990	3,097
Chemical	5,774	5,664	5,499	5,186	4,817	4,478	4,421	4,651	5,040	5,376	6,100	6,771
Civil	9,113	8,537	8,520	9,018	9,085	9,473	10,321	10,992	11,870	12,419	12,987	14,281
Electrical	15,839	16,517	17,089	18,703	19,098	19,138	17,757	16,668	15,768	14,759	14,871	14,786
Industrial	3,456	3,337	3,535	3,535	3,427	3,541	3,462	3,154	3,160	3,510	3,751	3,847
Materials	935	888	904	919	836	866	960	976	1,105	1,006	1,076	1,070
Mechanical	12,302	12,395	12,670	13,433	13,728	14,233	15,513	16,198	16,971	16,928	18,057	18,590
Other	6,390	6,107	6,497	6,861	6,995	7,470	8,476	8,593	9,031	9,672	10,065	10,406
Science	328,452	329,919	343,300	365,345	379,703	390,243	397,088	404,494	413,914	421,851	437,246	460,719
Natural sciences	145,371	146,503	152,293	162,204	165,350	165,719	166,833	169,717	171,634	175,706	183,534	195,008
Agricultural sciences	17,987	17,217	17,097	17,433	16,807	16,846	17,041	17,414	18,246	18,909	20,111	22,417
Biological sciences	63,511	60,574	60,220	61,979	63,099	66,005	70,853	77,015	80,068	83,145	87,060	90,873
Earth, atmospheric, and ocean sciences	3,973	3,919	3,925	3,892	3,853	3,879	3,911	4,019	4,244	4,460	4,698	5,177
Atmospheric sciences	482	454	519	554	569	667	646	736	731	713	685	673
Earth sciences	3,326	3,288	3,185	3,204	3,125	3,081	3,166	3,146	3,389	3,605	3,835	4,293
Oceanography	165	177	221	134	159	131	99	137	124	142	178	211
Mathematics/computer sciences	45,854	51,203	57,597	65,313	67,963	64,652	59,402	55,004	52,197	52,046	54,064	58,223
Computer sciences	34,619	40,192	45,797	53,072	54,908	50,597	44,901	40,163	37,118	36,677	38,240	41,558
Mathematics	11,235	11,011	11,800	12,241	13,055	14,055	14,501	14,841	15,079	15,369	15,824	16,665
Physical sciences	14,046	13,590	13,454	13,587	13,628	14,337	15,626	16,265	16,879	17,146	17,601	18,318
Astronomy	156	227	260	256	282	311	353	319	330	322	375	348
Chemistry	10,044	9,480	9,097	9,003	8,950	9,526	10,421	10,799	11,364	11,615	11,791	12,315
Physics	3,202	3,267	3,475	3,745	3,951	3,999	4,323	4,647	4,647	4,633	4,793	4,966
Other physical sciences	644	616	622	583	445	501	529	500	538	576	642	689
Social/behavioral sciences	183,081	183,416	191,007	203,141	214,353	224,524	230,255	234,777	242,280	246,145	253,712	265,711
Psychology	73,392	72,841	75,928	77,769	81,131	84,528	86,971	88,939	91,515	93,135	96,052	99,892
Social sciences	109,689	110,575	115,079	125,372	133,222	139,996	143,284	145,838	150,765	153,010	157,660	165,819
Anthropology	6,941	6,778	7,084	7,449	7,525	7,627	7,977	7,976	8,729	9,053	9,448	9,924
Area/ethnic studies	5,436	5,393	5,677	5,585	6,080	6,449	6,800	6,921	7,152	7,363	7,167	7,607
Economics	17,709	18,548	19,920	21,820	22,758	22,961	22,571	22,691	24,083	25,247	26,372	26,690
History of science	91	98	101	100	140	116	110	110	102	99	109	137
Linguistics	633	680	766	834	973	976	1,127	1,281	1,420	1,400	1,607	1,723
Political science/public administration	35,232	35,501	37,398	42,510	46,202	50,271	52,110	53,181	54,437	53,858	56,176	58,051
Sociology	25,386	25,099	25,001	25,851	26,693	28,227	28,151	28,652	28,543	28,480	28,633	29,243
Other social sciences	18,261	18,478	19,132	21,223	22,851	23,369	24,438	25,026	26,299	27,510	28,148	32,444
Non-S&E	832,107	835,751	867,823	897,573	932,744	959,347	995,913	1,027,361	1,056,365	1,084,714	1,113,486	1,147,968
Engineering technologies	14,967	14,823	15,171	15,132	14,825	15,161	14,949	15,515	15,793	16,009	16,415	17,340

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
White												
All fields	896,511	890,089	914,692	943,779	967,924	987,957	1,011,497	1,032,791	1,051,236	1,069,016	1,082,145	1,102,792
S&E	270,341	267,866	276,403	290,875	297,708	303,321	308,888	312,763	316,982	320,081	326,643	338,461
Engineering	39,025	38,723	39,693	41,820	41,838	42,191	43,526	43,980	45,383	45,647	47,977	49,401
Aerospace	899	1,058	1,279	1,447	1,629	1,723	2,005	2,017	2,088	2,113	2,155	2,257
Chemical	4,062	4,061	3,976	3,746	3,483	3,203	3,086	3,210	3,453	3,706	4,169	4,699
Civil	6,984	6,615	6,624	7,032	7,012	7,196	7,768	8,130	8,750	8,871	9,243	9,982
Electrical	9,717	9,875	9,968	10,971	10,939	10,868	10,026	9,620	9,207	8,588	8,904	8,635
Industrial	2,385	2,323	2,429	2,388	2,353	2,353	2,312	2,107	2,148	2,346	2,501	2,482
Materials	741	708	712	701	614	633	671	711	802	710	778	776
Mechanical	9,450	9,520	9,852	10,501	10,730	10,933	11,833	12,266	12,692	12,753	13,420	13,568
Other	4,787	4,563	4,853	5,034	5,078	5,282	5,825	5,919	6,243	6,560	6,807	7,002
Science	231,316	229,143	236,710	249,055	255,870	261,130	265,362	268,783	271,599	274,434	278,666	289,060
Natural sciences	103,331	102,252	105,511	110,194	110,989	111,642	112,658	114,851	114,545	116,594	120,168	126,538
Agricultural sciences	15,655	14,948	14,728	14,935	14,368	14,353	14,388	14,523	15,004	15,476	16,291	17,967
Biological sciences	43,903	41,261	41,212	41,893	42,443	43,759	46,495	49,771	50,367	51,756	53,192	55,171
Earth, atmospheric, and ocean sciences	3,536	3,436	3,450	3,442	3,338	3,366	3,360	3,474	3,565	3,718	3,879	4,256
Atmospheric sciences	437	395	467	493	508	597	575	662	639	610	586	575
Earth sciences	2,959	2,888	2,806	2,837	2,691	2,663	2,703	2,692	2,822	2,996	3,149	3,509
Oceanography	140	153	177	112	139	106	82	120	104	112	144	172
Mathematics/computer sciences	30,141	32,808	36,434	39,998	41,024	39,886	37,400	35,764	34,064	33,934	34,875	36,921
Computer sciences	21,759	24,649	27,696	31,040	31,400	29,742	26,948	25,033	23,189	23,021	23,702	25,293
Mathematics	8,382	8,159	8,738	8,958	9,624	10,144	10,452	10,731	10,875	10,913	11,173	11,628
Physical sciences	10,096	9,799	9,687	9,926	9,816	10,278	11,015	11,319	11,545	11,710	11,931	12,223
Astronomy	131	185	204	212	220	234	269	248	251	233	260	272
Chemistry	6,900	6,500	6,260	6,280	6,149	6,586	7,023	7,135	7,322	7,463	7,560	7,821
Physics	2,543	2,617	2,736	2,963	3,115	3,092	3,333	3,545	3,572	3,599	3,636	3,734
Other physical sciences	522	497	487	471	332	366	390	391	400	415	475	396
Social/behavioral sciences	127,985	126,891	131,199	138,861	144,881	149,488	152,704	153,932	157,054	157,840	158,498	162,522
Psychology	52,400	51,545	53,318	54,711	56,576	58,089	59,416	59,761	60,763	60,729	60,764	62,207
Social sciences	75,585	75,346	77,881	84,150	88,305	91,399	93,288	94,171	96,291	97,111	97,734	100,315
Anthropology	5,378	5,222	5,380	5,593	5,498	5,586	5,784	5,652	6,134	6,388	6,488	6,658
Area/ethnic studies	2,940	2,937	3,069	2,948	3,180	3,240	3,374	3,456	3,611	3,687	3,571	3,512
Economics	12,102	12,414	13,371	14,299	14,656	14,720	14,427	14,496	15,501	16,205	16,386	16,466
History of science	58	57	60	68	100	86	83	73	69	61	69	93
Linguistics	439	499	571	598	652	637	771	858	955	909	1,033	1,107
Political science/public administration	24,931	24,961	26,150	29,565	31,756	33,891	35,058	35,634	35,932	35,254	35,946	36,325
Sociology	16,561	16,099	15,817	16,283	16,677	17,231	16,963	16,985	16,556	16,413	15,802	15,676
Other social sciences	13,176	13,157	13,463	14,796	15,786	16,008	16,828	17,017	17,533	18,194	18,439	20,478
Non-S&E	626,170	622,223	638,289	652,904	670,216	684,636	702,609	720,028	734,254	748,935	755,502	764,331
Engineering technologies	10,916	10,760	10,925	10,744	10,453	10,634	10,605	11,209	11,260	11,560	11,739	12,153

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Asian or Pacific Islander												
All fields	75,384	75,741	79,482	83,498	86,743	91,482	96,315	99,011	102,301	105,246	109,022	113,214
S&E	35,556	36,468	37,518	39,944	41,403	43,312	44,475	45,516	47,323	48,348	50,367	52,379
Engineering	6,850	7,025	7,120	7,413	7,628	8,211	8,551	8,466	8,343	8,266	8,405	8,775
Aerospace	98	103	128	145	186	184	223	250	278	294	309	328
Chemical	788	702	636	563	527	486	558	652	690	739	888	903
Civil	642	521	482	500	493	585	770	908	985	1,111	1,083	1,263
Electrical	3,143	3,522	3,773	3,967	4,086	4,293	3,840	3,353	2,994	2,561	2,415	2,478
Industrial	332	319	356	386	376	352	362	333	315	360	343	390
Materials	91	88	85	91	95	101	166	153	140	137	157	147
Mechanical	1,002	998	892	939	928	1,082	1,249	1,413	1,491	1,489	1,543	1,595
Other	754	772	768	822	937	1,128	1,383	1,404	1,450	1,575	1,667	1,671
Science	28,706	29,443	30,398	32,531	33,775	35,101	35,924	37,050	38,980	40,082	41,962	43,604
Natural sciences	16,342	16,633	17,196	18,499	18,433	18,455	18,459	19,106	20,231	20,957	22,078	23,389
Agricultural sciences	454	399	411	459	415	448	542	606	632	731	831	936
Biological sciences	8,025	7,493	7,209	7,398	7,792	8,835	10,088	11,572	12,866	13,578	14,327	14,716
Earth, atmospheric, and ocean sciences	97	86	85	73	85	86	92	106	121	143	158	156
Atmospheric sciences	14	14	8	9	11	15	12	17	13	14	15	11
Earth sciences	77	64	65	58	65	69	75	82	104	119	133	137
Oceanography	6	8	12	6	9	2	5	7	4	10	10	8
Mathematics/computer sciences	6,304	7,311	8,274	9,426	8,912	7,770	6,119	5,020	4,645	4,459	4,645	5,382
Computer sciences	5,415	6,395	7,273	8,273	7,668	6,351	4,672	3,581	3,133	2,894	3,015	3,540
Mathematics	889	916	1,001	1,153	1,244	1,419	1,447	1,439	1,512	1,565	1,630	1,842
Physical sciences	1,462	1,344	1,217	1,143	1,229	1,316	1,618	1,802	1,967	2,046	2,117	2,199
Astronomy	9	12	24	16	18	21	37	16	21	27	36	20
Chemistry	1,208	1,126	978	893	960	1,024	1,267	1,420	1,596	1,671	1,726	1,796
Physics	218	184	184	204	223	236	281	327	307	306	310	347
Other physical sciences	27	22	31	30	28	35	33	39	43	42	45	36
Social/behavioral sciences	12,364	12,810	13,202	14,032	15,342	16,646	17,465	17,944	18,749	19,125	19,884	20,215
Psychology	4,188	4,150	4,241	4,064	4,350	4,797	5,305	5,615	5,931	6,042	6,231	6,413
Social sciences	8,176	8,660	8,961	9,968	10,992	11,849	12,160	12,329	12,818	13,083	13,653	13,802
Anthropology	340	332	377	396	398	424	496	534	581	599	678	682
Area/ethnic studies	737	714	686	671	758	875	879	899	880	932	895	847
Economics	2,774	3,082	3,235	3,708	4,007	4,003	3,913	3,874	3,976	4,218	4,645	4,489
History of science	12	15	20	16	14	11	9	8	11	13	8	13
Linguistics	72	69	73	83	105	112	112	136	156	152	187	196
Political science/public administration	2,073	2,228	2,325	2,648	2,903	3,267	3,488	3,539	3,653	3,551	3,640	3,848
Sociology	1,324	1,300	1,325	1,372	1,596	1,853	1,907	1,908	1,994	1,950	1,992	1,907
Other social sciences	844	920	920	1,074	1,211	1,304	1,356	1,431	1,567	1,668	1,608	1,820
Non-S&E	39,828	39,273	41,964	43,554	45,340	48,170	51,840	53,495	54,978	56,898	58,655	60,835
Engineering technologies	770	731	769	703	680	754	661	669	657	594	622	683

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Black or African American												
All fields	104,341	106,966	111,330	117,902	123,636	127,978	133,743	137,566	142,576	145,988	152,404	161,005
S&E	32,993	33,386	34,899	36,961	38,737	39,846	40,108	40,401	41,263	41,822	43,428	46,341
Engineering	3,069	2,892	2,982	3,092	3,227	3,206	3,209	3,164	3,101	3,096	3,082	3,097
Aerospace	40	39	43	65	70	71	85	72	84	90	101	88
Chemical	383	373	346	317	303	273	231	244	256	256	255	288
Civil	403	329	317	292	320	342	324	403	420	441	483	510
Electrical	1,055	1,089	1,103	1,301	1,408	1,331	1,277	1,207	1,135	1,120	1,035	980
Industrial	256	238	256	275	251	297	273	252	229	230	262	245
Materials	24	27	32	22	22	19	28	22	31	30	27	29
Mechanical	594	515	561	471	504	537	569	570	560	539	550	585
Other	314	282	324	349	349	336	422	394	386	390	369	372
Science	29,924	30,494	31,917	33,869	35,510	36,640	36,899	37,237	38,162	38,726	40,346	43,244
Natural sciences	10,796	11,359	12,066	13,191	13,554	13,199	13,071	12,880	12,540	12,694	13,114	13,721
Agricultural sciences	450	428	454	452	450	444	485	481	557	510	595	575
Biological sciences	4,738	4,693	4,632	4,878	5,039	5,052	5,366	5,857	6,003	6,253	6,434	6,677
Earth, atmospheric, and ocean sciences	51	56	62	60	65	68	58	79	89	88	97	105
Atmospheric sciences	10	2	10	12	20	8	14	15	21	20	23	23
Earth sciences	40	52	42	43	43	54	43	61	65	65	71	76
Oceanography	1	2	10	5	2	6	1	3	3	3	3	6
Mathematics/computer sciences	4,467	5,186	5,900	6,873	7,042	6,670	6,122	5,420	4,807	4,710	4,900	5,239
Computer sciences	3,563	4,378	5,057	6,083	6,259	5,815	5,275	4,588	4,011	3,868	4,066	4,418
Mathematics	904	808	843	790	783	855	847	832	796	842	834	821
Physical sciences	1,090	996	1,018	928	958	965	1,040	1,043	1,084	1,133	1,088	1,125
Astronomy	1	2	3	1	3	4	9	3	6	5	7	5
Chemistry	888	827	796	744	756	760	827	852	910	935	893	918
Physics	152	133	182	147	166	166	171	163	144	149	143	149
Other physical sciences	49	34	37	36	33	35	33	25	24	44	45	53
Social/behavioral sciences	19,128	19,135	19,851	20,678	21,956	23,441	23,828	24,357	25,622	26,032	27,232	29,523
Psychology	7,572	7,561	7,748	8,014	8,485	9,141	9,097	9,729	10,271	10,541	11,066	11,643
Social sciences	11,556	11,574	12,103	12,664	13,471	14,300	14,731	14,628	15,351	15,491	16,166	17,880
Anthropology	268	242	253	258	338	320	337	358	408	435	447	495
Area/ethnic studies	738	691	784	749	805	905	1,011	926	1,012	992	927	1,211
Economics	1,044	1,089	1,221	1,326	1,409	1,377	1,379	1,289	1,380	1,346	1,441	1,414
History of science	6	6	4	6	8	5	4	12	7	8	9	7
Linguistics	14	24	25	17	32	33	44	44	57	50	44	60
Political science/public administration	3,601	3,556	3,737	4,059	4,452	4,866	5,099	4,955	5,119	5,188	5,536	5,844
Sociology	4,097	4,200	4,167	4,214	4,220	4,539	4,627	4,721	4,842	4,761	4,879	5,271
Other social sciences	1,788	1,766	1,912	2,035	2,207	2,255	2,230	2,323	2,526	2,711	2,883	3,578
Non-S&E	71,348	73,580	76,431	80,941	84,899	88,132	93,635	97,165	101,313	104,166	108,976	114,664
Engineering technologies	1,466	1,427	1,467	1,557	1,592	1,599	1,574	1,463	1,467	1,442	1,531	1,650

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hispanic[a]												
All fields	88,445	90,232	95,492	101,030	106,388	111,616	118,057	124,787	131,695	137,746	147,205	159,936
S&E	27,980	28,361	29,935	32,533	33,748	35,662	37,049	38,546	40,877	43,018	46,336	51,421
Engineering	4,075	4,015	4,136	4,358	4,483	4,628	4,928	4,962	5,234	5,577	5,948	6,317
Aerospace	67	92	97	110	121	139	153	172	172	194	232	217
Chemical	380	341	353	320	313	333	345	326	375	405	446	478
Civil	762	742	761	798	836	888	952	1,006	1,079	1,269	1,338	1,428
Electrical	1,283	1,301	1,411	1,428	1,564	1,535	1,563	1,521	1,467	1,484	1,404	1,548
Industrial	391	356	372	365	332	364	391	337	326	428	431	463
Materials	38	34	33	50	52	59	58	40	58	48	57	50
Mechanical	846	880	819	950	935	962	1,050	1,147	1,301	1,183	1,449	1,516
Other	308	269	290	337	330	348	416	413	456	566	591	617
Science	23,905	24,346	25,799	28,175	29,265	31,034	32,121	33,584	35,643	37,441	40,388	45,104
Natural sciences	8,842	9,202	9,476	10,767	10,736	10,968	11,099	11,312	12,153	12,720	13,659	15,231
Agricultural sciences	635	607	662	686	673	710	651	776	997	969	999	1,236
Biological sciences	4,446	4,547	4,367	4,840	4,611	4,819	5,084	5,453	5,995	6,384	7,124	7,761
Earth, atmospheric, and ocean sciences	125	157	136	119	131	151	143	135	192	221	246	265
Atmospheric sciences	9	15	10	10	13	20	20	18	30	42	31	29
Earth sciences	105	130	109	103	112	121	120	113	155	172	200	223
Oceanography	11	12	17	6	6	10	3	4	7	7	15	13
Mathematics/computer sciences	2,753	3,021	3,448	4,261	4,436	4,350	4,232	3,916	3,847	3,977	4,129	4,691
Computer sciences	2,154	2,396	2,776	3,590	3,758	3,529	3,351	2,970	2,923	2,999	3,124	3,539
Mathematics	599	625	672	671	678	821	881	946	924	978	1,005	1,152
Physical sciences	883	870	863	861	885	938	989	1,032	1,122	1,169	1,161	1,278
Astronomy	7	16	10	12	23	17	12	18	30	21	33	26
Chemistry	719	669	666	669	651	704	739	748	830	879	841	940
Physics	125	151	156	164	187	183	206	246	229	235	258	276
Other physical sciences	32	34	31	16	24	34	32	20	33	34	29	36
Social/behavioral sciences	15,063	15,144	16,323	17,408	18,529	20,066	21,022	22,272	23,490	24,721	26,729	29,873
Psychology	6,127	6,178	6,695	6,828	7,285	7,708	8,236	8,506	8,885	9,615	10,412	11,667
Social sciences	8,936	8,966	9,628	10,580	11,244	12,358	12,786	13,766	14,605	15,106	16,317	18,206
Anthropology	462	465	494	533	568	578	607	636	723	775	873	1,056
Area/ethnic studies	659	648	688	717	756	827	926	971	972	1,007	1,021	1,185
Economics	976	1,030	1,068	1,188	1,290	1,352	1,423	1,510	1,540	1,616	1,836	1,835
History of science	3	5	7	4	7	6	5	5	2	3	5	13
Linguistics	42	45	39	48	71	68	80	101	120	121	141	165
Political science/public administration	2,973	2,925	3,135	3,586	3,872	4,583	4,531	5,105	5,382	5,496	5,768	6,422
Sociology	2,317	2,291	2,440	2,555	2,665	2,874	2,969	3,150	3,283	3,398	3,746	4,065
Other social sciences	1,504	1,557	1,757	1,949	2,015	2,070	2,245	2,288	2,583	2,690	2,927	3,465
Non-S&E	60,465	61,871	65,557	68,497	72,640	75,954	81,008	86,241	90,818	94,728	100,869	108,515
Engineering technologies	1,123	1,146	1,187	1,290	1,215	1,210	1,098	1,148	1,315	1,242	1,353	1,502

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
American Indian or Alaska Native												
All fields	8,414	8,683	8,744	9,314	10,021	9,704	10,281	10,751	10,768	11,407	11,485	11,126
S&E	2,607	2,800	2,649	2,909	3,264	3,209	3,341	3,319	3,392	3,564	3,624	3,445
Engineering	326	256	308	320	333	349	353	305	344	347	366	322
Aerospace	7	8	17	10	23	16	14	9	16	19	20	16
Chemical	42	31	33	34	29	30	27	25	36	30	37	29
Civil	83	65	67	67	64	73	73	75	63	75	77	89
Electrical	81	56	70	99	88	84	69	61	81	72	76	55
Industrial	23	17	21	12	15	27	17	14	23	18	21	10
Materials	5	4	6	3	6	5	8	5	7	5	1	3
Mechanical	52	51	61	58	73	72	91	71	81	88	87	84
Other	33	24	33	37	35	42	54	45	37	40	47	36
Science	2,281	2,544	2,341	2,589	2,931	2,860	2,988	3,014	3,048	3,217	3,258	3,123
Natural sciences	917	1,080	967	1,002	1,216	1,145	1,141	1,151	1,109	1,231	1,201	1,171
Agricultural sciences	190	215	158	163	188	161	186	165	172	207	175	182
Biological sciences	379	431	410	378	417	499	479	531	508	577	550	546
Earth, atmospheric, and ocean sciences	43	35	26	24	31	25	36	26	28	29	44	31
Atmospheric sciences	4	5	1	4	1	1	1	4	2	4	4	2
Earth sciences	35	29	23	18	30	23	35	21	26	24	39	29
Oceanography	4	1	2	2	0	1	0	1	0	1	1	0
Mathematics/computer sciences	240	326	290	343	504	357	338	312	294	284	324	310
Computer sciences	172	275	233	278	445	281	274	249	221	213	248	226
Mathematics	68	51	57	65	59	76	64	63	73	71	76	84
Physical sciences	65	73	83	94	76	103	102	117	107	134	108	102
Astronomy	2	2	2	4	1	3	1	1	1	2	3	1
Chemistry	49	47	57	71	50	65	73	90	80	94	66	68
Physics	12	19	21	17	20	33	24	22	22	32	35	31
Other physical sciences	2	5	3	2	5	2	4	4	4	6	4	2
Social/behavioral sciences	1,364	1,464	1,374	1,587	1,715	1,715	1,847	1,863	1,939	1,986	2,057	1,952
Psychology	518	561	542	545	597	555	597	612	637	632	748	651
Social sciences	846	903	832	1,042	1,118	1,160	1,250	1,251	1,302	1,354	1,309	1,301
Anthropology	89	93	85	111	103	98	114	116	106	134	107	102
Area/ethnic studies	80	106	121	128	145	134	127	170	166	176	157	186
Economics	71	68	65	95	108	95	104	103	104	128	112	114
History of science	1	0	0	0	0	0	0	0	1	1	0	0
Linguistics	10	2	2	9	4	12	7	11	9	12	10	16
Political science/public administration	230	234	241	288	354	345	397	368	404	375	416	387
Sociology	220	225	184	244	228	259	271	249	268	299	267	228
Other social sciences	145	175	134	167	176	217	230	234	244	229	240	268
Non-S&E	5,807	5,883	6,095	6,405	6,757	6,495	6,940	7,432	7,376	7,843	7,861	7,681
Engineering technologies	110	129	102	126	195	96	132	138	112	142	132	152

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other/unknown race or ethnicity												
All fields	42,419	48,754	57,722	66,907	77,865	82,265	86,624	90,834	97,431	103,691	118,368	133,462
S&E	13,930	15,833	18,235	21,635	24,973	26,305	26,743	27,834	29,805	31,547	36,745	41,520
Engineering	1,610	1,884	2,100	2,509	2,621	2,827	2,949	3,008	3,323	3,596	4,119	4,936
Aerospace	35	50	61	80	115	80	126	133	145	149	173	191
Chemical	119	156	155	206	162	153	174	194	230	240	305	374
Civil	239	265	269	329	360	389	434	470	573	652	763	1,009
Electrical	560	674	764	937	1,013	1,027	982	906	884	934	1,037	1,090
Industrial	69	84	101	109	100	148	107	111	119	128	193	257
Materials	36	27	36	52	47	49	29	45	67	76	56	65
Mechanical	358	431	485	514	558	647	721	731	846	876	1,008	1,242
Other	194	197	229	282	266	334	376	418	459	541	584	708
Science	12,320	13,949	16,135	19,126	22,352	23,478	23,794	24,826	26,482	27,951	32,626	36,584
Natural sciences	5,143	5,977	7,077	8,551	10,422	10,310	10,405	10,417	11,056	11,510	13,314	14,958
Agricultural sciences	603	620	684	738	713	730	789	863	884	1,016	1,220	1,521
Biological sciences	2,020	2,149	2,390	2,592	2,797	3,041	3,341	3,831	4,329	4,597	5,433	6,002
Earth, atmospheric, and ocean sciences	121	149	166	174	203	183	222	199	249	261	274	364
Atmospheric sciences	8	23	23	26	16	26	24	20	26	23	26	33
Earth sciences	110	125	140	145	184	151	190	177	217	229	243	319
Oceanography	3	1	3	3	3	6	8	2	6	9	5	12
Mathematics/computer sciences	1,949	2,551	3,251	4,412	6,045	5,619	5,191	4,572	4,540	4,682	5,191	5,680
Computer sciences	1,556	2,099	2,762	3,808	5,378	4,879	4,381	3,742	3,641	3,682	4,085	4,542
Mathematics	393	452	489	604	667	740	810	830	899	1,000	1,106	1,138
Physical sciences	450	508	586	635	664	737	862	952	1,054	954	1,196	1,391
Astronomy	6	10	17	11	17	32	25	33	21	34	36	24
Chemistry	280	311	340	346	384	387	492	554	626	573	705	772
Physics	152	163	196	250	240	289	308	344	373	312	411	429
Other physical sciences	12	24	33	28	23	29	37	21	34	35	44	166
Social/behavioral sciences	7,177	7,972	9,058	10,575	11,930	13,168	13,389	14,409	15,426	16,441	19,312	21,626
Psychology	2,587	2,846	3,384	3,607	3,838	4,238	4,320	4,716	5,028	5,576	6,831	7,311
Social sciences	4,590	5,126	5,674	6,968	8,092	8,930	9,069	9,693	10,398	10,865	12,481	14,315
Anthropology	404	424	495	558	620	621	639	680	777	722	855	931
Area/ethnic studies	282	297	329	372	436	468	483	499	511	569	596	666
Economics	742	865	960	1,204	1,288	1,414	1,325	1,419	1,582	1,734	1,952	2,372
History of science	11	15	10	6	11	8	9	12	12	13	18	11
Linguistics	56	41	56	79	109	114	113	131	123	156	192	179
Political science/public administration	1,424	1,597	1,810	2,364	2,865	3,319	3,537	3,580	3,947	3,994	4,870	5,225
Sociology	867	984	1,068	1,183	1,307	1,471	1,414	1,639	1,600	1,659	1,947	2,096
Other social sciences	804	903	946	1,202	1,456	1,515	1,549	1,733	1,846	2,018	2,051	2,835
Non-S&E	28,489	32,921	39,487	45,272	52,892	55,960	59,881	63,000	67,626	72,144	81,623	91,942
Engineering technologies	582	630	721	712	690	868	879	888	982	1,029	1,038	1,200

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Temporary resident												
All fields	39,104	39,843	41,508	43,264	44,844	45,399	46,405	45,964	44,406	45,934	47,598	52,694
S&E	15,195	15,721	16,344	17,898	18,825	18,559	18,254	17,393	16,526	17,055	18,231	20,798
Engineering	4,532	4,419	4,266	4,277	4,550	4,740	4,711	4,389	4,180	4,071	4,502	5,251
Aerospace	121	148	122	160	174	171	147	175	151	178	217	245
Chemical	445	424	447	359	368	411	436	430	464	518	592	764
Civil	458	412	371	349	315	327	342	326	373	368	495	559
Electrical	1,836	1,842	1,868	2,054	2,276	2,321	2,176	1,879	1,589	1,425	1,419	1,699
Industrial	481	475	442	402	381	395	428	375	406	369	433	446
Materials	37	42	29	31	29	40	46	49	45	64	62	70
Mechanical	789	744	683	596	614	647	650	713	714	715	801	880
Other	365	332	304	326	393	428	486	442	438	434	483	588
Science	10,663	11,302	12,078	13,621	14,275	13,819	13,543	13,004	12,346	12,984	13,729	15,547
Natural sciences	5,591	6,120	6,682	7,864	8,283	7,741	7,133	6,558	5,967	6,208	6,624	7,509
Agricultural sciences	258	248	262	270	251	274	266	282	228	243	289	342
Biological sciences	1,376	1,436	1,455	1,538	1,651	1,967	2,119	2,333	2,330	2,429	2,555	2,781
Earth, atmospheric, and ocean sciences	46	49	59	57	50	80	76	58	70	82	104	122
Atmospheric sciences	8	2	6	8	3	10	5	9	5	8	6	5
Earth sciences	33	46	49	48	45	65	65	47	64	74	96	117
Oceanography	5	1	4	1	2	5	6	2	1	0	2	0
Mathematics/computer sciences	3,379	3,831	4,363	5,476	5,740	4,752	3,908	3,143	2,566	2,658	2,875	3,384
Computer sciences	2,900	3,405	3,909	4,854	5,060	3,991	3,099	2,433	1,804	1,819	1,867	2,028
Mathematics	479	426	454	622	680	761	809	710	762	839	1,008	1,356
Physical sciences	532	556	543	523	591	668	764	742	773	796	801	880
Astronomy	4	13	16	15	10	20	13	13	16	13	13	16
Chemistry	344	335	342	326	350	397	466	451	468	529	547	573
Physics	160	180	166	168	189	200	243	223	229	209	207	255
Other physical sciences	24	28	19	14	42	51	42	55	60	45	34	36
Social/behavioral sciences	5,072	5,182	5,396	5,757	5,992	6,078	6,410	6,446	6,379	6,776	7,105	8,038
Psychology	1,264	1,283	1,369	1,394	1,475	1,503	1,580	1,559	1,474	1,608	1,694	1,676
Social sciences	3,808	3,899	4,027	4,363	4,517	4,575	4,830	4,887	4,905	5,168	5,411	6,362
Anthropology	116	120	114	94	106	115	123	110	124	100	118	98
Area/ethnic studies	178	164	158	160	164	163	175	199	171	235	197	210
Economics	1,691	1,823	1,903	2,046	2,169	2,199	2,136	2,134	2,198	2,381	2,718	3,323
History of science	1	3	2	3	0	1	3	4	1	1	1	1
Linguistics	83	77	81	80	74	77	74	59	85	78	75	85
Political science/public administration	1,152	1,149	1,167	1,286	1,307	1,269	1,479	1,417	1,452	1,461	1,473	1,701

Appendix table 2-23

Earned bachelor's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sociology	299	258	295	349	327	329	390	398	365	356	367	371
Other social sciences	288	305	307	345	370	422	450	566	509	556	462	573
Non-S&E	23,909	24,122	25,164	25,366	26,019	26,840	28,151	28,571	27,880	28,879	29,367	31,896
Engineering technologies	443	543	466	459	516	488	378	379	371	445	428	450

[a] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: Racial and ethnic breakouts include U.S. citizens and permanent residents only; temporary resident includes all racial and ethnic groups. Engineering technologies are focused more on applied skills than on fundamental science and mathematics. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-24

S&E graduate enrollment, by sex and field: 2000–11

Sex/field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Both sexes													
S&E	493,311	509,607	540,404	567,121	574,463	582,226	597,643	607,823	604,815	613,591	611,629	611,841	608,171
Engineering	104,112	109,493	119,668	127,377	123,566	120,565	123,041	130,255	127,075	131,951	137,873	142,446	143,390
Aerospace	3,407	3,451	3,685	4,048	4,089	4,170	4,482	4,616	4,616	4,902	5,266	5,540	5,691
Chemical	7,056	6,913	7,414	7,516	7,452	7,173	7,261	7,383	7,584	7,892	8,188	8,668	8,828
Civil	16,451	16,665	17,713	18,890	18,561	18,114	17,802	19,867	16,071	16,931	18,638	19,559	19,596
Electrical	33,611	36,100	39,948	41,763	38,995	37,450	38,265	40,207	40,588	41,164	41,218	41,336	41,580
Industrial	12,119	12,940	14,033	14,313	13,852	13,650	13,829	14,290	14,474	15,692	15,825	15,205	14,494
Materials	4,377	4,721	4,992	5,131	5,059	5,160	5,268	5,365	5,314	5,539	5,863	6,274	6,649
Mechanical	15,235	15,852	17,139	18,393	17,852	17,373	17,919	18,366	18,347	19,585	21,243	22,509	21,883
Other	11,856	12,851	14,744	17,323	17,706	17,475	18,215	20,161	20,081	20,246	21,632	23,355	24,669
Science	389,199	400,114	420,736	439,744	450,897	461,661	474,602	477,568	477,740	481,640	473,756	469,395	464,781
Natural sciences	255,406	263,978	279,369	292,453	299,439	304,952	314,602	312,413	310,489	313,706	303,195	298,812	292,097
Agricultural sciences	12,023	12,235	12,698	13,197	13,445	13,123	13,016	13,222	13,528	14,153	15,200	15,656	16,129
Biological sciences[b]	56,282	57,639	61,088	64,701	66,565	68,479	69,941	71,663	73,516	74,678	75,660	77,726	79,540
Earth, atmospheric, and ocean sciences	13,941	13,841	14,240	14,620	15,131	14,836	14,920	14,675	14,100	14,389	14,839	15,655	15,820
Atmospheric sciences	963	924	1,036	1,150	1,086	1,146	1,079	1,117	1,178	1,400	1,355	1,455	1,513
Earth sciences	6,596	6,544	6,712	6,889	7,358	7,212	7,177	7,061	7,020	7,089	7,539	8,251	8,361
Oceanography	2,668	2,585	2,618	2,695	2,801	2,760	2,770	2,663	2,615	2,634	2,633	2,556	2,680
Other geosciences	3,714	3,788	3,874	3,886	3,886	3,718	3,894	3,834	3,287	3,266	3,312	3,393	3,266
Mathematics/computer sciences	63,000	68,847	73,432	73,161	69,947	68,188	68,468	70,294	69,221	70,953	73,387	74,682	75,035
Computer sciences	47,350	52,196	55,269	53,696	50,016	47,978	47,653	48,959	48,246	49,553	51,161	51,546	51,234
Mathematics/statistics	15,650	16,651	18,163	19,465	19,931	20,210	20,815	21,335	20,975	21,400	22,226	23,136	23,801
Medical/other health sciences	79,775	80,378	85,570	92,476	98,590	103,951	111,356	105,448	103,300	102,214	85,960	76,120	65,879
Medical sciences	22,815	24,012	26,841	29,440	29,762	31,223	33,437	33,137	31,876	32,311	32,508	33,862	34,348
Other health sciences[c]	56,960	56,366	58,729	63,036	68,828	72,728	77,919	72,311	71,424	69,903	53,452	42,258	31,531
Physical sciences	30,385	31,038	32,341	34,298	35,761	36,375	36,901	37,111	36,824	37,319	38,149	38,973	39,694
Astronomy	888	916	990	1,080	1,119	1,191	1,211	1,233	1,232	1,275	1,409	1,331	1,345
Chemistry	18,105	18,366	19,045	20,049	20,776	21,101	21,351	21,424	21,298	21,574	22,094	22,436	22,802
Physics	10,841	11,248	11,701	12,555	13,298	13,472	13,722	13,845	13,816	13,862	14,060	14,507	14,829
Other physical sciences	551	508	605	614	568	611	617	609	478	608	586	699	718
Social/behavioral sciences	133,793	136,136	141,367	147,291	151,458	156,709	160,000	165,155	162,767	162,375	164,004	162,639	166,147
Psychology[c]	50,466	50,454	51,152	52,162	54,126	57,282	57,653	60,284	59,617	58,991	56,184	53,419	54,486
Social sciences	83,327	85,682	90,215	95,129	97,332	99,427	102,347	104,871	103,150	103,384	107,820	109,220	111,661
Anthropology	7,626	7,491	7,481	7,789	7,826	7,750	8,150	8,099	8,129	8,333	8,359	8,528	8,406
Economics	12,827	13,569	14,196	14,634	14,513	13,932	14,290	14,454	14,586	15,103	16,215	16,497	17,015
History of science	532	571	663	737	994	965	968	1,119	1,054	1,177	1,006	705	597
Linguistics	2,674	2,744	2,875	3,028	2,941	3,187	3,074	3,076	2,879	3,095	3,170	3,132	3,219
Political science/public administration	31,131	31,805	34,934	36,880	39,023	40,780	41,784	41,854	41,349	40,871	43,919	45,045	49,660
Sociology	9,397	9,620	9,665	9,900	9,713	9,866	9,872	10,565	10,324	10,655	10,307	10,212	9,959
Other social sciences	19,140	19,882	20,401	22,161	22,322	22,947	24,209	25,704	24,829	24,150	24,844	25,101	22,805
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	4,484	5,559	6,557	7,944	6,537

Appendix table 2-24

S&E graduate enrollment, by sex and field: 2000–11

Sex/field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Male													
S&E	262,109	271,155	287,059	298,682	296,714	295,291	299,818	308,152	306,273	313,363	320,738	327,528	328,826
Engineering	83,366	87,236	94,701	99,790	96,294	93,670	95,097	100,281	98,577	103,026	107,552	111,037	111,092
Aerospace	2,938	2,966	3,169	3,445	3,489	3,563	3,773	3,916	3,916	4,180	4,532	4,756	4,909
Chemical	5,181	5,084	5,419	5,416	5,346	5,094	5,102	5,148	5,318	5,483	5,572	5,946	5,978
Civil	12,174	12,162	12,808	13,492	13,120	12,709	12,379	13,519	11,335	12,166	13,337	13,988	14,007
Electrical	28,075	29,888	32,678	33,969	31,794	30,662	31,239	32,840	33,149	33,824	34,044	34,143	34,150
Industrial	9,406	10,132	10,957	11,047	10,622	10,354	10,363	10,770	10,930	11,978	12,025	11,521	10,884
Materials	3,336	3,548	3,741	3,800	3,738	3,812	3,878	3,905	3,841	4,006	4,274	4,520	4,773
Mechanical	13,403	13,908	15,056	16,039	15,396	14,965	15,434	15,751	15,733	16,836	18,253	19,323	18,720
Other	8,853	9,548	10,873	12,582	12,789	12,511	12,929	14,432	14,355	14,553	15,515	16,840	17,671
Science	178,743	183,919	192,358	198,892	200,420	201,621	204,721	207,871	207,696	210,337	213,186	216,491	217,734
Natural sciences	125,060	129,753	136,353	141,081	141,002	141,499	143,451	144,751	143,574	145,952	146,719	149,298	148,967
Agricultural sciences	6,935	6,892	7,045	7,171	7,187	6,921	6,717	6,778	6,901	7,262	7,715	7,837	8,103
Biological sciences[b]	26,475	26,590	27,677	28,818	29,276	29,958	30,572	31,012	31,899	32,247	32,578	33,681	34,508
Earth, atmospheric, and ocean sciences	8,188	7,949	7,993	8,082	8,199	7,941	7,916	7,724	7,450	7,768	8,024	8,455	8,645
Atmospheric sciences	695	626	703	776	723	758	712	722	759	951	908	971	1,036
Earth sciences	4,141	4,061	4,099	4,125	4,299	4,169	4,096	4,006	3,980	4,047	4,344	4,758	4,900
Oceanography	1,401	1,330	1,309	1,303	1,292	1,279	1,273	1,199	1,176	1,201	1,202	1,133	1,186
Other geosciences	1,951	1,932	1,882	1,878	1,885	1,735	1,835	1,797	1,535	1,569	1,570	1,593	1,523
Mathematics/computer sciences	43,140	47,275	50,521	51,056	49,173	48,706	48,713	50,307	49,526	50,657	52,355	53,748	54,068
Computer sciences	33,270	36,894	39,244	38,880	36,739	35,933	35,591	36,753	36,229	37,008	38,108	38,739	38,627
Mathematics/statistics	9,870	10,381	11,277	12,176	12,434	12,773	13,122	13,554	13,297	13,649	14,247	15,009	15,441
Medical/other health sciences	19,052	19,345	20,842	22,434	22,706	23,324	24,637	24,072	23,083	23,032	20,589	19,430	17,061
Medical sciences	9,748	10,136	11,045	11,917	11,506	11,680	12,377	12,243	11,595	11,477	11,652	11,619	11,477
Other health sciences[b]	9,304	9,209	9,797	10,517	11,200	11,644	12,260	11,829	11,488	11,555	8,937	7,811	5,584
Physical sciences	21,270	21,702	22,275	23,520	24,461	24,649	24,896	24,858	24,715	24,986	25,458	26,147	26,582
Astronomy	621	651	688	735	764	797	804	819	818	865	978	908	922
Chemistry	11,349	11,511	11,720	12,210	12,544	12,678	12,707	12,603	12,528	12,591	12,872	13,175	13,361
Physics	8,931	9,206	9,500	10,189	10,797	10,803	11,012	11,069	11,048	11,104	11,214	11,608	11,850
Other physical sciences	369	334	367	386	356	371	373	367	321	426	394	456	449
Social/behavioral sciences	53,683	54,166	56,005	57,811	59,418	60,122	61,270	63,120	62,198	62,060	63,719	63,742	65,661
Psychology[b]	13,594	13,147	13,435	13,383	13,970	13,963	13,950	14,690	14,501	14,376	13,648	13,181	13,565
Social sciences	40,089	41,019	42,570	44,428	45,448	46,159	47,320	48,430	47,697	47,684	50,071	50,561	52,096
Anthropology	2,941	2,929	2,864	2,919	2,853	2,810	2,935	2,948	2,960	3,019	3,022	3,038	3,049
Economics	8,273	8,739	9,084	9,226	9,174	8,803	9,038	8,992	9,038	9,374	10,146	10,356	10,563
History of science	313	327	362	425	580	525	540	637	605	681	597	389	331
Linguistics	930	951	984	1,023	1,014	1,132	1,088	1,083	1,003	1,093	1,230	1,244	1,279
Political science/public administration	15,204	15,304	16,315	17,038	18,203	18,898	19,545	19,708	19,529	19,175	20,540	21,075	23,497
Sociology	3,354	3,388	3,444	3,493	3,372	3,528	3,532	3,778	3,706	3,791	3,777	3,668	3,570
Other social sciences	9,074	9,381	9,517	10,304	10,252	10,463	10,642	11,284	10,856	10,551	10,759	10,791	9,807
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	1,924	2,325	2,748	3,451	3,106

Appendix table 2-24

S&E graduate enrollment, by sex and field: 2000–11

Sex/field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Female													
S&E	231,202	238,452	253,345	268,439	277,749	286,935	297,825	299,671	298,542	300,228	290,891	284,313	279,345
Engineering	20,746	22,257	24,967	27,587	27,272	26,895	27,944	29,974	28,498	28,925	30,321	31,409	32,298
Aerospace	469	485	516	603	600	607	709	700	700	722	734	784	782
Chemical	1,875	1,829	1,995	2,100	2,106	2,079	2,159	2,235	2,266	2,409	2,616	2,722	2,850
Civil	4,277	4,503	4,905	5,398	5,441	5,405	5,423	6,348	4,736	4,765	5,301	5,571	5,589
Electrical	5,536	6,212	7,270	7,794	7,201	6,788	7,026	7,367	7,439	7,340	7,174	7,193	7,430
Industrial	2,713	2,808	3,076	3,266	3,230	3,296	3,466	3,520	3,544	3,714	3,800	3,684	3,610
Materials	1,041	1,173	1,251	1,331	1,321	1,348	1,390	1,460	1,473	1,533	1,589	1,754	1,876
Mechanical	1,832	1,944	2,083	2,354	2,456	2,408	2,485	2,615	2,614	2,749	2,990	3,186	3,163
Other	3,003	3,303	3,871	4,741	4,917	4,964	5,286	5,729	5,726	5,693	6,117	6,515	6,998
Science	210,456	216,195	228,378	240,852	250,477	260,040	269,881	269,697	270,044	271,303	260,570	252,904	247,047
Natural sciences	130,346	134,225	143,016	151,372	158,437	163,453	171,151	167,662	166,915	167,754	156,476	149,514	143,130
Agricultural sciences	5,088	5,343	5,653	6,026	6,258	6,202	6,299	6,444	6,627	6,891	7,485	7,819	8,026
Biological sciences[b]	29,807	31,049	33,411	35,883	37,289	38,521	39,369	40,651	41,617	42,431	43,082	44,045	45,032
Earth, atmospheric, and ocean sciences	5,753	5,892	6,247	6,538	6,932	6,895	7,004	6,951	6,650	6,621	6,815	7,200	7,175
Atmospheric sciences	268	298	333	374	363	388	367	395	419	449	447	484	477
Earth sciences	2,455	2,483	2,613	2,764	3,059	3,043	3,081	3,055	3,040	3,042	3,195	3,493	3,461
Oceanography	1,267	1,255	1,309	1,392	1,509	1,481	1,497	1,464	1,439	1,433	1,431	1,423	1,494
Other geosciences	1,763	1,856	1,992	2,008	2,001	1,983	2,059	2,037	1,752	1,697	1,742	1,800	1,743
Mathematics/computer sciences	19,860	21,572	22,911	22,105	20,774	19,482	19,755	19,987	19,695	20,296	21,032	20,934	20,967
Computer sciences	14,080	15,302	16,025	14,816	13,277	12,045	12,062	12,206	12,017	12,545	13,053	12,807	12,607
Mathematics/statistics	5,780	6,270	6,886	7,289	7,497	7,437	7,693	7,781	7,678	7,751	7,979	8,127	8,360
Medical/other health sciences	60,723	61,033	64,728	70,042	75,884	80,627	86,719	81,376	80,217	79,182	65,371	56,690	48,818
Medical sciences	13,067	13,876	15,796	17,523	18,256	19,543	21,060	20,894	20,281	20,834	20,856	22,243	22,871
Other health sciences[c]	47,656	47,157	48,932	52,519	57,628	61,084	65,659	60,482	59,936	58,348	44,515	34,447	25,947
Physical sciences	9,115	9,336	10,066	10,778	11,300	11,726	12,005	12,253	12,109	12,333	12,691	12,826	13,112
Astronomy	267	265	302	345	355	394	407	414	414	410	431	423	423
Chemistry	6,756	6,855	7,325	7,839	8,232	8,423	8,644	8,821	8,770	8,983	9,222	9,261	9,441
Physics	1,910	2,042	2,201	2,366	2,501	2,669	2,710	2,776	2,768	2,758	2,846	2,899	2,979
Other physical sciences	182	174	238	228	212	240	244	242	157	182	192	243	269
Social/behavioral sciences	80,110	81,970	85,362	89,480	92,040	96,587	98,730	102,035	100,569	100,315	100,285	98,897	100,486
Psychology[c]	36,872	37,307	37,717	38,779	40,156	43,319	43,703	45,594	45,116	44,615	42,536	40,238	40,921
Social sciences	43,238	44,663	47,645	50,701	51,884	53,268	55,027	56,441	55,453	55,700	57,749	58,659	59,565
Anthropology	4,685	4,562	4,617	4,870	4,973	4,940	5,215	5,151	5,169	5,314	5,337	5,490	5,357
Economics	4,554	4,830	5,112	5,408	5,339	5,129	5,252	5,462	5,548	5,729	6,069	6,141	6,452
History of science	219	244	301	312	414	440	428	482	449	496	409	316	266
Linguistics	1,744	1,793	1,891	2,005	1,927	2,055	1,986	1,993	1,876	2,002	1,940	1,888	1,940
Political science/public administration	15,927	16,501	18,619	19,842	20,820	21,882	22,239	22,146	21,820	21,696	23,379	23,970	26,163

Appendix table 2-24

S&E graduate enrollment, by sex and field: 2000–11

Sex/field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Sociology	6,043	6,232	6,221	6,407	6,341	6,338	6,340	6,787	6,618	6,864	6,530	6,544	6,389
Other social sciences	10,066	10,501	10,884	11,857	12,070	12,484	13,567	14,420	13,973	13,599	14,085	14,310	12,998
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	2,560	3,234	3,809	4,493	3,431

NA = not available.

[a] In 2007, the survey was redesigned to improve reporting, and five fields were added or reclassified to improve reporting. "2007new" shows data as collected in 2007; "2007old" shows data as they would have been collected in prior years. Because of methodological changes, counts should be used with caution for trend analysis. See http://www.nsf.gov/statistics/nsf10307/ for more detail. S&E excludes fields that were collected in this survey starting in 2007 (architecture, communication, and family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.
[b] Starting in 2007, includes neuroscience, which had been included in "neurology" under medical sciences in prior years.
[c] Beginning with 2008, more rigorous follow-up was done with institutions regarding exclusion of practitioner-oriented graduate degree programs in psychology and other health sciences (a subfield of health). This change may affect interpretation of trends in these fields.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-25

Engineering enrollment, by enrollment level and attendance: 1991–2011

	Undergraduate						Graduate					
	All enrolled		Full time		Part time		All enrolled		Full time		Part time	
Year	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1991	379,977	100.0	339,397	89.3	40,580	10.7	123,497	100.0	74,568	60.4	48,929	39.6
1992	382,525	100.0	344,126	90.0	38,399	10.0	128,854	100.0	78,651	61.0	50,203	39.0
1993	375,944	100.0	337,817	89.9	38,127	10.1	128,081	100.0	78,885	61.6	49,196	38.4
1994	367,298	100.0	328,463	89.4	38,835	10.6	122,242	100.0	74,596	61.0	47,646	39.0
1995	363,315	100.0	325,489	89.6	37,826	10.4	118,506	100.0	72,215	60.9	46,291	39.1
1996	356,177	100.0	317,772	89.2	38,405	10.8	113,063	100.0	70,129	62.0	42,934	38.0
1997	365,358	100.0	326,458	89.4	38,900	10.6	112,257	100.0	70,447	62.8	41,810	37.2
1998	366,991	100.0	329,657	89.8	37,334	10.2	110,355	100.0	69,519	63.0	40,836	37.0
1999	361,395	100.0	323,713	89.6	37,682	10.4	105,005	100.0	67,633	64.4	37,372	35.6
2000	390,803	100.0	353,118	90.4	37,685	9.6	118,257	100.0	81,821	69.2	36,436	30.8
2001	409,557	100.0	367,954	89.8	41,603	10.2	128,764	100.0	87,187	67.7	41,577	32.3
2002	421,178	100.0	383,109	91.0	38,069	9.0	140,240	100.0	97,752	69.7	42,488	30.3
2003	421,791	100.0	384,612	91.2	37,179	8.8	147,940	100.0	103,223	69.8	44,717	30.2
2004	411,635	100.0	377,040	91.6	34,595	8.4	147,497	100.0	102,975	69.8	44,522	30.2
2005	409,326	100.0	375,112	91.6	34,214	8.4	139,755	100.0	97,676	69.9	42,079	30.1
2006	405,489	100.0	371,720	91.7	33,769	8.3	139,905	100.0	99,750	71.3	40,155	28.7
2007	431,910	100.0	399,429	92.5	32,481	7.5	147,398	100.0	104,936	71.2	42,462	28.8
2008	442,952	100.0	411,345	92.9	31,607	7.1	153,106	100.0	110,430	72.1	42,676	27.9
2009	468,139	100.0	435,752	93.1	32,387	6.9	160,207	100.0	114,555	71.5	45,652	28.5
2010	488,435	100.0	454,202	93.0	34,233	7.0	165,407	100.0	118,473	71.6	46,934	28.4
2011	511,306	100.0	471,920	92.3	39,386	7.7	168,448	100.0	121,297	72.0	47,151	28.0

SOURCE: Engineering Workforce Commission, Engineering & Technology Enrollments, Fall 2011, American Association of Engineering Societies (2012).

Science and Engineering Indicators 2014

Appendix table 2-26

First-time full-time S&E graduate students, by citizenship and field: 2000–11

Citizenship and field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
All citizenships													
S&E	94,340	98,112	104,184	107,715	106,544	110,219	116,482	120,236	118,893	126,165	129,731	131,394	132,441
Engineering	22,191	23,306	24,607	24,429	22,025	22,373	25,876	27,818	26,732	28,613	30,230	31,540	32,355
Aerospace	775	767	712	845	834	804	943	962	962	1,116	1,176	1,196	1,239
Chemical	1,595	1,541	1,616	1,600	1,392	1,293	1,429	1,532	1,566	1,713	1,910	2,047	2,039
Civil	3,840	3,820	4,107	4,363	4,175	4,057	4,198	4,926	3,662	4,073	4,878	5,079	5,003
Electrical	7,195	7,882	8,221	7,834	6,633	6,987	8,668	8,887	8,920	9,042	8,831	9,237	9,790
Industrial	2,005	2,216	2,238	2,029	1,724	1,674	2,148	2,445	2,626	3,015	2,908	2,783	2,837
Materials	1,005	975	1,044	958	926	992	1,043	1,089	1,086	1,170	1,302	1,431	1,561
Mechanical	3,269	3,583	3,709	3,476	3,129	3,225	3,734	3,941	3,937	4,297	4,814	5,055	4,832
Other	2,507	2,522	2,960	3,324	3,212	3,341	3,713	4,036	3,973	4,187	4,411	4,712	5,054
Science	72,149	74,806	79,577	83,286	84,519	87,846	90,606	92,418	92,161	97,552	99,501	99,854	100,086
Natural sciences	49,626	51,215	54,124	55,791	56,655	58,228	60,076	61,424	60,985	64,066	63,707	64,457	64,614
Agricultural sciences	2,335	2,338	2,320	2,424	2,316	2,260	2,206	2,313	2,356	2,597	2,994	3,121	3,053
Biological sciences[b]	10,955	11,608	12,127	12,719	12,796	12,918	13,055	13,485	14,022	14,832	15,838	16,543	17,327
Earth, atmospheric, and ocean sciences	2,649	2,794	3,085	3,104	2,926	2,758	2,795	2,861	2,749	2,904	3,153	3,445	3,408
Atmospheric sciences	222	205	213	268	228	228	207	233	243	263	250	279	266
Earth sciences	1,230	1,383	1,437	1,412	1,336	1,308	1,348	1,410	1,405	1,429	1,682	1,887	1,839
Oceanography	479	511	533	567	534	463	457	412	402	466	517	502	520
Other geosciences	718	695	902	857	828	759	783	806	699	746	704	777	783
Mathematics/computer sciences	11,850	12,763	12,955	12,319	12,035	12,454	13,325	13,947	13,688	15,025	15,445	15,776	16,589
Computer sciences	8,431	9,077	9,037	8,134	7,783	8,258	8,983	9,352	9,256	10,434	10,557	10,583	10,995
Mathematics/statistics	3,419	3,686	3,918	4,185	4,252	4,196	4,342	4,595	4,432	4,591	4,888	5,193	5,594
Medical/other health sciences	16,008	15,701	17,357	18,384	19,979	21,181	22,069	22,031	21,459	21,816	19,001	17,995	16,475
Medical sciences	5,127	5,361	5,780	6,034	6,525	6,644	7,096	7,255	6,870	7,753	7,714	7,962	8,014
Other health sciences[c]	10,881	10,340	11,577	12,350	13,454	14,537	14,973	14,776	14,589	14,063	11,287	10,033	8,461
Physical sciences	5,829	6,011	6,280	6,841	6,603	6,657	6,626	6,787	6,711	6,892	7,276	7,577	7,762
Astronomy	183	193	194	225	210	190	204	207	207	225	250	234	267
Chemistry	3,482	3,651	3,746	3,983	3,862	3,904	3,900	3,972	3,938	4,161	4,331	4,557	4,585
Physics	2,101	2,102	2,231	2,543	2,442	2,458	2,409	2,534	2,523	2,406	2,571	2,663	2,766
Other physical sciences	63	65	109	90	89	105	113	74	43	100	124	123	144
Social/behavioral sciences	22,523	23,591	25,453	27,495	27,864	29,618	30,530	30,994	30,405	32,346	34,382	33,638	34,088
Psychology[c]	7,545	7,691	8,420	8,858	9,478	10,358	10,224	10,624	10,476	11,082	10,980	10,231	10,218
Social sciences	14,978	15,900	17,033	18,637	18,386	19,260	20,306	20,370	19,929	21,264	23,402	23,407	23,870
Anthropology	1,157	1,119	1,177	1,279	1,187	1,243	1,314	1,305	1,310	1,444	1,452	1,454	1,407
Economics	2,963	3,058	3,418	3,457	3,209	3,281	3,450	3,624	3,670	3,836	4,465	4,436	4,573
History of science	78	72	97	107	107	138	121	163	151	205	119	94	85
Linguistics	454	495	466	588	570	633	577	580	535	557	632	645	680
Political science/public administration	5,142	5,562	6,241	6,950	7,333	7,807	8,319	7,749	7,627	8,152	9,736	9,637	10,618
Sociology	1,464	1,591	1,690	1,722	1,537	1,672	1,504	1,783	1,730	1,888	1,761	1,729	1,783
Other social sciences	3,720	4,003	3,944	4,534	4,443	4,486	5,021	5,166	4,906	5,182	5,237	5,412	4,724
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	771	1,140	1,412	1,759	1,384

Appendix table 2-26

First-time full-time S&E graduate students, by citizenship and field: 2000–11

Citizenship and field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
U.S. citizen or permanent resident													
S&E	61,021	62,396	70,346	76,478	77,169	79,531	81,142	82,127	81,033	84,230	88,183	89,174	86,686
Engineering	8,603	8,668	10,749	12,263	11,188	10,905	11,747	12,004	11,053	11,767	13,749	14,638	13,896
Aerospace	374	348	396	536	537	508	616	592	592	707	753	810	801
Chemical	651	616	760	852	733	624	684	679	695	711	927	1,002	910
Civil	2,009	1,989	2,250	2,595	2,591	2,492	2,650	3,188	2,188	2,335	3,017	3,124	2,905
Electrical	1,901	1,985	2,679	3,127	2,458	2,430	2,305	2,125	2,129	2,223	2,295	2,416	2,346
Industrial	596	590	781	832	755	690	933	813	901	1,030	1,121	1,042	995
Materials	413	410	502	479	454	482	545	511	514	534	592	721	684
Mechanical	1,231	1,373	1,681	1,843	1,684	1,668	1,889	1,858	1,854	1,959	2,477	2,664	2,360
Other	1,428	1,357	1,700	1,999	1,976	2,011	2,125	2,238	2,180	2,268	2,567	2,859	2,895
Science	52,418	53,728	59,597	64,215	65,981	68,626	69,395	70,123	69,980	72,463	74,434	74,536	72,790
Natural sciences	34,659	34,988	39,006	41,645	42,752	43,728	44,112	44,401	44,138	45,010	44,896	45,485	44,122
Agricultural sciences	1,916	1,845	1,856	1,971	1,870	1,828	1,764	1,837	1,848	1,996	2,359	2,513	2,357
Biological sciences[b]	8,355	8,768	9,261	9,763	9,808	9,925	9,946	10,230	10,687	11,129	12,159	12,890	13,380
Earth, atmospheric, and ocean sciences	2,082	2,210	2,548	2,573	2,468	2,270	2,289	2,364	2,271	2,306	2,533	2,804	2,712
Atmospheric sciences	147	140	157	220	186	172	170	189	195	209	199	223	209
Earth sciences	986	1,091	1,179	1,129	1,102	1,073	1,068	1,136	1,139	1,119	1,323	1,511	1,415
Oceanography	374	426	447	485	476	376	380	354	345	382	424	407	435
Other geosciences	575	553	765	739	704	649	671	685	592	596	587	663	653
Mathematics/computer sciences	4,263	4,651	5,845	6,418	6,264	6,193	5,904	5,706	5,595	5,872	6,467	6,594	6,402
Computer sciences	2,414	2,621	3,534	3,891	3,632	3,632	3,382	3,077	3,034	3,324	3,659	3,582	3,339
Mathematics/statistics	1,849	2,030	2,311	2,527	2,632	2,561	2,522	2,629	2,561	2,548	2,808	3,012	3,063
Medical/other health sciences	14,720	14,189	15,721	16,829	18,316	19,374	20,164	20,118	19,648	19,719	16,954	16,105	14,643
Medical sciences	4,248	4,302	4,640	4,982	5,372	5,455	5,836	5,928	5,614	6,285	6,186	6,554	6,554
Other health sciences[c]	10,472	9,887	11,081	11,847	12,944	13,919	14,328	14,190	14,034	13,434	10,768	9,551	8,089
Physical sciences	3,323	3,325	3,775	4,091	4,026	4,138	4,045	4,146	4,089	3,988	4,424	4,579	4,628
Astronomy	123	135	137	150	145	144	142	136	136	146	191	169	178
Chemistry	2,151	2,125	2,292	2,438	2,391	2,461	2,405	2,453	2,434	2,453	2,683	2,777	2,765
Physics	1,009	1,025	1,270	1,442	1,416	1,439	1,406	1,498	1,487	1,315	1,455	1,547	1,580
Other physical sciences	40	40	76	61	74	94	92	59	32	74	95	86	105
Social/behavioral sciences	17,759	18,740	20,591	22,570	23,229	24,898	25,283	25,722	25,258	26,594	28,407	27,666	27,592
Psychology[c]	7,060	7,167	7,902	8,285	8,944	9,800	9,645	9,985	9,861	10,407	10,347	9,570	9,535
Social sciences	10,699	11,573	12,689	14,285	14,285	15,098	15,638	15,737	15,397	16,187	18,060	18,096	18,057
Anthropology	996	985	1,028	1,142	1,068	1,131	1,170	1,144	1,149	1,280	1,325	1,295	1,252
Economics	1,207	1,275	1,559	1,694	1,589	1,594	1,634	1,691	1,731	1,756	2,213	2,164	2,098
History of science	65	62	90	95	97	115	109	147	140	183	106	78	69
Linguistics	257	294	305	405	381	440	417	403	370	361	419	441	468
Political science/public administration	3,870	4,291	4,949	5,561	5,974	6,475	6,670	6,298	6,206	6,584	7,926	7,898	8,616
Sociology	1,205	1,311	1,440	1,501	1,357	1,474	1,339	1,562	1,513	1,689	1,531	1,508	1,559
Other social sciences	3,099	3,355	3,318	3,887	3,819	3,869	4,299	4,492	4,288	4,334	4,540	4,712	3,995
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	584	859	1,131	1,385	1,076

Appendix table 2-26

First-time full-time S&E graduate students, by citizenship and field: 2000–11

Citizenship and field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Temporary resident													
S&E	33,319	35,716	33,838	31,237	29,375	30,688	35,340	38,109	37,860	41,935	41,548	42,220	45,755
Engineering	13,588	14,638	13,858	12,166	10,837	11,468	14,129	15,814	15,679	16,846	16,481	16,902	18,459
Aerospace	401	419	316	309	297	296	327	370	370	409	423	386	438
Chemical	944	925	856	748	659	669	745	853	871	1,002	983	1,045	1,129
Civil	1,831	1,831	1,857	1,768	1,584	1,565	1,548	1,738	1,474	1,738	1,861	1,955	2,098
Electrical	5,294	5,897	5,542	4,707	4,175	4,557	6,363	6,762	6,791	6,819	6,536	6,821	7,444
Industrial	1,409	1,626	1,457	1,197	969	984	1,215	1,632	1,725	1,985	1,787	1,741	1,842
Materials	592	565	542	479	472	510	498	578	572	636	710	710	877
Mechanical	2,038	2,210	2,028	1,633	1,445	1,557	1,845	2,083	2,083	2,338	2,337	2,391	2,472
Other	1,079	1,165	1,260	1,325	1,236	1,330	1,588	1,798	1,793	1,919	1,844	1,853	2,159
Science	19,731	21,078	19,980	19,071	18,538	19,220	21,211	22,295	22,181	25,089	25,067	25,318	27,296
Natural sciences	14,967	16,227	15,118	14,146	13,903	14,500	15,964	17,023	16,847	19,056	18,811	18,972	20,492
Agricultural sciences	419	493	464	453	446	432	442	476	508	601	635	608	696
Biological sciences[b]	2,600	2,840	2,866	2,956	2,988	2,993	3,109	3,255	3,335	3,703	3,679	3,653	3,947
Earth, atmospheric, and ocean sciences	567	584	537	531	458	488	506	497	478	598	620	641	696
Atmospheric sciences	75	65	56	48	42	56	37	44	48	54	51	56	57
Earth sciences	244	292	258	283	234	235	280	274	266	310	359	376	424
Oceanography	105	85	86	82	58	87	77	58	57	84	93	95	85
Other geosciences	143	142	137	118	124	110	112	121	107	150	117	114	130
Mathematics/computer sciences	7,587	8,112	7,110	5,901	5,771	6,261	7,421	8,241	8,093	9,153	8,978	9,182	10,187
Computer sciences	6,017	6,456	5,503	4,243	4,151	4,626	5,601	6,275	6,222	7,110	6,898	7,001	7,656
Mathematics/statistics	1,570	1,656	1,607	1,658	1,620	1,635	1,820	1,966	1,871	2,043	2,080	2,181	2,531
Medical/other health sciences	1,288	1,512	1,636	1,555	1,663	1,807	1,905	1,913	1,811	2,097	2,047	1,890	1,832
Medical sciences	879	1,059	1,140	1,052	1,153	1,189	1,260	1,327	1,256	1,468	1,528	1,408	1,460
Other health sciences	409	453	496	503	510	618	645	586	555	629	519	482	372
Physical sciences	2,506	2,686	2,505	2,750	2,577	2,519	2,581	2,641	2,622	2,904	2,852	2,998	3,134
Astronomy	60	58	57	75	65	46	62	71	71	79	59	65	89
Chemistry	1,331	1,526	1,454	1,545	1,471	1,443	1,495	1,519	1,504	1,708	1,648	1,780	1,820
Physics	1,092	1,077	961	1,101	1,026	1,019	1,003	1,036	1,036	1,091	1,116	1,116	1,186
Other physical sciences	23	25	33	29	15	11	21	15	11	26	29	37	39
Social/behavioral sciences	4,764	4,851	4,862	4,925	4,635	4,720	5,247	5,272	5,147	5,752	5,975	5,972	6,496
Psychology[c]	485	524	518	573	534	558	579	639	615	675	633	661	683
Social sciences	4,279	4,327	4,344	4,352	4,101	4,162	4,668	4,633	4,532	5,077	5,342	5,311	5,813
Anthropology	161	134	149	137	119	112	144	161	161	164	127	159	155
Economics	1,756	1,783	1,859	1,763	1,620	1,687	1,816	1,933	1,939	2,080	2,252	2,272	2,475
History of science	13	10	7	12	10	23	12	16	11	22	13	16	16
Linguistics	197	201	161	183	189	193	160	177	165	196	213	204	212
Political science/public administration	1,272	1,271	1,292	1,389	1,359	1,332	1,649	1,451	1,421	1,568	1,810	1,739	2,002

Appendix table 2-26

First-time full-time S&E graduate students, by citizenship and field: 2000–11

Citizenship and field	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Sociology	259	280	250	221	180	198	165	221	217	199	230	221	224
Other social sciences	621	648	626	647	624	617	722	674	618	848	697	700	729
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	187	281	281	374	308

NA = not available.

[a] In 2007, the survey was redesigned to improve reporting, and five fields were added or reclassified to improve reporting. "2007new" shows data as collected in 2007; "2007old" shows data as they would have been collected in prior years. Because of methodological changes, counts should be used with caution for trend analysis. See http://www.nsf.gov/statistics/nsf10307/ for more detail. S&E excludes fields that were collected in this survey starting in 2007 (architecture, communication, family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.
[b] Starting in 2007, includes neuroscience, which had been included in "neurology" under medical sciences in prior years.
[c] Beginning with 2008, more rigorous follow-up was done with institutions regarding exclusion of practitioner-oriented graduate degree programs in psychology and other health sciences (a subfield of health). This change may affect interpretation of trends in these fields.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
All citizenships, races, and ethnicities													
S&E	493,311	509,607	540,404	567,121	574,463	582,226	597,643	607,823	604,815	613,591	611,629	611,841	608,171
Engineering	104,112	109,493	119,668	127,377	123,566	120,565	123,041	130,255	127,075	131,951	137,873	142,446	143,390
Aerospace	3,407	3,451	3,685	4,048	4,089	4,170	4,482	4,616	4,616	4,902	5,266	5,540	5,691
Chemical	7,056	6,913	7,414	7,516	7,452	7,173	7,261	7,383	7,584	7,892	8,188	8,668	8,828
Civil	16,451	16,665	17,713	18,890	18,561	18,114	17,802	19,867	16,071	16,931	18,638	19,559	19,596
Electrical	33,611	36,100	39,948	41,763	38,995	37,450	38,265	40,207	40,588	41,164	41,218	41,336	41,580
Industrial	12,119	12,940	14,033	14,313	13,852	13,650	13,829	14,290	14,474	15,692	15,825	15,205	14,494
Materials	4,377	4,721	4,992	5,131	5,059	5,160	5,268	5,365	5,314	5,539	5,863	6,274	6,649
Mechanical	15,235	15,852	17,139	18,393	17,852	17,373	17,919	18,366	18,347	19,585	21,243	22,509	21,883
Other	11,856	12,851	14,744	17,323	17,706	17,475	18,215	20,161	20,081	20,246	21,632	23,355	24,669
Science	389,199	400,114	420,736	439,744	450,897	461,661	474,602	477,568	477,740	481,640	473,756	469,395	464,781
Natural sciences	255,406	263,978	279,369	292,453	299,439	304,952	314,602	312,413	310,489	313,706	303,195	298,812	292,097
Agricultural sciences	12,023	12,235	12,698	13,197	13,445	13,123	13,016	13,222	13,528	14,153	15,200	15,656	16,129
Biological sciences[b]	56,282	57,639	61,088	64,701	66,565	68,479	69,941	71,663	73,516	74,678	75,660	77,726	79,540
Earth, atmospheric, and ocean sciences	13,941	13,841	14,240	14,620	15,131	14,836	14,920	14,675	14,100	14,389	14,839	15,655	15,820
Atmospheric sciences	963	924	1,036	1,150	1,086	1,146	1,079	1,117	1,178	1,400	1,355	1,455	1,513
Earth sciences	6,596	6,544	6,712	6,889	7,358	7,212	7,177	7,061	7,020	7,089	7,539	8,251	8,361
Oceanography	2,668	2,585	2,618	2,695	2,801	2,760	2,770	2,663	2,615	2,634	2,633	2,556	2,680
Other geosciences	3,714	3,788	3,874	3,886	3,886	3,718	3,894	3,834	3,287	3,266	3,312	3,393	3,266
Mathematics/computer sciences	63,000	68,847	73,432	73,161	69,947	68,188	68,468	70,294	69,221	70,953	73,387	74,682	75,035
Computer sciences	47,350	52,196	55,269	53,696	50,016	47,978	47,653	48,959	48,246	49,553	51,161	51,546	51,234
Mathematics/statistics	15,650	16,651	18,163	19,465	19,931	20,210	20,815	21,335	20,975	21,400	22,226	23,136	23,801
Medical/other health sciences	79,775	80,378	85,570	92,476	98,590	103,951	111,356	105,448	103,300	102,214	85,960	76,120	65,879
Medical sciences	22,815	24,012	26,841	29,440	29,762	31,223	33,437	33,137	31,876	32,311	32,508	33,862	34,348
Other health sciences[c]	56,960	56,366	58,729	63,036	68,828	72,728	77,919	72,311	71,424	69,903	53,452	42,258	31,531
Physical sciences	30,385	31,038	32,341	34,298	35,761	36,375	36,901	37,111	36,824	37,319	38,149	38,973	39,694
Astronomy	888	916	990	1,080	1,119	1,191	1,211	1,233	1,232	1,275	1,409	1,331	1,345
Chemistry	18,105	18,366	19,045	20,049	20,776	21,101	21,351	21,424	21,298	21,574	22,094	22,436	22,802
Physics	10,841	11,248	11,701	12,555	13,298	13,472	13,722	13,845	13,816	13,862	14,060	14,507	14,829
Other physical sciences	551	508	605	614	568	611	617	609	478	608	586	699	718
Social/behavioral sciences	133,793	136,136	141,367	147,291	151,458	156,709	160,000	165,155	162,767	162,375	164,004	162,639	166,147
Psychology[c]	50,466	50,454	51,152	52,162	54,126	57,282	57,653	60,284	59,617	58,991	56,184	53,419	54,486
Social sciences	83,327	85,682	90,215	95,129	97,332	99,427	102,347	104,871	103,150	103,384	107,820	109,220	111,661
Anthropology	7,626	7,491	7,481	7,789	7,826	7,750	8,150	8,099	8,129	8,333	8,359	8,528	8,406
Economics	12,827	13,569	14,196	14,634	14,513	13,932	14,290	14,454	14,586	15,103	16,215	16,497	17,015
History of science	532	571	663	737	994	965	968	1,119	1,054	1,177	1,006	705	597
Linguistics	2,674	2,744	2,875	3,028	2,941	3,187	3,074	3,076	2,879	3,095	3,170	3,132	3,219
Political science/public administration	31,131	31,805	34,934	36,880	39,023	40,780	41,784	41,854	41,349	40,871	43,919	45,045	49,660
Sociology	9,397	9,620	9,665	9,900	9,713	9,866	9,872	10,565	10,324	10,655	10,307	10,212	9,959
Other social sciences	19,140	19,882	20,401	22,161	22,322	22,947	24,209	25,704	24,829	24,150	24,844	25,101	22,805
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	4,484	5,559	6,557	7,944	6,537

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
U.S. citizen or permanent resident													
S&E	364,894	368,737	387,416	412,105	423,218	434,730	446,625	450,251	447,903	448,347	442,779	440,839	434,718
Engineering	56,651	56,890	61,277	67,310	66,379	66,551	67,698	70,357	67,592	69,411	73,031	76,747	76,970
Aerospace	1,894	1,805	1,999	2,361	2,401	2,528	2,998	3,090	3,090	3,311	3,605	3,893	4,045
Chemical	3,711	3,398	3,686	3,736	3,753	3,675	3,685	3,647	3,744	3,821	4,022	4,272	4,402
Civil	10,306	10,072	10,553	11,458	11,436	11,415	11,421	13,051	9,972	10,477	11,750	12,482	12,221
Electrical	15,315	15,534	16,579	18,118	16,878	16,662	16,166	15,759	16,024	16,042	15,936	16,109	15,985
Industrial	7,574	7,588	8,290	8,820	8,763	9,071	9,249	9,020	9,090	9,464	9,511	9,028	8,552
Materials	2,265	2,385	2,482	2,546	2,501	2,518	2,690	2,739	2,719	2,796	2,949	3,197	3,315
Mechanical	8,052	8,141	8,562	9,602	9,724	9,719	10,205	10,495	10,481	11,075	11,893	12,986	12,635
Other	7,534	7,967	9,126	10,669	10,923	10,963	11,284	12,556	12,472	12,425	13,365	14,780	15,815
Science	308,243	311,847	326,139	344,795	356,839	368,179	378,927	379,894	380,311	378,936	369,748	364,092	357,748
Natural sciences	193,036	195,250	205,691	218,875	226,950	232,603	240,588	236,533	235,170	234,181	222,537	217,406	209,614
Agricultural sciences	9,612	9,722	10,085	10,601	10,750	10,464	10,341	10,487	10,631	11,047	11,938	12,416	12,702
Biological sciences[b]	44,521	45,196	47,253	49,865	50,734	52,012	53,034	54,784	56,558	56,746	57,904	59,829	61,374
Earth, atmospheric, and ocean sciences	11,249	11,059	11,463	11,837	12,337	12,058	12,153	11,952	11,488	11,612	12,082	12,729	12,730
Atmospheric sciences	659	639	721	861	813	849	821	854	891	1,080	1,056	1,133	1,180
Earth sciences	5,294	5,189	5,333	5,456	5,906	5,785	5,749	5,624	5,633	5,686	6,036	6,607	6,588
Oceanography	2,142	2,071	2,152	2,206	2,304	2,270	2,267	2,226	2,184	2,164	2,170	2,122	2,211
Other geosciences	3,154	3,160	3,257	3,314	3,314	3,154	3,316	3,248	2,780	2,682	2,820	2,867	2,751
Mathematics/computer sciences	34,681	36,309	39,342	41,477	40,785	40,177	39,894	39,565	38,873	38,551	40,236	40,691	40,307
Computer sciences	25,088	26,142	28,203	29,420	28,261	27,409	26,675	25,957	25,441	25,316	26,325	26,170	25,656
Mathematics/statistics	9,593	10,167	11,139	12,057	12,524	12,768	13,219	13,608	13,432	13,235	13,911	14,521	14,651
Medical/other health sciences	74,243	74,129	78,297	84,924	91,196	96,217	103,022	97,109	95,203	93,669	77,306	68,089	58,363
Medical sciences	19,090	19,784	21,773	24,212	24,789	26,163	27,936	27,400	26,297	26,354	26,218	27,976	28,482
Other health sciences[c]	55,153	54,345	56,524	60,712	66,407	70,054	75,086	69,709	68,906	67,315	51,088	40,113	29,881
Physical sciences	18,730	18,835	19,251	20,171	21,148	21,675	22,144	22,636	22,417	22,556	23,071	23,652	24,138
Astronomy	617	633	687	747	749	828	845	852	851	873	969	932	939
Chemistry	11,883	11,797	11,792	12,168	12,637	12,833	13,050	13,275	13,201	13,155	13,515	13,766	14,057
Physics	5,757	5,991	6,259	6,744	7,270	7,473	7,722	7,940	7,918	7,988	8,078	8,460	8,656
Other physical sciences	473	414	513	512	492	541	527	569	447	540	509	494	486
Social/behavioral sciences	115,207	116,597	120,448	125,920	129,889	135,576	138,339	143,361	141,353	140,102	141,683	139,979	142,639
Psychology[c]	48,203	47,933	48,295	49,055	50,932	54,228	54,802	57,171	56,574	55,912	53,246	50,332	51,398
Social sciences	67,004	68,664	72,153	76,865	78,957	81,348	83,537	86,190	84,779	84,190	88,437	89,647	91,241
Anthropology	6,797	6,722	6,634	6,967	6,966	6,892	7,225	7,125	7,155	7,352	7,410	7,538	7,424
Economics	6,006	6,233	6,530	6,920	6,938	6,590	6,810	6,951	7,068	7,331	8,194	8,307	8,502
History of science	463	501	595	668	925	886	881	1,024	978	1,081	913	630	511
Linguistics	1,714	1,782	1,893	2,065	1,936	2,257	2,124	2,181	2,028	2,150	2,229	2,182	2,232
Political science/public administration	26,972	27,582	30,280	32,003	34,054	35,895	36,477	36,668	36,263	35,621	38,328	39,520	43,561
Sociology	8,065	8,228	8,275	8,485	8,356	8,481	8,493	9,250	9,046	9,371	9,073	8,983	8,751
Other social sciences	16,987	17,616	17,946	19,757	19,782	20,347	21,527	22,991	22,241	21,284	22,290	22,487	20,260
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	3,788	4,653	5,528	6,707	5,495

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
White													
S&E	261,112	260,371	270,025	283,241	288,574	292,276	299,275	298,917	297,001	296,445	290,813	287,669	282,866
Engineering	39,083	38,459	40,559	43,469	43,235	42,868	43,293	44,751	42,599	44,169	46,428	48,942	49,123
Aerospace	1,451	1,434	1,512	1,747	1,791	1,844	1,969	2,152	2,152	2,244	2,485	2,702	2,820
Chemical	2,627	2,417	2,565	2,554	2,666	2,561	2,556	2,520	2,601	2,672	2,809	2,872	2,955
Civil	7,759	7,492	7,707	8,333	8,270	8,139	7,971	9,115	6,807	7,265	7,884	8,245	8,118
Electrical	8,982	8,876	9,121	9,709	9,444	9,150	8,875	8,789	8,933	8,734	8,908	9,035	8,974
Industrial	5,329	5,255	5,668	5,680	5,484	5,658	5,586	5,300	5,293	5,543	5,305	5,011	4,893
Materials	1,751	1,839	1,882	1,909	1,815	1,859	1,926	1,924	1,900	1,988	2,119	2,252	2,290
Mechanical	6,005	5,932	6,254	6,883	6,998	6,898	7,337	7,232	7,213	7,591	8,334	9,135	8,779
Other	5,179	5,214	5,850	6,654	6,767	6,759	7,073	7,719	7,700	8,132	8,584	9,690	10,294
Science	222,029	221,912	229,466	239,772	245,339	249,408	255,982	254,166	254,402	252,276	244,385	238,727	233,743
Natural sciences	142,528	141,957	148,248	155,919	160,578	163,685	168,414	163,760	162,868	161,787	152,089	147,426	141,905
Agricultural sciences	8,152	8,147	8,486	8,799	8,936	8,662	8,384	8,452	8,572	8,725	9,421	9,867	10,142
Biological sciences[b]	33,255	33,193	34,568	35,809	36,053	36,627	37,163	37,605	38,575	38,738	38,790	40,036	40,970
Earth, atmospheric, and ocean sciences	9,812	9,573	9,799	9,963	10,342	10,126	10,116	9,783	9,443	9,354	9,651	10,141	10,145
Atmospheric sciences	557	547	623	713	663	697	690	715	743	860	851	902	932
Earth sciences	4,720	4,603	4,639	4,691	5,111	5,010	4,896	4,722	4,732	4,687	4,893	5,328	5,356
Oceanography	1,872	1,769	1,845	1,871	1,933	1,896	1,898	1,834	1,795	1,779	1,743	1,733	1,809
Other geosciences	2,663	2,654	2,692	2,688	2,635	2,523	2,632	2,512	2,173	2,028	2,164	2,178	2,048
Mathematics/computer sciences	21,423	22,443	23,885	25,674	25,797	25,471	25,144	24,418	24,030	24,084	25,060	25,326	25,448
Computer sciences	14,468	15,057	15,962	17,260	16,938	16,555	15,943	15,089	14,811	14,930	15,533	15,604	15,417
Mathematics/statistics	6,955	7,386	7,923	8,414	8,859	8,916	9,201	9,329	9,219	9,154	9,527	9,722	10,031
Medical/other health sciences	55,543	54,353	56,890	60,567	63,724	66,500	71,282	66,874	65,797	64,366	52,234	44,737	37,544
Medical sciences	12,017	12,492	14,307	15,425	15,560	15,507	16,310	16,516	16,110	15,977	15,322	16,023	15,909
Other health sciences[c]	43,526	41,861	42,583	45,142	48,164	50,993	54,972	50,358	49,687	48,389	36,912	28,714	21,635
Physical sciences	14,343	14,248	14,620	15,107	15,726	16,299	16,325	16,628	16,451	16,520	16,933	17,319	17,656
Astronomy	523	527	570	610	631	677	683	676	676	703	764	731	742
Chemistry	9,028	8,977	8,926	8,955	9,171	9,435	9,314	9,460	9,400	9,404	9,650	9,771	9,982
Physics	4,514	4,485	4,789	5,209	5,600	5,765	5,937	6,097	6,074	6,043	6,134	6,429	6,569
Other physical sciences	278	259	335	333	324	422	391	395	301	370	385	388	363
Social/behavioral sciences	79,501	79,955	81,218	83,853	84,761	85,723	87,568	90,406	89,077	87,530	88,874	87,102	88,259
Psychology[c]	33,801	33,569	33,464	33,552	33,580	34,359	35,045	36,976	36,519	35,530	34,342	32,043	32,350
Social sciences	45,700	46,386	47,754	50,301	51,181	51,364	52,523	53,430	52,558	52,000	54,532	55,059	55,909
Anthropology	5,311	5,190	5,153	5,316	5,258	5,097	5,287	5,184	5,208	5,312	5,361	5,379	5,391
Economics	4,314	4,392	4,481	4,778	4,819	4,625	4,679	4,771	4,851	4,983	5,463	5,607	5,713
History of science	386	414	426	514	700	679	673	831	808	803	704	498	414
Linguistics	1,237	1,293	1,335	1,418	1,349	1,540	1,503	1,519	1,413	1,517	1,504	1,458	1,492
Political science/public administration	17,401	17,635	18,785	19,525	20,468	20,966	21,242	21,450	21,240	20,594	22,424	22,933	25,368
Sociology	5,445	5,590	5,549	5,602	5,535	5,560	5,597	5,736	5,607	5,818	5,651	5,464	5,284
Other social sciences	11,606	11,872	12,025	13,148	13,052	12,897	13,542	13,939	13,431	12,973	13,425	13,720	12,247
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	2,457	2,959	3,422	4,199	3,579

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Asian or Pacific Islander													
S&E	30,190	31,945	34,918	38,155	37,735	37,764	37,863	38,396	38,221	37,256	37,850	37,737	38,132
Engineering	7,214	7,926	9,299	10,687	9,712	9,730	9,179	9,515	9,410	9,405	9,602	10,075	10,147
Aerospace	206	138	186	207	212	251	312	346	346	366	377	419	437
Chemical	486	474	551	540	453	493	496	475	485	494	536	604	649
Civil	744	771	855	1,024	997	1,006	957	1,054	874	949	1,136	1,286	1,233
Electrical	3,119	3,454	4,079	4,606	3,823	3,762	3,414	3,099	3,164	3,127	3,041	2,985	2,899
Industrial	628	667	850	998	929	1,026	1,010	1,032	1,068	1,069	977	928	804
Materials	246	244	298	316	346	315	337	341	338	359	362	418	430
Mechanical	759	903	870	994	973	962	940	1,242	1,243	1,280	1,225	1,352	1,385
Other	1,026	1,275	1,610	2,002	1,979	1,915	1,713	1,926	1,892	1,761	1,948	2,083	2,310
Science	22,976	24,019	25,619	27,468	28,023	28,034	28,684	28,881	28,811	27,851	28,248	27,662	27,985
Natural sciences	17,843	18,625	19,708	20,906	21,202	20,876	21,508	21,035	20,863	20,033	20,225	19,663	19,790
Agricultural sciences	250	262	286	316	329	290	338	333	340	384	399	377	391
Biological sciences[c]	4,246	4,701	4,826	5,158	5,277	5,420	5,709	6,016	6,254	5,985	6,386	6,596	7,119
Earth, atmospheric, and ocean sciences	351	341	346	355	428	400	389	421	388	387	415	421	441
Atmospheric sciences	41	26	22	46	53	44	35	38	41	40	41	53	50
Earth sciences	132	139	149	126	149	136	141	155	153	159	185	178	188
Oceanography	64	51	64	48	69	65	57	67	67	58	46	47	63
Other geosciences	114	125	111	135	157	155	156	161	127	130	143	143	140
Mathematics/computer sciences	6,280	6,412	7,137	7,131	6,400	5,945	5,635	5,256	5,119	4,978	5,373	5,137	5,140
Computer sciences	5,332	5,427	5,953	5,767	5,102	4,573	4,222	3,838	3,732	3,618	3,916	3,602	3,520
Mathematics/statistics	948	985	1,184	1,364	1,298	1,372	1,413	1,418	1,387	1,360	1,457	1,535	1,620
Medical/other health sciences	5,192	5,451	5,689	6,369	7,090	7,190	7,684	7,117	6,885	6,528	5,781	5,309	4,679
Medical sciences	2,437	2,495	2,506	2,881	3,111	3,364	3,624	3,319	3,171	2,747	2,898	3,029	3,099
Other health sciences[c]	2,755	2,956	3,183	3,488	3,979	3,826	4,060	3,798	3,714	3,781	2,883	2,280	1,580
Physical sciences	1,524	1,458	1,424	1,577	1,678	1,631	1,753	1,892	1,877	1,771	1,871	1,823	2,020
Astronomy	33	36	44	53	38	46	54	57	56	50	66	60	65
Chemistry	1,079	983	950	1,061	1,123	1,093	1,173	1,271	1,267	1,143	1,180	1,201	1,336
Physics	393	422	405	431	492	470	500	497	498	528	565	534	580
Other physical sciences	19	17	25	32	25	22	26	67	56	50	60	28	39
Social/behavioral sciences	5,133	5,394	5,911	6,562	6,821	7,158	7,176	7,846	7,724	7,562	7,721	7,648	7,900
Psychology[c]	2,063	2,176	2,186	2,374	2,443	2,551	2,612	2,896	2,869	2,810	2,659	2,551	2,549
Social sciences	3,070	3,218	3,725	4,188	4,378	4,607	4,564	4,950	4,855	4,752	5,062	5,097	5,351
Anthropology	260	253	252	283	294	308	311	322	322	310	337	315	301
Economics	506	524	623	694	663	636	652	704	710	652	759	798	804
History of science	20	21	28	29	48	36	35	34	29	32	21	18	13
Linguistics	106	154	183	215	176	247	177	196	187	201	210	194	209
Political science/public administration	1,206	1,225	1,489	1,622	1,784	1,950	1,970	2,076	2,042	2,069	2,190	2,251	2,503
Sociology	367	374	387	456	402	397	433	508	489	500	469	457	480
Other social sciences	605	667	763	889	1,011	1,033	986	1,110	1,076	988	1,076	1,064	1,041
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	224	256	302	351	295

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Black or African American													
S&E	25,928	27,071	28,715	31,242	32,496	33,547	34,866	34,934	34,866	35,724	35,823	36,542	37,069
Engineering	2,977	2,915	3,074	3,212	3,399	3,470	3,572	3,684	3,556	3,704	3,872	3,903	3,937
Aerospace	57	45	51	59	68	73	79	81	81	103	108	92	92
Chemical	168	167	160	173	169	146	149	149	155	150	172	164	169
Civil	448	431	453	428	453	456	508	603	461	475	528	594	545
Electrical	830	812	846	812	850	843	828	842	861	864	900	937	951
Industrial	557	591	616	685	714	764	763	741	734	849	826	708	666
Materials	94	107	112	110	105	102	129	131	127	126	112	130	127
Mechanical	396	354	358	382	369	411	419	409	408	425	431	456	463
Other	427	408	478	563	671	675	697	728	729	712	795	822	924
Science	22,951	24,156	25,641	28,030	29,097	30,077	31,294	31,250	31,310	32,020	31,951	32,639	33,132
Natural sciences	10,849	11,695	12,584	14,100	14,917	15,456	16,483	15,942	15,895	16,178	15,553	15,630	15,145
Agricultural sciences	292	327	375	460	394	417	453	431	434	470	406	482	499
Biological sciences[b]	2,241	2,351	2,479	2,757	2,902	2,991	3,071	3,303	3,381	3,461	3,663	3,739	3,723
Earth, atmospheric, and ocean sciences	220	227	266	270	261	262	263	279	272	301	311	328	321
Atmospheric sciences	18	19	25	32	36	30	26	32	32	48	39	51	56
Earth sciences	56	57	64	75	84	82	71	95	93	97	113	132	131
Oceanography	28	31	36	35	30	37	41	38	38	38	41	29	28
Other geosciences	118	120	141	128	111	113	125	114	109	118	118	116	106
Mathematics/computer sciences	2,084	2,299	2,524	2,606	2,495	2,481	2,485	2,576	2,542	2,570	2,818	2,968	2,894
Computer sciences	1,512	1,709	1,898	1,951	1,799	1,761	1,774	1,865	1,834	1,889	2,088	2,228	2,134
Mathematics/statistics	572	590	626	655	696	720	711	711	708	681	730	740	760
Medical/other health sciences	5,094	5,616	6,047	7,068	7,872	8,299	9,202	8,369	8,286	8,367	7,376	7,105	6,705
Medical sciences	1,780	1,829	1,955	2,402	2,398	2,601	3,014	3,005	3,056	3,427	3,565	4,073	4,622
Other health sciences[c]	3,314	3,787	4,092	4,666	5,474	5,698	6,188	5,364	5,230	4,940	3,811	3,032	2,083
Physical sciences	918	875	893	939	993	1,006	1,009	984	980	1,009	979	1,008	1,003
Astronomy	9	12	10	9	10	10	11	8	8	7	6	7	6
Chemistry	650	631	636	663	711	692	732	735	733	742	746	786	757
Physics	235	211	220	236	248	272	229	210	210	215	206	195	217
Other physical sciences	24	21	27	31	24	32	37	31	29	45	21	20	23
Social/behavioral sciences	12,102	12,461	13,057	13,930	14,180	14,621	14,811	15,308	15,095	15,454	15,918	16,448	17,511
Psychology[c]	4,214	4,343	4,487	4,692	4,990	5,238	5,089	5,140	5,100	5,358	5,393	5,442	5,806
Social sciences	7,888	8,118	8,570	9,238	9,190	9,383	9,722	10,168	9,995	10,096	10,525	11,006	11,705
Anthropology	270	274	248	276	272	277	278	268	268	287	268	248	241
Economics	397	390	405	441	434	384	422	377	378	401	500	492	511
History of science	14	16	24	25	30	42	31	50	49	56	51	43	20
Linguistics	44	47	44	49	47	64	46	43	37	45	59	61	60
Political science/public administration	4,073	4,264	4,632	4,849	4,917	4,932	5,063	4,942	4,885	4,968	5,243	5,759	6,852
Sociology	1,098	1,132	1,132	1,201	1,164	1,194	1,140	1,278	1,257	1,300	1,266	1,245	1,241
Other social sciences	1,992	1,995	2,085	2,397	2,326	2,490	2,742	3,210	3,121	3,039	3,138	3,158	2,780
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	320	388	480	561	476

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Hispanic[d]													
S&E	21,327	22,329	24,282	26,684	28,031	29,309	30,510	31,110	31,019	30,691	31,281	32,187	33,824
Engineering	3,018	3,183	3,461	3,979	4,164	4,090	4,381	4,517	4,355	4,331	4,764	5,220	5,670
Aerospace	80	71	92	119	118	116	136	145	145	159	195	240	290
Chemical	182	180	206	249	249	240	277	261	261	238	225	279	284
Civil	776	747	778	846	898	896	967	1,068	892	796	915	1,091	1,136
Electrical	717	825	941	1,094	1,097	1,090	1,044	979	996	1,007	1,072	1,157	1,196
Industrial	439	469	477	562	629	579	664	661	664	703	717	677	716
Materials	84	80	79	98	99	106	98	116	117	118	145	170	213
Mechanical	366	407	450	537	566	575	621	653	656	685	749	827	948
Other	374	404	438	474	508	488	574	634	624	625	746	779	887
Science	18,309	19,146	20,821	22,705	23,867	25,219	26,129	26,593	26,664	26,360	26,517	26,967	28,154
Natural sciences	9,269	9,787	10,579	12,046	12,874	13,156	13,892	13,904	13,834	13,489	13,683	13,954	14,135
Agricultural sciences	440	425	406	490	524	506	535	576	604	611	749	770	809
Biological sciences[b]	2,183	2,338	2,585	2,830	2,993	3,146	3,289	3,470	3,555	3,598	3,837	4,136	4,493
Earth, atmospheric, and ocean sciences	355	397	413	484	538	508	540	555	522	525	585	669	698
Atmospheric sciences	12	15	16	21	27	36	30	27	30	42	46	59	67
Earth sciences	136	155	163	187	217	206	217	217	218	229	270	324	337
Oceanography	113	137	131	158	161	150	151	162	162	148	141	140	137
Other geosciences	94	90	103	118	133	116	142	149	112	106	128	146	157
Mathematics/computer sciences	1,323	1,376	1,546	1,705	1,767	1,832	1,902	1,955	1,928	1,937	2,159	2,249	2,510
Computer sciences	863	894	1,004	1,101	1,142	1,199	1,207	1,191	1,170	1,227	1,371	1,455	1,618
Mathematics/statistics	460	482	542	604	625	633	695	764	758	710	788	794	892
Medical/other health sciences	4,124	4,355	4,648	5,443	5,819	5,922	6,370	6,078	5,961	5,550	5,071	4,766	4,220
Medical sciences	1,533	1,734	1,669	1,874	1,999	1,943	2,093	2,022	1,712	1,885	2,001	2,149	2,166
Other health sciences[c]	2,591	2,621	2,979	3,569	3,820	3,979	4,277	4,056	4,249	3,665	3,070	2,617	2,054
Physical sciences	844	896	981	1,094	1,233	1,242	1,256	1,270	1,264	1,268	1,282	1,364	1,405
Astronomy	17	17	17	25	23	27	27	32	32	33	37	38	37
Chemistry	602	629	668	750	838	823	823	821	819	822	834	873	878
Physics	202	239	274	297	343	358	374	385	385	376	397	432	463
Other physical sciences	23	11	22	22	29	34	32	32	28	37	14	21	27
Social/behavioral sciences	9,040	9,359	10,242	10,659	10,993	12,063	12,237	12,689	12,577	12,511	12,433	12,396	13,558
Psychology[c]	4,145	4,309	4,655	4,677	4,791	5,101	5,222	5,526	5,506	5,543	5,003	4,859	5,396
Social sciences	4,895	5,050	5,587	5,982	6,202	6,962	7,015	7,163	7,071	6,968	7,430	7,537	8,162
Anthropology	368	383	409	436	453	472	491	515	519	527	535	544	549
Economics	277	346	362	411	409	390	406	416	421	425	501	548	555
History of science	17	18	55	38	56	60	64	33	33	80	72	26	20
Linguistics	142	126	140	136	148	163	125	151	143	123	148	149	171
Political science/public administration	2,303	2,223	2,587	2,749	2,960	3,298	3,235	3,244	3,216	3,075	3,362	3,344	3,878
Sociology	634	636	686	709	693	718	721	846	816	877	857	957	972
Other social sciences	1,154	1,318	1,348	1,503	1,483	1,861	1,973	1,958	1,923	1,861	1,955	1,969	2,017
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	253	360	401	617	461

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
American Indian or Alaska Native													
S&E	2,021	2,136	2,239	2,399	2,354	2,485	2,689	2,777	2,792	3,172	2,935	2,759	2,640
Engineering	208	227	244	304	273	273	290	286	275	304	312	293	300
Aerospace	8	8	11	15	16	13	10	13	13	18	16	11	15
Chemical	20	13	21	19	27	24	20	16	16	15	14	18	17
Civil	39	43	58	65	51	52	62	70	58	50	59	55	63
Electrical	37	45	39	63	54	54	46	47	48	61	54	48	51
Industrial	41	43	34	52	48	51	55	46	47	51	61	43	39
Materials	5	8	11	8	6	5	8	9	9	13	11	12	10
Mechanical	27	32	32	42	24	28	32	33	33	37	43	46	44
Other	31	35	38	40	47	46	57	52	51	59	54	60	61
Science	1,813	1,909	1,995	2,095	2,081	2,212	2,399	2,491	2,517	2,868	2,623	2,466	2,340
Natural sciences	905	992	1,062	1,104	1,111	1,161	1,323	1,332	1,319	1,517	1,338	1,281	1,161
Agricultural sciences	56	58	76	77	82	76	85	87	88	130	134	146	97
Biological sciences[b]	189	205	210	236	248	277	310	300	309	346	342	371	347
Earth, atmospheric, and ocean sciences	61	70	81	63	67	61	69	88	80	74	75	102	109
Atmospheric sciences	3	4	4	5	4	3	1	3	3	5	7	5	4
Earth sciences	27	32	36	26	33	29	36	45	45	40	43	69	79
Oceanography	10	12	11	8	11	11	11	14	14	8	12	10	9
Other geosciences	21	22	30	24	19	18	21	26	18	21	13	18	17
Mathematics/computer sciences	105	125	107	129	130	138	164	143	139	188	175	176	155
Computer sciences	80	87	83	104	91	100	105	96	94	130	128	125	101
Mathematics/statistics	25	38	24	25	39	38	59	47	45	58	47	51	54
Medical/other health sciences	419	453	505	520	506	527	577	609	600	668	493	384	349
Medical sciences	113	124	138	167	134	133	148	191	187	223	179	175	190
Other health sciences[c]	306	329	367	353	372	394	429	418	413	445	314	209	159
Physical sciences	75	81	83	79	78	82	118	105	103	111	119	102	104
Astronomy	1	0	2	3	3	5	8	9	9	9	7	7	9
Chemistry	61	62	58	51	54	53	78	70	70	63	74	57	61
Physics	12	19	22	24	18	20	26	22	22	30	31	28	29
Other physical sciences	1	0	1	1	3	4	6	4	2	9	7	10	5
Social/behavioral sciences	908	917	933	991	970	1,051	1,076	1,159	1,146	1,296	1,231	1,135	1,136
Psychology[c]	360	334	320	324	323	332	344	404	402	398	384	353	356
Social sciences	548	583	613	667	647	719	732	755	744	898	847	782	780
Anthropology	109	102	89	99	106	123	145	126	127	144	134	127	126
Economics	24	25	32	38	56	42	33	21	21	64	38	29	40
History of science	2	2	2	5	7	5	8	4	2	7	5	2	4
Linguistics	13	13	12	16	17	17	21	31	28	36	40	29	27
Political science/public administration	175	192	217	241	212	246	241	251	251	295	288	257	271
Sociology	75	82	82	83	71	68	65	71	70	90	80	64	72
Other social sciences	150	167	179	185	178	218	219	251	245	262	262	274	240
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	52	55	54	50	43

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Other/unknown race or ethnicity													
S&E	24,316	24,885	27,237	30,384	34,028	39,349	41,422	44,117	44,004	45,059	44,077	43,945	40,187
Engineering	4,151	4,180	4,640	5,659	5,596	6,120	6,983	7,604	7,397	7,498	8,053	8,314	7,793
Aerospace	92	109	147	214	196	231	492	353	353	421	424	429	391
Chemical	228	147	183	201	189	211	187	226	226	252	266	335	328
Civil	540	588	702	762	767	866	956	1,141	880	942	1,228	1,211	1,126
Electrical	1,630	1,522	1,553	1,834	1,610	1,763	1,959	2,003	2,022	2,249	1,961	1,947	1,914
Industrial	580	563	645	843	959	993	1,171	1,240	1,284	1,249	1,625	1,661	1,434
Materials	85	107	100	105	130	131	192	218	228	192	200	215	245
Mechanical	499	513	598	764	794	845	856	926	928	1,057	1,111	1,170	1,016
Other	497	631	712	936	951	1,080	1,170	1,497	1,476	1,136	1,238	1,346	1,339
Science	20,165	20,705	22,597	24,725	28,432	33,229	34,439	36,513	36,607	37,561	36,024	35,631	32,394
Natural sciences	11,642	12,194	13,510	14,800	16,268	18,269	18,968	20,560	20,391	21,177	19,649	19,452	17,478
Agricultural sciences	422	503	456	459	485	513	546	608	593	727	829	774	764
Biological sciences[b]	2,407	2,408	2,585	3,075	3,261	3,551	3,492	4,090	4,484	4,618	4,886	4,951	4,722
Earth, atmospheric, and ocean sciences	450	451	558	702	701	701	776	826	783	971	1,045	1,068	1,016
Atmospheric sciences	28	28	31	44	30	39	39	39	42	85	72	63	71
Earth sciences	223	203	282	351	312	322	388	390	392	474	532	576	497
Oceanography	55	71	65	86	100	111	109	111	108	133	187	163	165
Other geosciences	144	149	180	221	259	229	240	286	241	279	254	266	283
Mathematics/computer sciences	3,466	3,654	4,143	4,232	4,196	4,310	4,564	5,217	5,115	4,794	4,651	4,835	4,160
Computer sciences	2,833	2,968	3,303	3,237	3,189	3,221	3,424	3,878	3,800	3,522	3,289	3,156	2,866
Mathematics/statistics	633	686	840	995	1,007	1,089	1,140	1,339	1,315	1,272	1,362	1,679	1,294
Medical/other health sciences	3,871	3,901	4,518	4,957	6,185	7,779	7,907	8,062	7,674	8,190	6,351	5,788	4,866
Medical sciences	1,210	1,110	1,198	1,463	1,587	2,615	2,747	2,347	2,061	2,095	2,253	2,527	2,496
Other health sciences[c]	2,661	2,791	3,320	3,494	4,598	5,164	5,160	5,715	5,613	6,095	4,098	3,261	2,370
Physical sciences	1,026	1,277	1,250	1,375	1,440	1,415	1,683	1,757	1,742	1,877	1,887	2,036	1,950
Astronomy	34	41	44	47	44	63	62	70	70	71	89	89	80
Chemistry	463	515	554	688	740	737	930	918	912	981	1,031	1,078	1,043
Physics	401	615	549	547	569	588	656	729	729	796	745	842	798
Other physical sciences	128	106	103	93	87	27	35	40	31	29	22	27	29
Social/behavioral sciences	8,523	8,511	9,087	9,925	12,164	14,960	15,471	15,953	15,734	15,749	15,506	15,250	14,275
Psychology[c]	3,620	3,202	3,183	3,436	4,805	6,647	6,490	6,229	6,178	6,273	5,465	5,084	4,941
Social sciences	4,903	5,309	5,904	6,489	7,359	8,313	8,981	9,724	9,556	9,476	10,041	10,166	9,334
Anthropology	479	520	483	557	583	615	713	710	711	772	775	925	816
Economics	488	556	627	558	557	513	618	662	687	806	933	833	879
History of science	24	30	60	57	84	64	70	72	57	103	60	43	40
Linguistics	172	149	179	231	199	226	252	241	220	228	268	291	273
Political science/public administration	1,814	2,043	2,570	3,017	3,713	4,503	4,726	4,705	4,629	4,620	4,821	4,976	4,689
Sociology	446	414	439	434	491	544	537	811	807	786	750	796	702
Other social sciences	1,480	1,597	1,546	1,635	1,732	1,848	2,065	2,523	2,445	2,161	2,434	2,302	1,935
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	482	635	869	929	641

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Temporary resident													
S&E	128,417	140,870	152,988	155,016	151,245	147,496	151,018	157,572	156,912	165,244	168,850	171,002	173,453
Engineering	47,461	52,603	58,391	60,067	57,187	54,014	55,343	59,898	59,483	62,540	64,842	65,699	66,420
Aerospace	1,513	1,646	1,686	1,687	1,688	1,642	1,484	1,526	1,526	1,591	1,661	1,647	1,646
Chemical	3,345	3,515	3,728	3,780	3,699	3,498	3,576	3,736	3,840	4,071	4,166	4,396	4,426
Civil	6,145	6,593	7,160	7,432	7,125	6,699	6,381	6,816	6,099	6,454	6,888	7,077	7,375
Electrical	18,296	20,566	23,369	23,645	22,117	20,788	22,099	24,448	24,564	25,122	25,282	25,227	25,595
Industrial	4,545	5,352	5,743	5,493	5,089	4,579	4,580	5,270	5,384	6,228	6,314	6,177	5,942
Materials	2,112	2,336	2,510	2,585	2,558	2,642	2,578	2,626	2,595	2,743	2,914	3,077	3,334
Mechanical	7,183	7,711	8,577	8,791	8,128	7,654	7,714	7,871	7,866	8,510	9,350	9,523	9,248
Other	4,322	4,884	5,618	6,654	6,783	6,512	6,931	7,605	7,609	7,821	8,267	8,575	8,854
Science	80,956	88,267	94,597	94,949	94,058	93,482	95,675	97,674	97,429	102,704	104,008	105,303	107,033
Natural sciences	62,370	68,728	73,678	73,578	72,489	72,349	74,014	75,880	75,319	79,525	80,658	81,406	82,483
Agricultural sciences	2,411	2,513	2,613	2,596	2,695	2,659	2,675	2,735	2,897	3,106	3,262	3,240	3,427
Biological sciences[b]	11,761	12,443	13,835	14,836	15,831	16,467	16,907	16,879	16,958	17,932	17,756	17,897	18,166
Earth, atmospheric, and ocean sciences	2,692	2,782	2,777	2,783	2,794	2,778	2,767	2,723	2,612	2,777	2,757	2,926	3,090
Atmospheric sciences	304	285	315	289	273	297	258	263	287	320	299	322	333
Earth sciences	1,302	1,355	1,379	1,433	1,452	1,427	1,428	1,437	1,387	1,403	1,503	1,644	1,773
Oceanography	526	514	466	489	497	490	503	437	431	470	463	434	469
Other geosciences	560	628	617	572	572	564	578	586	507	584	492	526	515
Mathematics/computer sciences	28,319	32,538	34,090	31,684	29,162	28,011	28,574	30,729	30,348	32,402	33,151	33,991	34,728
Computer sciences	22,262	26,054	27,066	24,276	21,755	20,569	20,978	23,002	22,805	24,237	24,836	25,376	25,578
Mathematics/statistics	6,057	6,484	7,024	7,408	7,407	7,442	7,596	7,727	7,543	8,165	8,315	8,615	9,150
Medical/other health sciences	5,532	6,249	7,273	7,552	7,394	7,734	8,334	8,339	8,097	8,545	8,654	8,031	7,516
Medical sciences	3,725	4,228	5,068	5,228	4,973	5,060	5,501	5,737	5,579	5,957	6,290	5,886	5,866
Other health sciences[c]	1,807	2,021	2,205	2,324	2,421	2,674	2,833	2,602	2,518	2,588	2,364	2,145	1,650
Physical sciences	11,655	12,203	13,090	14,127	14,613	14,700	14,757	14,475	14,407	14,763	15,078	15,321	15,556
Astronomy	271	283	303	333	370	363	366	381	381	402	440	399	406
Chemistry	6,222	6,569	7,253	7,881	8,139	8,268	8,301	8,149	8,097	8,419	8,579	8,670	8,745
Physics	5,084	5,257	5,442	5,811	6,028	5,999	6,000	5,905	5,898	5,874	5,982	6,047	6,173
Other physical sciences	78	94	92	102	76	70	90	40	31	68	77	205	232
Social/behavioral sciences	18,586	19,539	20,919	21,371	21,569	21,133	21,661	21,794	21,414	22,273	22,321	22,660	23,508
Psychology[c]	2,263	2,521	2,857	3,107	3,194	3,054	2,851	3,113	3,043	3,079	2,938	3,087	3,088
Social sciences	16,323	17,018	18,062	18,264	18,375	18,079	18,810	18,681	18,371	19,194	19,383	19,573	20,420
Anthropology	829	769	847	822	860	858	925	974	974	981	949	990	982
Economics	6,821	7,336	7,666	7,714	7,575	7,342	7,480	7,503	7,518	7,772	8,021	8,190	8,513
History of science	69	70	68	69	69	79	87	95	76	96	93	75	86
Linguistics	960	962	982	963	1,005	930	950	895	851	945	941	950	987
Political science/public administration	4,159	4,223	4,654	4,877	4,969	4,885	5,307	5,186	5,086	5,250	5,591	5,525	6,099

Appendix table 2-27

S&E graduate enrollment, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007old[a]	2007new[a]	2008	2009	2010	2011
Sociology	1,332	1,392	1,390	1,415	1,357	1,385	1,379	1,315	1,278	1,284	1,234	1,229	1,208
Other social sciences	2,153	2,266	2,455	2,404	2,540	2,600	2,682	2,713	2,588	2,866	2,554	2,614	2,545
Multidisciplinary/interdisciplinary studies	NA	NA	NA	NA	NA	NA	NA	NA	696	906	1,029	1,237	1,042

NA = not available.

[a] In 2007, the survey was redesigned to improve reporting, and five fields were added or reclassified to improve reporting. "2007new" shows data as collected in 2007; "2007old" shows data as they would have been collected in prior years. Because of methodological changes, counts should be used with caution for trend analysis. See http://www.nsf.gov/statistics/nsf10307/ for more detail. S&E excludes fields that were collected in this survey starting in 2007 (architecture, communication, and family and consumer sciences/human sciences) that are not included in other tables in this report from other data sources.
[b] Starting in 2007, includes neuroscience, which had been included in "neurology" under medical sciences in prior years.
[c] Beginning with 2008, more rigorous follow-up was done with institutions regarding exclusion of practitioner-oriented graduate degree programs in psychology and other health sciences (a subfield of health). This change may affect interpretation of trends in these fields.
[d] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Graduate Students and Postdoctorates in Science and Engineering.

Science and Engineering Indicators 2014

Appendix table 2-28

Foreign graduate student enrollment in U.S. universities, by field and selected places of origin: November 2011 and November 2012

Place of origin	All fields	S&E									Non-S&E
		Total	Agricultural sciences	Biological sciences	Computer sciences	Engineering	Mathematics	Physical sciences	Psychology	Social sciences	
November 2011											
All locations	276,400	163,880	3,720	17,610	28,280	66,580	9,390	17,210	2,900	18,210	112,520
China	80,610	51,150	1,190	5,450	6,020	20,500	5,430	6,870	460	5,240	29,460
India	63,930	49,870	560	5,010	15,490	23,950	670	2,920	240	1,040	14,060
South Korea	21,310	8,200	160	790	740	3,200	490	680	270	1,870	13,110
Taiwan	11,680	5,350	110	870	610	2,280	230	570	130	560	6,330
Iran	5,120	4,390	50	140	420	3,100	90	370	20	210	730
Turkey	4,600	2,920	20	250	270	1,180	140	270	70	730	1,680
Canada	9,410	2,790	70	460	130	640	140	250	480	620	6,620
Saudi Arabia	5,740	2,620	30	210	750	990	120	170	30	320	3,130
Nepal	3,080	2,080	130	300	340	550	90	450	10	210	1,000
Bangladesh	1,770	1,470	20	90	280	840	30	110	0	110	300
Japan	3,720	1,460	40	200	70	200	70	160	110	620	2,260
Mexico	2,980	1,450	90	170	100	450	100	150	40	360	1,530
Colombia	2,220	1,240	80	210	60	410	70	150	30	240	980
Germany	2,470	1,210	30	150	70	210	80	210	60	410	1,260
Nigeria	2,600	1,190	50	130	160	500	30	130	10	180	1,410
Thailand	2,990	1,060	50	80	190	420	40	70	20	170	1,940
France	2,100	1,040	20	80	80	470	50	130	20	200	1,060
Sri Lanka	1,210	1,040	30	90	70	180	120	500	10	40	170
Russian Federation	1,760	890	10	120	80	140	70	250	20	210	860
Italy	1,620	870	30	90	70	260	60	90	20	240	750
Other locations	45,480	21,570	960	2,730	2,290	6,110	1,280	2,700	870	4,640	23,910
November 2012											
All locations	284,620	163,390	3,760	16,920	27,020	65,450	10,420	17,390	3,010	19,420	121,240
China	97,350	59,430	1,340	5,560	7,550	24,430	6,450	7,210	550	6,340	37,920
India	51,310	39,480	440	4,250	12,280	18,120	630	2,570	220	960	11,830
South Korea	21,200	7,810	140	770	670	3,050	460	580	270	1,860	13,390
Iran	6,710	5,630	80	160	550	3,920	110	530	30	260	1,080
Taiwan	10,630	4,950	100	800	550	2,090	220	550	120	520	5,680
Saudi Arabia	9,240	4,300	60	360	1,250	1,510	200	300	40	590	4,940
Canada	9,250	2,690	70	460	120	590	130	260	480	600	6,550
Turkey	4,320	2,680	10	220	270	1,040	140	240	70	690	1,640
Nepal	3,180	2,190	150	350	290	560	100	540	10	210	990
Bangladesh	2,320	1,900	30	110	350	1,070	40	170	0	140	420
Mexico	3,220	1,530	90	170	90	480	80	160	40	410	1,700
Japan	3,390	1,290	40	150	60	190	60	140	90	560	2,100
Colombia	2,200	1,220	90	200	50	390	60	160	20	250	980
Nigeria	2,680	1,210	40	130	170	500	40	140	10	170	1,480
Sri Lanka	1,320	1,150	30	90	70	190	140	570	10	40	170

Appendix table 2-28

Foreign graduate student enrollment in U.S. universities, by field and selected places of origin: November 2011 and November 2012

		S&E									
Place of origin	All fields	Total	Agricultural sciences	Biological sciences	Computer sciences	Engineering	Mathematics	Physical sciences	Psychology	Social sciences	Non-S&E
Germany	2,380	1,110	30	150	60	220	60	170	50	390	1,270
France	2,180	980	10	70	80	420	60	120	20	200	1,200
Vietnam	2,220	940	20	70	190	280	110	130	10	140	1,280
Thailand	2,900	940	40	70	170	360	40	80	30	160	1,970
Russian Federation	1,810	890	10	100	90	140	80	250	20	210	920
Other locations	44,800	21,070	940	2,650	2,110	5,950	1,230	2,530	920	4,730	23,730

NOTES: Data include active foreign national students on F-1 visas and exclude those on optional practical training. Graduate student enrollment includes master's and doctoral degrees. Numbers are rounded to the nearest 10. Countries are ordered by number of S&E students. Detail may not add to total because of rounding.

SOURCE: Bureau of Citizenship and Immigration Services, special tabulations (2013) of the Student and Exchange Visitor Information System database.

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Appendix table 2-29

Earned master's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Both sexes												
All fields	460,142	471,329	485,535	516,098	562,862	578,964	599,365	610,469	631,711	665,473	698,528	736,455
S&E	96,230	99,528	99,650	108,355	119,296	120,870	120,999	120,278	126,404	134,517	139,926	150,653
Engineering	25,738	26,436	26,180	29,472	33,922	33,899	32,263	30,936	33,177	36,510	37,614	41,282
Aerospace	560	611	682	702	870	935	936	912	1,036	1,075	1,098	1,306
Chemical	1,352	1,368	1,267	1,364	1,506	1,506	1,432	1,230	1,230	1,285	1,430	1,741
Civil	4,140	4,010	3,945	4,188	4,445	4,631	4,493	4,184	4,327	4,570	4,962	5,915
Electrical	8,341	8,596	8,246	10,038	12,220	11,613	10,456	10,093	11,232	12,698	12,105	12,545
Industrial	3,048	3,375	3,375	3,842	4,247	3,937	3,558	3,505	3,659	4,313	4,866	5,083
Materials	759	706	624	717	800	790	765	787	768	836	815	894
Mechanical	3,378	3,471	3,516	3,802	4,555	4,739	4,542	4,365	4,556	4,689	4,890	5,938
Other	4,160	4,299	4,525	4,819	5,279	5,748	6,081	5,860	6,369	7,044	7,448	7,860
Science	70,492	73,092	73,470	78,883	85,374	86,971	88,736	89,342	93,227	98,007	102,312	109,371
Natural sciences	33,326	35,471	35,780	39,300	41,970	41,078	40,808	40,144	41,914	43,397	45,331	48,346
Agricultural sciences	3,858	3,752	4,019	3,955	4,221	4,171	4,100	4,126	4,120	4,349	4,684	5,148
Biological sciences	6,329	6,487	6,341	6,883	7,644	8,120	8,718	8,794	9,565	9,921	10,668	11,214
Earth, atmospheric, and ocean sciences	1,345	1,363	1,406	1,491	1,570	1,637	1,684	1,632	1,552	1,579	1,677	1,789
Atmospheric sciences	156	140	141	167	179	212	206	193	199	225	227	221
Earth sciences	1,104	1,121	1,151	1,203	1,248	1,314	1,350	1,312	1,222	1,224	1,301	1,429
Oceanography	85	102	114	121	143	111	128	127	131	130	149	139
Mathematics/computer sciences	18,281	20,132	20,389	23,311	24,505	23,086	22,028	21,349	22,303	23,447	23,979	25,722
Computer sciences	14,986	16,852	16,965	19,590	20,208	18,489	17,138	16,314	17,151	17,988	18,021	19,519
Mathematics/statistics	3,295	3,280	3,424	3,721	4,297	4,597	4,890	5,035	5,152	5,459	5,958	6,203
Physical sciences	3,513	3,737	3,625	3,660	4,030	4,064	4,278	4,243	4,374	4,101	4,323	4,473
Astronomy	102	93	112	123	150	159	146	152	166	139	149	185
Chemistry	1,909	2,009	1,867	1,830	2,056	1,912	2,097	2,144	2,236	2,131	2,175	2,324
Physics	1,244	1,376	1,353	1,453	1,637	1,794	1,853	1,792	1,799	1,657	1,810	1,771
Other physical sciences	258	259	293	254	187	199	182	155	173	174	189	193
Social/behavioral sciences	37,166	37,621	37,690	39,583	43,404	45,893	47,928	49,198	51,313	54,610	56,981	61,025
Psychology	13,806	14,449	14,204	14,885	15,700	16,478	17,302	18,594	18,836	20,744	21,032	22,363
Social sciences	23,360	23,172	23,486	24,698	27,704	29,415	30,626	30,604	32,477	33,866	35,949	38,662
Anthropology	950	1,092	1,017	1,043	1,098	1,107	1,156	1,214	1,145	1,248	1,233	1,243
Area/ethnic studies	1,511	1,511	1,473	1,427	1,616	1,662	2,017	1,641	1,722	1,672	1,700	1,880
Economics	2,515	2,492	2,651	2,951	3,201	3,504	3,330	3,351	3,576	3,651	3,732	4,173
History of science	24	26	35	25	25	29	41	28	47	33	25	44
Linguistics	553	552	520	525	574	611	621	583	610	720	679	711
Political science/public administration	13,038	12,937	13,200	14,135	15,780	17,421	18,073	18,525	19,933	20,575	22,083	24,128
Sociology	2,036	1,901	1,957	1,929	2,031	1,518	1,577	1,575	1,571	1,601	1,453	1,640
Other social sciences	2,733	2,661	2,633	2,663	3,379	3,563	3,811	3,687	3,873	4,366	5,044	4,843
Non-S&E	363,912	371,801	385,885	407,743	443,566	458,094	478,366	490,191	505,307	530,956	558,602	585,802

Appendix table 2-29

Earned master's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Male												
All fields	192,821	195,277	200,199	212,513	230,786	234,829	239,418	239,892	248,971	263,478	277,170	293,301
S&E	54,560	55,884	55,939	61,183	67,215	67,244	66,249	65,353	68,810	73,489	76,266	82,451
Engineering	20,396	20,819	20,617	23,301	26,774	26,287	24,784	23,957	25,540	28,271	29,212	31,943
Aerospace	484	521	557	596	721	771	781	742	864	906	941	1,110
Chemical	1,008	1,016	932	1,021	1,089	1,081	1,046	854	877	887	995	1,235
Civil	3,065	2,951	2,883	3,041	3,234	3,309	3,147	2,969	3,091	3,214	3,553	4,266
Electrical	6,781	6,921	6,685	8,136	9,822	9,133	8,243	8,079	8,882	10,198	9,695	10,064
Industrial	2,400	2,591	2,583	2,999	3,341	3,018	2,640	2,628	2,734	3,247	3,685	3,738
Materials	558	534	456	536	601	586	565	578	549	594	590	650
Mechanical	2,923	3,023	3,048	3,343	3,992	4,140	3,909	3,782	3,896	3,990	4,197	5,150
Other	3,177	3,262	3,473	3,629	3,974	4,249	4,453	4,325	4,647	5,235	5,556	5,730
Science	34,164	35,065	35,322	37,882	40,441	40,957	41,465	41,396	43,270	45,218	47,054	50,508
Natural sciences	19,765	20,934	21,097	23,356	24,768	24,417	24,457	23,946	24,982	25,944	26,952	28,688
Agricultural sciences	2,039	1,915	2,022	1,896	1,965	1,951	1,947	1,859	1,872	2,031	2,237	2,399
Biological sciences	2,816	2,732	2,668	2,864	3,160	3,233	3,612	3,541	3,954	4,146	4,485	4,782
Earth, atmospheric, and ocean sciences	832	799	834	879	869	927	923	891	847	848	888	994
Atmospheric sciences	119	100	95	112	112	143	135	124	126	134	133	135
Earth sciences	670	649	678	702	682	737	738	713	663	658	686	797
Oceanography	43	50	61	65	75	47	50	54	58	56	69	62
Mathematics/computer sciences	11,780	13,052	13,274	15,375	16,257	15,766	15,323	14,975	15,500	16,332	16,640	17,697
Computer sciences	9,983	11,161	11,325	13,335	13,910	13,180	12,520	12,038	12,555	13,119	13,058	14,011
Mathematics/statistics	1,797	1,891	1,949	2,040	2,347	2,586	2,803	2,937	2,945	3,213	3,582	3,686
Physical sciences	2,298	2,436	2,299	2,342	2,517	2,540	2,652	2,680	2,809	2,587	2,702	2,816
Astronomy	77	57	85	81	97	97	80	93	104	82	94	115
Chemistry	1,086	1,184	1,015	1,001	1,106	973	1,073	1,139	1,201	1,134	1,120	1,243
Physics	1,000	1,090	1,067	1,140	1,224	1,372	1,414	1,375	1,421	1,286	1,400	1,367
Other physical sciences	135	105	132	120	90	98	85	73	83	85	88	91
Social/behavioral sciences	14,399	14,131	14,225	14,526	15,673	16,540	17,008	17,450	18,288	19,274	20,102	21,820
Psychology	3,443	3,510	3,426	3,478	3,465	3,560	3,665	3,915	3,920	4,382	4,386	4,719
Social sciences	10,956	10,621	10,799	11,048	12,208	12,980	13,343	13,535	14,368	14,892	15,716	17,101
Anthropology	363	403	375	388	377	370	395	375	379	410	394	394
Area/ethnic studies	643	619	608	554	656	687	794	644	662	622	679	746
Economics	1,563	1,519	1,601	1,790	1,949	2,113	2,011	2,045	2,192	2,145	2,240	2,445
History of science	18	16	18	15	11	17	30	10	24	17	16	30
Linguistics	146	172	160	145	164	178	171	175	212	217	202	229
Political science/public administration	6,317	6,094	6,213	6,399	6,947	7,614	7,850	8,209	8,694	8,979	9,550	10,580
Sociology	649	643	642	633	673	485	467	485	512	536	476	567
Other social sciences	1,257	1,155	1,182	1,124	1,431	1,516	1,625	1,592	1,693	1,966	2,159	2,110
Non-S&E	138,261	139,393	144,260	151,330	163,571	167,585	173,169	174,539	180,161	189,989	200,904	210,850

Appendix table 2-29

Earned master's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female												
All fields	267,321	276,052	285,336	303,585	332,076	344,135	359,947	370,577	382,740	401,995	421,358	443,154
S&E	41,670	43,644	43,711	47,172	52,081	53,626	54,750	54,925	57,594	61,028	63,660	68,202
Engineering	5,342	5,617	5,563	6,171	7,148	7,612	7,479	6,979	7,637	8,239	8,402	9,339
Aerospace	76	90	125	106	149	164	155	170	172	169	157	196
Chemical	344	352	335	343	417	425	386	376	353	398	435	506
Civil	1,075	1,059	1,062	1,147	1,211	1,322	1,346	1,215	1,236	1,356	1,409	1,649
Electrical	1,560	1,675	1,561	1,902	2,398	2,480	2,213	2,014	2,350	2,500	2,410	2,481
Industrial	648	784	792	843	906	919	918	877	925	1,066	1,181	1,345
Materials	201	172	168	181	199	204	200	209	219	242	225	244
Mechanical	455	448	468	459	563	599	633	583	660	699	693	788
Other	983	1,037	1,052	1,190	1,305	1,499	1,628	1,535	1,722	1,809	1,892	2,130
Science	36,328	38,027	38,148	41,001	44,933	46,014	47,271	47,946	49,957	52,789	55,258	58,863
Natural sciences	13,561	14,537	14,683	15,944	17,202	16,661	16,351	16,198	16,932	17,453	18,379	19,658
Agricultural sciences	1,819	1,837	1,997	2,059	2,256	2,220	2,153	2,267	2,248	2,318	2,447	2,749
Biological sciences	3,513	3,755	3,673	4,019	4,484	4,887	5,106	5,253	5,611	5,775	6,183	6,432
Earth, atmospheric, and ocean sciences	513	564	572	612	701	710	761	741	705	731	789	795
Atmospheric sciences	37	40	46	55	67	69	71	69	73	91	94	86
Earth sciences	434	472	473	501	566	577	612	599	559	566	615	632
Oceanography	42	52	53	56	68	64	78	73	73	74	80	77
Mathematics/computer sciences	6,501	7,080	7,115	7,936	8,248	7,320	6,705	6,374	6,803	7,115	7,339	8,025
Computer sciences	5,003	5,691	5,640	6,255	6,298	5,309	4,618	4,276	4,596	4,869	4,963	5,508
Mathematics/statistics	1,498	1,389	1,475	1,681	1,950	2,011	2,087	2,098	2,207	2,246	2,376	2,517
Physical sciences	1,215	1,301	1,326	1,318	1,513	1,524	1,626	1,563	1,565	1,514	1,621	1,657
Astronomy	25	36	27	42	53	62	66	59	62	57	55	70
Chemistry	823	825	852	829	950	939	1,024	1,005	1,035	997	1,055	1,081
Physics	244	286	286	313	413	422	439	417	378	371	410	404
Other physical sciences	123	154	161	134	97	101	97	82	90	89	101	102
Social/behavioral sciences	22,767	23,490	23,465	25,057	27,731	29,353	30,920	31,748	33,025	35,336	36,879	39,205
Psychology	10,363	10,939	10,778	11,407	12,235	12,918	13,637	14,679	14,916	16,362	16,646	17,644
Social sciences	12,404	12,551	12,687	13,650	15,496	16,435	17,283	17,069	18,109	18,974	20,233	21,561
Anthropology	587	689	642	655	721	737	761	839	766	838	839	849
Area/ethnic studies	868	892	865	873	960	975	1,223	997	1,060	1,050	1,021	1,134
Economics	952	973	1,050	1,161	1,252	1,391	1,319	1,306	1,384	1,506	1,492	1,728
History of science	6	10	17	10	14	12	11	18	23	16	9	14
Linguistics	407	380	360	380	410	433	450	408	398	503	477	482
Political science/public administration	6,721	6,843	6,987	7,736	8,833	9,807	10,223	10,316	11,239	11,596	12,533	13,548

Appendix table 2-29

Earned master's degrees, by sex and field: 2000–11

Sex and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sociology	1,387	1,258	1,315	1,296	1,358	1,033	1,110	1,090	1,059	1,065	977	1,073
Other social sciences	1,476	1,506	1,451	1,539	1,948	2,047	2,186	2,095	2,180	2,400	2,885	2,733
Non-S&E	225,651	232,408	241,625	256,413	279,995	290,509	305,197	315,652	325,146	340,967	357,698	374,952

NOTE: Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher-education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All citizenships, races, and ethnicities												
All fields	460,142	471,329	485,535	516,098	562,862	578,964	599,365	610,469	631,711	665,473	698,528	736,455
S&E	96,230	99,528	99,650	108,355	119,296	120,870	120,999	120,278	126,404	134,517	139,926	150,653
Engineering	25,738	26,436	26,180	29,472	33,922	33,899	32,263	30,936	33,177	36,510	37,614	41,282
Aerospace	560	611	682	702	870	935	936	912	1,036	1,075	1,098	1,306
Chemical	1,352	1,368	1,267	1,364	1,506	1,506	1,432	1,230	1,230	1,285	1,430	1,741
Civil	4,140	4,010	3,945	4,188	4,445	4,631	4,493	4,184	4,327	4,570	4,962	5,915
Electrical	8,341	8,596	8,246	10,038	12,220	11,613	10,456	10,093	11,232	12,698	12,105	12,545
Industrial	3,048	3,375	3,375	3,842	4,247	3,937	3,558	3,505	3,659	4,313	4,866	5,083
Materials	759	706	624	717	800	790	765	787	768	836	815	894
Mechanical	3,378	3,471	3,516	3,802	4,555	4,739	4,542	4,365	4,556	4,689	4,890	5,938
Other	4,160	4,299	4,525	4,819	5,279	5,748	6,081	5,860	6,369	7,044	7,448	7,860
Science	70,492	73,092	73,470	78,883	85,374	86,971	88,736	89,342	93,227	98,007	102,312	109,371
Natural sciences	33,326	35,471	35,780	39,300	41,970	41,078	40,808	40,144	41,914	43,397	45,331	48,346
Agricultural sciences	3,858	3,752	4,019	3,955	4,221	4,171	4,100	4,126	4,120	4,349	4,684	5,148
Biological sciences	6,329	6,487	6,341	6,883	7,644	8,120	8,718	8,794	9,565	9,921	10,668	11,214
Earth, atmospheric, and ocean sciences	1,345	1,363	1,406	1,491	1,570	1,637	1,684	1,632	1,552	1,579	1,677	1,789
Atmospheric sciences	156	140	141	167	179	212	206	193	199	225	227	221
Earth sciences	1,104	1,121	1,151	1,203	1,248	1,314	1,350	1,312	1,222	1,224	1,301	1,429
Oceanography	85	102	114	121	143	111	128	127	131	130	149	139
Mathematics/computer sciences	18,281	20,132	20,389	23,311	24,505	23,086	22,028	21,349	22,303	23,447	23,979	25,722
Computer sciences	14,986	16,852	16,965	19,590	20,208	18,489	17,138	16,314	17,151	17,988	18,021	19,519
Mathematics/statistics	3,295	3,280	3,424	3,721	4,297	4,597	4,890	5,035	5,152	5,459	5,958	6,203
Physical sciences	3,513	3,737	3,625	3,660	4,030	4,064	4,278	4,243	4,374	4,101	4,323	4,473
Astronomy	102	93	112	123	150	159	146	152	166	139	149	185
Chemistry	1,909	2,009	1,867	1,830	2,056	1,912	2,097	2,144	2,236	2,131	2,175	2,324
Physics	1,244	1,376	1,353	1,453	1,637	1,794	1,853	1,792	1,799	1,657	1,810	1,771
Other physical sciences	258	259	293	254	187	199	182	155	173	174	189	193
Social/behavioral sciences	37,166	37,621	37,690	39,583	43,404	45,893	47,928	49,198	51,313	54,610	56,981	61,025
Psychology	13,806	14,449	14,204	14,885	15,700	16,478	17,302	18,594	18,836	20,744	21,032	22,363
Social sciences	23,360	23,172	23,486	24,698	27,704	29,415	30,626	30,604	32,477	33,866	35,949	38,662
Anthropology	950	1,092	1,017	1,043	1,098	1,107	1,156	1,214	1,145	1,248	1,233	1,243
Area/ethnic studies	1,511	1,511	1,473	1,427	1,616	1,662	2,017	1,641	1,722	1,672	1,700	1,880
Economics	2,515	2,492	2,651	2,951	3,201	3,504	3,330	3,351	3,576	3,651	3,732	4,173
History of science	24	26	35	25	25	29	41	28	47	33	25	44
Linguistics	553	552	520	525	574	611	621	583	610	720	679	711
Political science/public administration	13,038	12,937	13,200	14,135	15,780	17,421	18,073	18,525	19,933	20,575	22,083	24,128
Sociology	2,036	1,901	1,957	1,929	2,031	1,518	1,577	1,575	1,571	1,601	1,453	1,640
Other social sciences	2,733	2,661	2,633	2,663	3,379	3,563	3,811	3,687	3,873	4,366	5,044	4,843
Non-S&E	363,912	371,801	385,885	407,743	443,566	458,094	478,366	490,191	505,307	530,956	558,602	585,802

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
U.S. citizen or permanent resident												
All fields	404,158	409,897	421,846	444,498	487,965	505,724	527,585	542,133	558,844	585,823	617,074	650,538
S&E	71,415	72,085	72,074	75,952	83,835	87,402	90,157	91,595	94,318	98,503	103,552	111,438
Engineering	15,914	15,434	15,380	16,125	18,282	19,034	18,972	19,276	19,749	20,940	21,685	23,895
Aerospace	339	360	395	417	579	645	683	731	798	839	833	974
Chemical	721	726	662	656	704	739	734	691	609	626	720	830
Civil	3,048	2,777	2,591	2,684	2,782	3,080	3,070	2,968	3,054	3,233	3,527	4,296
Electrical	4,232	3,924	4,004	4,362	5,303	5,214	4,970	5,068	5,211	5,545	5,089	5,155
Industrial	1,872	1,966	1,945	2,077	2,271	2,178	2,102	2,165	2,077	2,264	2,715	2,839
Materials	483	406	380	378	417	451	431	456	432	452	460	488
Mechanical	2,212	2,221	2,213	2,214	2,630	2,827	2,818	2,841	2,981	2,895	3,133	3,728
Other	3,007	3,054	3,190	3,337	3,596	3,900	4,164	4,356	4,587	5,086	5,208	5,585
Science	55,501	56,651	56,694	59,827	65,553	68,368	71,185	72,319	74,569	77,563	81,867	87,543
Natural sciences	22,990	23,725	24,102	25,722	27,903	28,378	28,828	28,599	28,967	28,982	30,893	32,941
Agricultural sciences	3,342	3,281	3,540	3,440	3,575	3,575	3,539	3,587	3,556	3,773	4,102	4,514
Biological sciences	5,579	5,614	5,536	5,882	6,530	6,910	7,430	7,468	8,100	8,211	8,878	9,313
Earth, atmospheric, and ocean sciences	1,150	1,191	1,207	1,285	1,312	1,390	1,431	1,416	1,348	1,345	1,436	1,563
Atmospheric sciences	118	116	113	128	135	166	161	158	173	203	184	200
Earth sciences	962	987	1,001	1,046	1,058	1,132	1,162	1,156	1,061	1,039	1,126	1,242
Oceanography	70	88	93	111	119	92	108	102	114	103	126	121
Mathematics/computer sciences	10,546	11,141	11,382	12,632	13,824	13,795	13,573	13,293	13,014	12,886	13,546	14,551
Computer sciences	8,362	9,091	9,252	10,423	11,312	10,975	10,489	10,027	9,746	9,641	10,066	10,786
Mathematics/statistics	2,184	2,050	2,130	2,209	2,512	2,820	3,084	3,266	3,268	3,245	3,480	3,765
Physical sciences	2,373	2,498	2,437	2,483	2,662	2,708	2,855	2,835	2,949	2,767	2,931	3,000
Astronomy	80	65	77	94	102	122	117	114	128	114	117	134
Chemistry	1,310	1,388	1,261	1,297	1,384	1,289	1,396	1,432	1,524	1,436	1,465	1,532
Physics	761	808	829	851	1,010	1,121	1,175	1,148	1,138	1,064	1,184	1,159
Other physical sciences	222	237	270	241	166	176	167	141	159	153	165	175
Social/behavioral sciences	32,511	32,926	32,592	34,105	37,650	39,990	42,357	43,720	45,602	48,581	50,974	54,602
Psychology	13,336	13,981	13,719	14,201	15,081	15,827	16,672	17,931	18,182	20,115	20,348	21,649
Social sciences	19,175	18,945	18,873	19,904	22,569	24,163	25,685	25,789	27,420	28,466	30,626	32,953
Anthropology	864	1,004	918	960	993	1,034	1,064	1,109	1,053	1,136	1,127	1,158
Area/ethnic studies	1,282	1,283	1,249	1,201	1,363	1,426	1,756	1,439	1,469	1,423	1,435	1,619
Economics	1,209	1,172	1,191	1,337	1,493	1,774	1,778	1,827	1,954	1,992	2,067	2,325
History of science	22	21	33	18	22	23	32	26	39	28	22	39
Linguistics	380	394	351	353	398	422	450	404	442	547	505	536
Political science/public administration	11,114	10,954	11,053	11,913	13,415	14,926	15,735	16,235	17,477	17,950	19,550	21,338
Sociology	1,845	1,744	1,766	1,744	1,832	1,349	1,409	1,411	1,432	1,440	1,300	1,476
Other social sciences	2,459	2,373	2,312	2,378	3,053	3,209	3,461	3,338	3,554	3,950	4,620	4,462
Non-S&E	332,743	337,812	349,772	368,546	404,130	418,322	437,428	450,538	464,526	487,320	513,522	539,100

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
White												
All fields	299,781	296,202	299,441	309,126	330,212	342,100	352,593	355,075	362,206	374,920	389,668	410,814
S&E	50,130	48,920	48,583	50,191	54,729	56,535	58,127	58,408	59,126	60,774	62,633	67,712
Engineering	11,020	10,391	10,337	10,615	11,763	12,198	12,084	11,949	12,077	12,428	12,919	14,579
Aerospace	284	277	310	327	444	490	506	534	601	650	600	699
Chemical	501	487	435	431	455	452	481	435	369	388	445	505
Civil	2,337	2,128	1,930	1,994	2,089	2,245	2,277	2,126	2,196	2,252	2,399	2,993
Electrical	2,474	2,216	2,287	2,401	2,815	2,785	2,609	2,580	2,546	2,446	2,396	2,513
Industrial	1,238	1,266	1,247	1,298	1,364	1,226	1,207	1,218	1,168	1,255	1,517	1,541
Materials	373	293	282	280	304	314	305	328	288	309	304	326
Mechanical	1,630	1,557	1,583	1,605	1,840	2,042	1,968	1,997	2,073	2,011	2,157	2,624
Other	2,183	2,167	2,263	2,279	2,452	2,644	2,731	2,731	2,836	3,117	3,101	3,378
Science	39,110	38,529	38,246	39,576	42,966	44,337	46,043	46,459	47,049	48,346	49,714	53,133
Natural sciences	16,154	15,989	16,270	16,947	18,313	18,794	19,270	18,851	18,767	18,622	19,462	20,666
Agricultural sciences	2,864	2,782	2,951	2,898	2,953	2,930	2,880	2,886	2,953	3,023	3,177	3,484
Biological sciences	4,183	4,124	4,088	4,291	4,617	4,876	5,248	5,073	5,242	5,299	5,594	5,838
Earth, atmospheric, and ocean sciences	1,036	1,043	1,065	1,125	1,144	1,197	1,217	1,232	1,114	1,148	1,181	1,278
Atmospheric sciences	111	99	98	117	120	149	141	140	148	177	164	170
Earth sciences	861	876	890	914	921	963	982	1,006	869	884	910	1,011
Oceanography	64	68	77	94	103	85	94	86	97	87	107	97
Mathematics/computer sciences	6,296	6,166	6,383	6,808	7,576	7,800	7,830	7,650	7,368	7,258	7,505	8,005
Computer sciences	4,641	4,651	4,828	5,185	5,781	5,818	5,715	5,463	5,176	5,080	5,183	5,553
Mathematics/statistics	1,655	1,515	1,555	1,623	1,795	1,982	2,115	2,187	2,192	2,178	2,322	2,452
Physical sciences	1,775	1,874	1,783	1,825	2,023	1,991	2,095	2,010	2,090	1,894	2,005	2,061
Astronomy	65	47	59	67	76	98	97	91	106	80	93	98
Chemistry	930	992	877	905	1,012	886	963	977	1,032	941	926	964
Physics	585	627	613	642	790	851	883	820	838	754	855	868
Other physical sciences	195	208	234	211	145	156	152	122	114	119	131	131
Social/behavioral sciences	22,956	22,540	21,976	22,629	24,653	25,543	26,773	27,608	28,282	29,724	30,252	32,467
Psychology	9,721	9,885	9,452	9,694	10,175	10,410	11,048	11,646	11,561	12,581	12,484	13,227
Social sciences	13,235	12,655	12,524	12,935	14,478	15,133	15,725	15,962	16,721	17,143	17,768	19,240
Anthropology	686	800	705	743	770	779	786	811	778	843	819	825
Area/ethnic studies	890	792	763	691	838	809	938	825	813	786	797	942
Economics	839	840	827	828	927	1,097	1,077	1,161	1,173	1,271	1,203	1,469
History of science	20	18	23	13	17	20	29	20	34	25	17	34
Linguistics	295	284	270	258	290	300	298	282	311	383	351	368
Political science/public administration	7,429	7,013	7,066	7,518	8,361	9,107	9,406	9,723	10,272	10,319	10,854	11,809
Sociology	1,254	1,178	1,183	1,177	1,202	858	906	912	915	894	796	863
Other social sciences	1,822	1,730	1,687	1,707	2,073	2,163	2,285	2,228	2,425	2,622	2,931	2,930
Non-S&E	249,651	247,282	250,858	258,935	275,483	285,565	294,466	296,667	303,080	314,146	327,035	343,102

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Asian or Pacific Islander												
All fields	21,720	22,309	23,134	24,616	27,526	29,378	30,362	32,056	32,942	35,086	37,307	38,745
S&E	7,032	7,056	6,839	7,601	8,642	8,891	8,731	9,088	9,177	9,664	9,959	10,577
Engineering	2,380	2,399	2,190	2,431	3,016	3,094	3,186	3,355	3,494	3,929	3,736	3,961
Aerospace	26	37	29	39	51	55	64	74	74	82	87	109
Chemical	114	120	96	96	135	106	110	103	93	101	115	153
Civil	283	220	203	240	254	298	277	306	298	309	354	485
Electrical	1,062	1,014	915	1,047	1,435	1,381	1,333	1,444	1,548	1,958	1,580	1,435
Industrial	192	210	189	273	284	332	319	313	301	272	301	362
Materials	54	55	43	52	53	64	63	65	65	68	70	74
Mechanical	265	358	315	262	347	324	360	343	370	359	385	468
Other	384	385	400	422	457	534	660	707	745	780	844	875
Science	4,652	4,657	4,649	5,170	5,626	5,797	5,545	5,733	5,683	5,735	6,223	6,616
Natural sciences	3,199	3,164	3,165	3,530	3,760	3,748	3,406	3,526	3,396	3,365	3,675	3,980
Agricultural sciences	94	97	126	99	111	111	84	128	102	137	165	203
Biological sciences	595	540	537	646	762	795	820	883	977	1,037	1,245	1,267
Earth, atmospheric, and ocean sciences	22	28	37	28	39	31	30	25	38	24	45	41
Atmospheric sciences	4	5	7	4	5	4	5	5	5	3	3	7
Earth sciences	17	17	25	18	28	26	23	16	27	17	37	30
Oceanography	1	6	5	6	6	1	2	4	6	4	5	4
Mathematics/computer sciences	2,248	2,279	2,252	2,526	2,652	2,568	2,252	2,211	2,043	1,908	1,929	2,161
Computer sciences	2,068	2,074	2,038	2,305	2,377	2,244	1,856	1,754	1,627	1,477	1,470	1,646
Mathematics/statistics	180	205	214	221	275	324	396	457	416	431	459	515
Physical sciences	240	220	213	231	196	243	220	279	236	259	291	308
Astronomy	5	5	4	7	6	7	2	4	2	12	7	8
Chemistry	172	153	125	157	128	154	137	177	154	178	186	208
Physics	53	56	66	57	60	74	78	94	78	66	93	81
Other physical sciences	10	6	18	10	2	8	3	4	2	3	5	11
Social/behavioral sciences	1,453	1,493	1,484	1,640	1,866	2,049	2,139	2,207	2,287	2,370	2,548	2,636
Psychology	473	503	530	531	593	597	651	733	724	765	781	796
Social sciences	980	990	954	1,109	1,273	1,452	1,488	1,474	1,563	1,605	1,767	1,840
Anthropology	39	39	34	42	43	44	39	51	46	59	53	44
Area/ethnic studies	78	101	90	97	93	111	126	110	113	117	126	107
Economics	132	113	119	156	157	185	207	191	211	221	194	221
History of science	0	0	2	2	3	1	1	1	1	1	1	1
Linguistics	42	43	26	32	37	41	43	32	35	38	36	38
Political science/public administration	516	534	512	601	717	855	862	880	952	942	1,106	1,156
Sociology	66	70	86	95	106	78	71	62	67	67	56	86
Other social sciences	107	90	85	84	117	137	139	147	138	160	195	187
Non-S&E	14,688	15,253	16,295	17,015	18,884	20,487	21,631	22,968	23,765	25,422	27,348	28,168

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Black or African American												
All fields	33,589	35,426	36,936	40,090	45,183	49,109	52,844	55,624	57,473	61,713	66,817	71,393
S&E	5,563	6,174	6,230	6,919	7,511	7,764	8,011	8,371	8,908	9,339	10,292	10,961
Engineering	658	699	735	823	853	869	883	926	977	971	1,098	1,180
Aerospace	7	10	14	7	11	19	22	26	25	19	30	25
Chemical	34	34	31	43	31	56	37	39	46	31	46	42
Civil	93	102	101	96	76	100	88	106	118	106	137	152
Electrical	183	188	189	226	238	230	226	251	260	246	235	291
Industrial	90	119	141	158	170	152	171	152	155	166	214	232
Materials	15	9	19	14	21	19	12	9	15	25	16	14
Mechanical	91	89	71	78	85	81	86	85	101	86	89	104
Other	145	148	169	201	221	212	241	258	257	292	331	320
Science	4,905	5,475	5,495	6,096	6,658	6,895	7,128	7,445	7,931	8,368	9,194	9,781
Natural sciences	1,179	1,382	1,374	1,606	1,678	1,602	1,691	1,753	1,878	1,826	2,052	2,322
Agricultural sciences	84	96	88	103	102	85	96	113	98	124	132	180
Biological sciences	223	313	288	298	385	377	406	438	500	474	512	599
Earth, atmospheric, and ocean sciences	7	21	18	18	22	17	30	23	29	26	18	29
Atmospheric sciences	0	4	2	2	3	3	7	3	4	6	4	4
Earth sciences	6	15	15	13	16	13	21	18	22	18	13	25
Oceanography	1	2	1	3	3	1	2	2	3	2	1	0
Mathematics/computer sciences	748	822	859	1,075	1,049	1,022	1,007	1,056	1,106	1,059	1,265	1,376
Computer sciences	650	709	746	977	934	887	853	898	950	919	1,111	1,212
Mathematics/statistics	98	113	113	98	115	135	154	158	156	140	154	164
Physical sciences	117	130	121	112	120	101	152	123	145	143	125	138
Astronomy	0	0	2	1	1	2	3	0	0	4	0	0
Chemistry	65	82	74	76	87	55	93	74	110	97	90	93
Physics	44	41	37	32	27	39	51	43	30	36	30	40
Other physical sciences	8	7	8	3	5	5	5	6	5	6	5	5
Social/behavioral sciences	3,726	4,093	4,121	4,490	4,980	5,293	5,437	5,692	6,053	6,542	7,142	7,459
Psychology	1,347	1,601	1,643	1,829	1,942	2,142	1,996	2,253	2,411	2,724	2,640	2,856
Social sciences	2,379	2,492	2,478	2,661	3,038	3,151	3,441	3,439	3,642	3,818	4,502	4,603
Anthropology	33	37	32	33	31	30	32	41	43	30	33	30
Area/ethnic studies	91	86	108	121	127	135	136	142	156	152	145	184
Economics	71	66	76	67	70	96	100	101	120	111	117	121
History of science	0	1	2	0	0	0	1	2	2	1	2	0
Linguistics	4	14	5	7	3	9	13	14	7	16	15	18
Political science/public administration	1,585	1,754	1,718	1,861	2,057	2,243	2,451	2,490	2,668	2,825	3,296	3,507
Sociology	344	294	285	274	301	205	201	190	201	202	205	198
Other social sciences	251	240	252	298	449	433	507	459	445	481	689	545
Non-S&E	28,026	29,252	30,706	33,171	37,672	41,345	44,833	47,253	48,565	52,374	56,525	60,432

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hispanic[a]												
All fields	20,911	22,450	23,356	25,517	29,905	32,435	34,081	36,456	37,354	40,395	43,037	46,594
S&E	3,762	4,113	4,106	4,384	5,111	5,380	5,681	6,041	6,216	6,634	7,379	8,411
Engineering	852	835	853	862	1,130	1,145	1,094	1,220	1,243	1,317	1,447	1,709
Aerospace	13	11	19	13	21	38	26	38	32	34	45	61
Chemical	39	40	45	39	40	41	49	43	42	46	37	53
Civil	180	167	187	152	163	208	185	199	208	217	268	318
Electrical	211	172	179	238	340	274	281	294	294	290	269	373
Industrial	172	191	205	162	229	239	212	238	256	283	318	327
Materials	15	21	15	6	16	26	17	21	22	16	24	34
Mechanical	99	93	87	116	157	151	153	171	160	183	201	222
Other	123	140	116	136	164	168	171	216	229	248	285	321
Science	2,910	3,278	3,253	3,522	3,981	4,235	4,587	4,821	4,973	5,317	5,932	6,702
Natural sciences	935	1,124	1,050	1,252	1,392	1,362	1,459	1,451	1,490	1,528	1,777	1,975
Agricultural sciences	133	123	175	132	171	185	196	176	157	206	227	264
Biological sciences	268	310	267	268	330	362	373	418	466	461	519	581
Earth, atmospheric, and ocean sciences	30	28	35	28	36	47	51	42	57	41	53	81
Atmospheric sciences	2	0	1	2	2	3	2	5	11	6	2	9
Earth sciences	26	25	31	24	32	43	47	33	43	32	44	66
Oceanography	2	3	3	2	2	1	2	4	3	3	7	6
Mathematics/computer sciences	408	544	437	680	728	628	671	670	654	655	817	875
Computer sciences	308	472	355	572	615	498	506	491	473	497	651	659
Mathematics/statistics	100	72	82	108	113	130	165	179	181	158	166	216
Physical sciences	96	119	136	144	127	140	168	145	156	165	161	174
Astronomy	2	1	2	2	3	2	6	3	6	4	3	6
Chemistry	56	74	72	90	70	84	107	79	90	89	96	107
Physics	34	37	56	41	44	49	54	60	53	67	56	54
Other physical sciences	4	7	6	11	10	5	1	3	7	5	6	7
Social/behavioral sciences	1,975	2,154	2,203	2,270	2,589	2,873	3,128	3,370	3,483	3,789	4,155	4,727
Psychology	842	946	962	974	1,102	1,222	1,331	1,466	1,543	1,670	1,812	2,051
Social sciences	1,133	1,208	1,241	1,296	1,487	1,651	1,797	1,904	1,940	2,119	2,343	2,676
Anthropology	37	45	59	48	58	62	60	67	59	83	80	89
Area/ethnic studies	97	111	109	119	116	132	174	144	184	164	188	187
Economics	67	53	57	79	80	111	100	86	81	92	90	152
History of science	0	1	0	1	0	0	0	1	1	1	1	1
Linguistics	18	27	19	23	26	26	42	37	33	43	31	42
Political science/public administration	702	736	743	802	909	1,026	1,070	1,248	1,252	1,343	1,541	1,706
Sociology	110	116	140	117	139	111	126	112	105	140	112	166
Other social sciences	102	119	114	107	159	183	225	209	225	253	300	333
Non-S&E	17,149	18,337	19,250	21,133	24,794	27,055	28,400	30,415	31,138	33,761	35,658	38,183

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
American Indian or Alaska Native												
All fields	2,109	2,293	2,410	2,574	2,857	2,969	3,142	3,178	3,324	3,310	3,464	3,507
S&E	383	476	421	457	540	501	568	552	553	560	629	584
Engineering	64	60	56	69	85	82	87	73	86	89	87	78
Aerospace	0	2	4	2	6	2	8	5	1	7	9	3
Chemical	3	4	2	2	0	4	2	7	3	3	3	2
Civil	14	10	11	13	16	13	17	15	13	18	12	16
Electrical	14	10	13	18	10	20	17	5	28	18	22	10
Industrial	8	15	8	8	19	18	9	13	14	13	12	15
Materials	4	1	2	1	1	1	1	0	2	0	2	0
Mechanical	7	7	6	9	21	6	11	12	10	9	12	13
Other	14	11	10	16	12	18	22	16	15	21	15	19
Science	319	416	365	388	455	419	481	479	467	471	542	506
Natural sciences	108	147	119	126	136	134	168	141	162	137	160	161
Agricultural sciences	23	18	25	24	23	27	35	34	31	26	35	34
Biological sciences	26	29	34	31	33	29	46	32	55	38	52	40
Earth, atmospheric, and ocean sciences	9	11	4	9	7	11	4	9	7	10	8	13
Atmospheric sciences	0	0	0	0	0	1	0	1	0	0	0	2
Earth sciences	9	8	4	9	7	10	4	8	7	10	7	10
Oceanography	0	3	0	0	0	0	0	0	0	0	1	1
Mathematics/computer sciences	41	80	41	50	65	56	69	54	55	44	56	62
Computer sciences	32	71	33	42	58	47	58	40	44	36	45	48
Mathematics/statistics	9	9	8	8	7	9	11	14	11	8	11	14
Physical sciences	9	9	15	12	8	11	14	12	14	19	9	12
Astronomy	0	0	0	1	0	1	0	0	0	1	1	2
Chemistry	5	7	11	5	3	6	9	8	8	9	5	5
Physics	3	2	4	5	5	3	3	3	5	8	3	3
Other physical sciences	1	0	0	1	0	1	2	1	1	1	0	2
Social/behavioral sciences	211	269	246	262	319	285	313	338	305	334	382	345
Psychology	69	107	97	109	112	118	118	114	104	116	123	116
Social sciences	142	162	149	153	207	167	195	224	201	218	259	229
Anthropology	14	17	12	11	19	14	21	25	16	16	19	14
Area/ethnic studies	16	20	20	33	27	27	28	25	32	25	28	23
Economics	3	7	10	6	6	10	3	12	8	9	12	8
History of science	0	1	1	0	0	0	0	0	0	0	0	0
Linguistics	1	1	4	1	2	6	2	2	2	4	16	7
Political science/public administration	62	70	74	78	118	90	107	134	117	135	136	137
Sociology	30	28	17	17	17	7	10	9	12	8	11	8
Other social sciences	16	18	11	7	18	13	24	17	14	21	37	32
Non-S&E	1,726	1,817	1,989	2,117	2,317	2,468	2,574	2,626	2,771	2,750	2,835	2,923

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other/unknown race or ethnicity												
All fields	26,048	31,217	36,569	42,575	52,282	49,733	54,563	59,744	65,545	70,399	76,781	79,485
S&E	4,545	5,346	5,895	6,400	7,302	8,331	9,039	9,135	10,338	11,532	12,660	13,193
Engineering	940	1,050	1,209	1,325	1,435	1,646	1,638	1,753	1,872	2,206	2,398	2,388
Aerospace	9	23	19	29	46	41	57	54	65	47	62	77
Chemical	30	41	53	45	43	80	55	64	56	57	74	75
Civil	141	150	159	189	184	216	226	216	221	331	357	332
Electrical	288	324	421	432	465	524	504	494	535	587	587	533
Industrial	172	165	155	178	205	211	184	231	183	275	353	362
Materials	22	27	19	25	22	27	33	33	40	34	44	40
Mechanical	120	117	151	144	180	223	240	233	267	247	289	297
Other	158	203	232	283	290	324	339	428	505	628	632	672
Science	3,605	4,296	4,686	5,075	5,867	6,685	7,401	7,382	8,466	9,326	10,262	10,805
Natural sciences	1,415	1,919	2,124	2,261	2,624	2,738	2,834	2,877	3,274	3,504	3,767	3,837
Agricultural sciences	144	165	175	184	215	237	248	250	215	257	366	349
Biological sciences	284	298	322	348	403	471	537	624	860	902	956	988
Earth, atmospheric, and ocean sciences	46	60	48	77	64	87	99	85	103	96	131	121
Atmospheric sciences	1	8	5	3	5	6	6	4	5	11	11	8
Earth sciences	43	46	36	68	54	77	85	75	93	78	115	100
Oceanography	2	6	7	6	5	4	8	6	5	7	5	13
Mathematics/computer sciences	805	1,250	1,410	1,493	1,754	1,721	1,744	1,652	1,788	1,962	1,974	2,072
Computer sciences	663	1,114	1,252	1,342	1,547	1,481	1,501	1,381	1,476	1,632	1,606	1,668
Mathematics/statistics	142	136	158	151	207	240	243	271	312	330	368	404
Physical sciences	136	146	169	159	188	222	206	266	308	287	340	307
Astronomy	8	12	10	16	16	12	9	16	14	13	13	20
Chemistry	82	80	102	64	84	104	87	117	130	122	162	155
Physics	42	45	53	74	84	105	106	128	134	133	147	113
Other physical sciences	4	9	4	5	4	1	4	5	30	19	18	19
Social/behavioral sciences	2,190	2,377	2,562	2,814	3,243	3,947	4,567	4,505	5,192	5,822	6,495	6,968
Psychology	884	939	1,035	1,064	1,157	1,338	1,528	1,719	1,839	2,259	2,508	2,603
Social sciences	1,306	1,438	1,527	1,750	2,086	2,609	3,039	2,786	3,353	3,563	3,987	4,365
Anthropology	55	66	76	83	72	105	126	114	111	105	123	156
Area/ethnic studies	110	173	159	140	162	212	354	193	171	179	151	176
Economics	97	93	102	201	253	275	291	276	361	288	451	354
History of science	2	0	5	2	2	2	1	2	1	0	1	3
Linguistics	20	25	27	32	40	40	52	37	54	63	56	63
Political science/public administration	820	847	940	1,053	1,253	1,605	1,839	1,760	2,216	2,386	2,617	3,023
Sociology	41	58	55	64	67	90	95	126	132	129	120	155
Other social sciences	161	176	163	175	237	280	281	278	307	413	468	435
Non-S&E	21,503	25,871	30,674	36,175	44,980	41,402	45,524	50,609	55,207	58,867	64,121	66,292

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Temporary resident												
All fields	55,984	61,432	63,689	71,600	74,897	73,240	71,780	68,336	72,867	79,650	81,454	85,917
S&E	24,815	27,443	27,576	32,403	35,461	33,468	30,842	28,683	32,086	36,014	36,374	39,215
Engineering	9,824	11,002	10,800	13,347	15,640	14,865	13,291	11,660	13,428	15,570	15,929	17,387
Aerospace	221	251	287	285	291	290	253	181	238	236	265	332
Chemical	631	642	605	708	802	767	698	539	621	659	710	911
Civil	1,092	1,233	1,354	1,504	1,663	1,551	1,423	1,216	1,273	1,337	1,435	1,619
Electrical	4,109	4,672	4,242	5,676	6,917	6,399	5,486	5,025	6,021	7,153	7,016	7,390
Industrial	1,176	1,409	1,430	1,765	1,976	1,759	1,456	1,340	1,582	2,049	2,151	2,244
Materials	276	300	244	339	383	339	334	331	336	384	355	406
Mechanical	1,166	1,250	1,303	1,588	1,925	1,912	1,724	1,524	1,575	1,794	1,757	2,210
Other	1,153	1,245	1,335	1,482	1,683	1,848	1,917	1,504	1,782	1,958	2,240	2,275
Science	14,991	16,441	16,776	19,056	19,821	18,603	17,551	17,023	18,658	20,444	20,445	21,828
Natural sciences	10,336	11,746	11,678	13,578	14,067	12,700	11,980	11,545	12,947	14,415	14,438	15,405
Agricultural sciences	516	471	479	515	646	596	561	539	564	576	582	634
Biological sciences	750	873	805	1,001	1,114	1,210	1,288	1,326	1,465	1,710	1,790	1,901
Earth, atmospheric, and ocean sciences	195	172	199	206	258	247	253	216	204	234	241	226
Atmospheric sciences	38	24	28	39	44	46	45	35	26	22	43	21
Earth sciences	142	134	150	157	190	182	188	156	161	185	175	187
Oceanography	15	14	21	10	24	19	20	25	17	27	23	18
Mathematics/computer sciences	7,735	8,991	9,007	10,679	10,681	9,291	8,455	8,056	9,289	10,561	10,433	11,171
Computer sciences	6,624	7,761	7,713	9,167	8,896	7,514	6,649	6,287	7,405	8,347	7,955	8,733
Mathematics/statistics	1,111	1,230	1,294	1,512	1,785	1,777	1,806	1,769	1,884	2,214	2,478	2,438
Physical sciences	1,140	1,239	1,188	1,177	1,368	1,356	1,423	1,408	1,425	1,334	1,392	1,473
Astronomy	22	28	35	29	48	37	29	38	38	25	32	51
Chemistry	599	621	606	533	672	623	701	712	712	695	710	792
Physics	483	568	524	602	627	673	678	644	661	593	626	612
Other physical sciences	36	22	23	13	21	23	15	14	14	21	24	18
Social/behavioral sciences	4,655	4,695	5,098	5,478	5,754	5,903	5,571	5,478	5,711	6,029	6,007	6,423
Psychology	470	468	485	684	619	651	630	663	654	629	684	714
Social sciences	4,185	4,227	4,613	4,794	5,135	5,252	4,941	4,815	5,057	5,400	5,323	5,709
Anthropology	86	88	99	83	105	73	92	105	92	112	106	85
Area/ethnic studies	229	228	224	226	253	236	261	202	253	249	265	261
Economics	1,306	1,320	1,460	1,614	1,708	1,730	1,552	1,524	1,622	1,659	1,665	1,848
History of science	2	5	2	7	3	6	9	2	8	5	3	5
Linguistics	173	158	169	172	176	189	171	179	168	173	174	175

Appendix table 2-30

Earned master's degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Political science/public administration	1,924	1,983	2,147	2,222	2,365	2,495	2,338	2,290	2,456	2,625	2,533	2,790
Sociology	191	157	191	185	199	169	168	164	139	161	153	164
Other social sciences	274	288	321	285	326	354	350	349	319	416	424	381
Non-S&E	31,169	33,989	36,113	39,197	39,436	39,772	40,938	39,653	40,781	43,636	45,080	46,702

[a] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: Racial and ethnic breakouts include U.S. citizens and permanent residents only; temporary resident includes all racial and ethnic groups. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data from *Science and Engineering Indicators 2008* and earlier years that were based on accredited higher education institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All citizenships												
Both sexes												
All fields	44,947	45,068	44,311	46,177	48,560	52,855	56,309	60,887	61,716	61,730	57,405	59,847
S&E	27,862	28,096	27,588	28,746	30,979	34,468	37,541	40,980	41,480	41,111	36,711	38,470
Engineering	5,384	5,561	5,196	5,282	5,931	6,548	7,402	8,066	8,110	7,915	7,812	8,478
Aerospace	203	202	193	178	190	205	209	234	232	257	228	237
Chemical	665	680	693	608	708	872	911	915	950	886	929	951
Civil	628	647	669	685	736	830	864	935	909	902	851	894
Electrical	1,515	1,527	1,361	1,402	1,634	1,782	2,124	2,380	2,279	2,090	2,169	2,352
Industrial	218	262	275	258	280	286	302	364	346	333	290	319
Materials	454	454	381	457	494	514	611	663	665	661	653	651
Mechanical	821	906	813	786	835	963	1,139	1,138	1,149	1,186	1,022	1,172
Other	880	883	811	908	1,054	1,096	1,242	1,437	1,580	1,600	1,670	1,902
Science	22,478	22,535	22,392	23,464	25,048	27,920	30,139	32,914	33,370	33,196	28,899	29,992
Natural sciences	14,296	14,084	14,385	15,340	16,773	19,329	21,563	24,052	24,466	24,649	20,809	21,313
Agricultural sciences	984	934	969	1,060	1,016	1,004	1,037	1,068	1,080	1,143	982	1,053
Biological sciences	4,992	4,750	4,596	5,212	5,491	5,925	6,138	6,703	7,319	7,429	7,571	7,596
Earth, atmospheric, and ocean sciences	579	542	562	544	540	572	600	727	683	724	713	687
Atmospheric sciences	87	70	68	78	77	96	95	87	106	110	100	120
Earth sciences	393	380	404	368	369	379	430	513	469	503	496	467
Oceanography	99	92	90	98	94	97	75	127	108	111	117	100
Mathematics/computer sciences	1,858	1,769	1,677	1,825	1,975	2,301	2,713	2,953	3,058	3,110	3,155	3,152
Computer sciences	777	768	750	816	910	1,121	1,416	1,597	1,696	1,574	1,561	1,562
Mathematics/statistics	1,081	1,001	927	1,009	1,065	1,180	1,297	1,356	1,362	1,536	1,594	1,590
Medical/other health sciences	2,439	2,643	3,334	3,321	4,406	5,907	7,089	8,392	8,121	7,827	4,062	4,265
Medical sciences	893	864	882	850	1,010	1,144	1,252	1,293	1,320	1,254	1,506	1,497
Other health sciences	1,546	1,779	2,452	2,471	3,396	4,763	5,837	7,099	6,801	6,573	2,556	2,768
Physical sciences	3,444	3,446	3,247	3,378	3,345	3,620	3,986	4,209	4,205	4,416	4,326	4,560
Astronomy	101	103	70	101	101	115	114	128	163	143	160	166
Chemistry	2,090	2,134	2,037	2,158	2,105	2,226	2,502	2,606	2,495	2,652	2,564	2,685
Physics	1,208	1,169	1,096	1,089	1,119	1,254	1,341	1,442	1,507	1,580	1,570	1,670
Other physical sciences	45	40	44	30	20	25	29	33	40	41	32	39
Social/behavioral sciences	8,182	8,451	8,007	8,124	8,275	8,591	8,576	8,862	8,904	8,547	8,090	8,679
Psychology	4,200	4,538	4,185	4,258	4,389	4,681	4,484	4,696	4,600	4,046	3,606	3,952
Social sciences	3,982	3,913	3,822	3,866	3,886	3,910	4,092	4,166	4,304	4,501	4,484	4,727
Anthropology	471	428	508	487	537	459	480	519	491	527	534	596
Area/ethnic studies	212	216	209	176	204	184	220	226	246	226	237	257
Economics	1,001	1,016	961	967	978	1,111	1,057	1,107	1,172	1,172	1,120	1,152
History of science	23	21	20	27	20	28	34	27	34	19	31	27
Linguistics	202	193	152	201	194	172	216	219	215	240	203	235
Political science/public administration	1,019	1,047	992	1,055	1,001	1,049	1,098	1,093	1,104	1,244	1,312	1,314
Sociology	602	550	547	598	564	534	574	573	594	635	612	671

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other social sciences	452	442	433	355	388	373	413	402	448	438	435	475
Non-S&E	17,085	16,972	16,723	17,431	17,581	18,387	18,768	19,907	20,236	20,619	20,694	21,377
Male												
All fields	25,064	24,781	23,760	24,398	25,359	27,039	28,702	30,336	30,601	30,505	29,008	30,334
S&E	17,024	16,873	16,164	16,569	17,532	18,970	20,254	21,653	21,995	21,743	20,361	21,377
Engineering	4,549	4,640	4,300	4,373	4,884	5,326	5,918	6,381	6,362	6,203	5,997	6,580
Aerospace	179	179	174	154	170	178	184	204	208	224	188	207
Chemical	529	518	527	459	530	667	667	682	701	649	660	671
Civil	513	520	541	549	576	630	667	685	677	688	605	655
Electrical	1,328	1,330	1,213	1,230	1,418	1,530	1,826	2,004	1,891	1,752	1,787	1,965
Industrial	175	209	200	188	228	221	220	260	249	247	218	219
Materials	371	363	307	359	403	392	456	494	509	489	487	495
Mechanical	732	816	715	698	736	847	988	991	989	1,026	897	1,010
Other	722	705	623	736	823	861	910	1,061	1,138	1,128	1,155	1,358
Science	12,475	12,233	11,864	12,196	12,648	13,644	14,336	15,272	15,633	15,540	14,364	14,797
Natural sciences	8,833	8,553	8,398	8,748	9,119	10,142	10,889	11,860	12,133	12,070	10,936	11,305
Agricultural sciences	663	601	637	672	640	642	612	630	635	637	527	562
Biological sciences	2,790	2,655	2,557	2,826	2,948	3,014	3,125	3,419	3,612	3,535	3,564	3,609
Earth, atmospheric, and ocean sciences	413	386	385	376	360	375	382	441	439	436	424	420
Atmospheric sciences	70	55	47	57	54	67	62	54	85	77	66	84
Earth sciences	273	270	284	264	245	256	282	318	295	308	292	281
Oceanography	70	61	54	55	61	52	38	69	59	51	66	55
Mathematics/computer sciences	1,453	1,351	1,238	1,382	1,473	1,749	2,022	2,219	2,262	2,283	2,343	2,387
Computer sciences	646	632	579	648	709	907	1,109	1,269	1,323	1,223	1,225	1,251
Mathematics/statistics	807	719	659	734	764	842	913	950	939	1,060	1,118	1,136
Medical/other health sciences	930	1,027	1,223	1,046	1,266	1,734	1,931	2,224	2,214	2,148	1,123	1,185
Medical sciences	419	393	431	393	419	466	500	510	531	479	534	547
Other health sciences	511	634	792	653	847	1,268	1,431	1,714	1,683	1,669	589	638
Physical sciences	2,584	2,533	2,358	2,446	2,432	2,628	2,817	2,927	2,971	3,031	2,955	3,142
Astronomy	76	83	56	73	69	77	74	85	124	89	99	109
Chemistry	1,426	1,415	1,346	1,451	1,411	1,456	1,609	1,642	1,594	1,628	1,570	1,638
Physics	1,050	1,002	926	899	940	1,072	1,107	1,177	1,227	1,287	1,265	1,368
Other physical sciences	32	33	30	23	12	23	27	23	26	27	21	27
Social/behavioral sciences	3,642	3,680	3,466	3,448	3,529	3,502	3,447	3,412	3,500	3,470	3,428	3,492
Psychology	1,370	1,440	1,348	1,327	1,356	1,348	1,236	1,282	1,289	1,134	1,069	1,089
Social sciences	2,272	2,240	2,118	2,121	2,173	2,154	2,211	2,130	2,211	2,336	2,359	2,403
Anthropology	205	181	209	190	244	198	208	199	190	212	220	238
Area/ethnic studies	106	86	107	67	97	81	98	95	103	88	106	116
Economics	733	724	690	687	689	772	733	749	764	753	740	746
History of science	16	18	16	13	11	17	17	13	17	12	17	19
Linguistics	86	84	63	79	78	60	85	89	95	88	88	93
Political science/public administration	636	683	573	646	620	609	642	577	584	698	724	716

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sociology	248	229	215	245	226	205	206	211	234	255	234	252
Other social sciences	242	235	245	194	208	212	222	197	224	230	230	223
Non-S&E	8,040	7,908	7,596	7,829	7,827	8,069	8,448	8,683	8,606	8,762	8,647	8,957
Female												
All fields	19,883	20,287	20,551	21,779	23,201	25,816	27,607	30,551	31,115	31,225	28,397	29,513
S&E	10,838	11,223	11,424	12,177	13,447	15,498	17,287	19,327	19,485	19,368	16,350	17,093
Engineering	835	921	896	909	1,047	1,222	1,484	1,685	1,748	1,712	1,815	1,898
Aerospace	24	23	19	24	20	27	25	30	24	33	40	30
Chemical	136	162	166	149	178	205	244	233	249	237	269	280
Civil	115	127	128	136	160	200	197	250	232	214	246	239
Electrical	187	197	148	172	216	252	298	376	388	338	382	387
Industrial	43	53	75	70	52	65	82	104	97	86	72	100
Materials	83	91	74	98	91	122	155	169	156	172	166	156
Mechanical	89	90	98	88	99	116	151	147	160	160	125	162
Other	158	178	188	172	231	235	332	376	442	472	515	544
Science	10,003	10,302	10,528	11,268	12,400	14,276	15,803	17,642	17,737	17,656	14,535	15,195
Natural sciences	5,463	5,531	5,987	6,592	7,654	9,187	10,674	12,192	12,333	12,579	9,873	10,008
Agricultural sciences	321	333	332	388	376	362	425	438	445	506	455	491
Biological sciences	2,202	2,095	2,039	2,386	2,543	2,911	3,013	3,284	3,707	3,894	4,007	3,987
Earth, atmospheric, and ocean sciences	166	156	177	168	180	197	218	286	244	288	289	267
Atmospheric sciences	17	15	21	21	23	29	33	33	21	33	34	36
Earth sciences	120	110	120	104	124	123	148	195	174	195	204	186
Oceanography	29	31	36	43	33	45	37	58	49	60	51	45
Mathematics/computer sciences	405	418	439	443	502	552	691	734	796	827	812	765
Computer sciences	131	136	171	168	201	214	307	328	373	351	336	311
Mathematics/statistics	274	282	268	275	301	338	384	406	423	476	476	454
Medical/other health sciences	1,509	1,616	2,111	2,275	3,140	4,173	5,158	6,168	5,907	5,679	2,939	3,080
Medical sciences	474	471	451	457	591	678	752	783	789	775	972	950
Other health sciences	1,035	1,145	1,660	1,818	2,549	3,495	4,406	5,385	5,118	4,904	1,967	2,130
Physical sciences	860	913	889	932	913	992	1,169	1,282	1,234	1,385	1,371	1,418
Astronomy	25	20	14	28	32	38	40	43	39	54	61	57
Chemistry	664	719	691	707	694	770	893	964	901	1,024	994	1,047
Physics	158	167	170	190	179	182	234	265	280	293	305	302
Other physical sciences	13	7	14	7	8	2	2	10	14	14	11	12
Social/behavioral sciences	4,540	4,771	4,541	4,676	4,746	5,089	5,129	5,450	5,404	5,077	4,662	5,187
Psychology	2,830	3,098	2,837	2,931	3,033	3,333	3,248	3,414	3,311	2,912	2,537	2,863
Social sciences	1,710	1,673	1,704	1,745	1,713	1,756	1,881	2,036	2,093	2,165	2,125	2,324
Anthropology	266	247	299	297	293	261	272	320	301	315	314	358
Area/ethnic studies	106	130	102	109	107	103	122	131	143	138	131	141
Economics	268	292	271	280	289	339	324	358	408	419	380	406
History of science	7	3	4	14	9	11	17	14	17	7	14	8
Linguistics	116	109	89	122	116	112	131	130	120	152	115	142

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Political science/public administration	383	364	419	409	381	440	456	516	520	546	588	598
Sociology	354	321	332	353	338	329	368	362	360	380	378	419
Other social sciences	210	207	188	161	180	161	191	205	224	208	205	252
Non-S&E	9,045	9,064	9,127	9,602	9,754	10,318	10,320	11,224	11,630	11,857	12,047	12,420
U.S. citizen or permanent resident												
All fields	34,113	34,105	33,382	34,551	35,807	38,512	40,334	43,888	44,509	45,019	41,759	43,514
S&E	19,401	19,382	19,110	19,731	21,136	23,113	24,816	27,283	27,594	27,753	24,106	25,296
Engineering	2,656	2,562	2,261	2,237	2,347	2,452	2,714	2,994	3,180	3,374	3,507	3,713
Aerospace	125	101	77	72	73	91	80	108	103	137	122	130
Chemical	364	357	354	295	340	360	423	373	417	437	469	440
Civil	319	300	273	283	257	296	296	359	330	348	347	353
Electrical	641	587	506	478	531	567	560	645	704	711	757	815
Industrial	104	109	115	93	119	107	117	129	125	112	116	124
Materials	240	217	172	198	205	191	242	286	284	281	316	283
Mechanical	384	414	335	336	307	338	388	376	406	472	425	505
Other	479	477	429	482	515	502	608	718	811	876	955	1,063
Science	16,745	16,820	16,849	17,494	18,789	20,661	22,102	24,289	24,414	24,379	20,599	21,583
Natural sciences	9,779	9,682	10,048	10,765	11,872	13,661	15,139	17,116	17,248	17,699	14,237	14,614
Agricultural sciences	553	544	549	626	601	611	640	643	668	715	639	660
Biological sciences	3,724	3,579	3,443	3,901	4,118	4,330	4,377	4,713	5,091	5,310	5,447	5,513
Earth, atmospheric, and ocean sciences	409	362	368	376	356	360	389	481	436	477	481	472
Atmospheric sciences	57	40	43	46	45	54	45	48	58	68	50	83
Earth sciences	280	258	266	259	245	244	296	347	302	333	350	312
Oceanography	72	64	59	71	66	62	48	86	76	76	81	77
Mathematics/computer sciences	990	920	848	926	963	1,040	1,134	1,325	1,338	1,518	1,645	1,621
Computer sciences	402	395	410	413	455	500	551	680	667	730	782	772
Mathematics/statistics	588	525	438	513	508	540	583	645	671	788	863	849
Medical/other health sciences	1,955	2,121	2,796	2,876	3,865	5,284	6,416	7,688	7,408	7,193	3,536	3,696
Medical sciences	615	582	568	577	655	735	816	862	910	848	1,142	1,108
Other health sciences	1,340	1,539	2,228	2,299	3,210	4,549	5,600	6,826	6,498	6,345	2,394	2,588
Physical sciences	2,148	2,156	2,044	2,060	1,969	2,036	2,183	2,266	2,307	2,486	2,489	2,652
Astronomy	76	78	53	79	75	73	73	89	117	98	119	108
Chemistry	1,336	1,383	1,355	1,374	1,321	1,366	1,461	1,464	1,414	1,586	1,542	1,592
Physics	708	677	604	591	562	585	635	696	754	781	808	928
Other physical sciences	28	18	32	16	11	12	14	17	22	21	20	24
Social/behavioral sciences	6,966	7,138	6,801	6,729	6,917	7,000	6,963	7,173	7,166	6,680	6,362	6,969
Psychology	4,042	4,381	4,042	4,059	4,191	4,452	4,230	4,450	4,359	3,770	3,334	3,694
Social sciences	2,924	2,757	2,759	2,670	2,726	2,548	2,733	2,723	2,807	2,910	3,028	3,275
Anthropology	409	356	430	420	466	392	425	433	416	431	444	505
Area/ethnic studies	180	180	180	149	168	154	187	202	190	178	191	214
Economics	474	422	419	377	396	368	371	369	438	408	459	456
History of science	18	20	16	24	14	21	28	16	29	12	25	24

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Linguistics	105	100	84	102	105	95	114	123	114	145	118	146
Political science/public administration	856	859	821	827	809	806	827	811	822	919	967	1,013
Sociology	510	473	474	492	460	436	466	459	477	499	504	555
Other social sciences	372	347	335	279	308	276	315	310	321	318	320	362
Non-S&E	14,712	14,723	14,272	14,820	14,671	15,399	15,518	16,605	16,915	17,266	17,653	18,218
Male												
All fields	17,408	17,061	16,263	16,501	16,767	17,391	18,294	19,321	19,603	19,881	19,176	20,016
S&E	10,712	10,457	10,024	10,097	10,487	10,925	11,496	12,285	12,595	12,787	11,980	12,545
Engineering	2,160	2,079	1,810	1,807	1,854	1,941	2,108	2,317	2,376	2,518	2,601	2,793
Aerospace	108	85	67	63	64	81	69	92	90	119	102	115
Chemical	275	271	267	225	245	277	306	279	287	311	329	299
Civil	248	224	206	204	178	200	211	268	219	240	234	238
Electrical	557	524	449	418	457	477	497	555	595	597	638	685
Industrial	81	77	76	66	90	79	73	88	79	74	81	87
Materials	186	170	128	155	169	141	176	212	217	194	224	217
Mechanical	330	372	298	297	258	296	329	319	339	391	363	421
Other	375	356	319	379	393	390	447	504	550	592	630	731
Science	8,552	8,378	8,214	8,290	8,633	8,984	9,388	9,968	10,219	10,269	9,379	9,752
Natural sciences	5,693	5,554	5,508	5,683	5,912	6,466	6,879	7,485	7,661	7,813	6,895	7,184
Agricultural sciences	359	334	344	388	367	376	381	365	394	365	318	343
Biological sciences	2,021	1,963	1,893	2,068	2,189	2,185	2,237	2,386	2,531	2,485	2,517	2,597
Earth, atmospheric, and ocean sciences	289	243	233	249	226	234	241	276	268	286	282	282
Atmospheric sciences	46	34	32	32	32	42	32	30	50	52	32	61
Earth sciences	195	171	168	181	152	161	185	204	180	201	207	181
Oceanography	48	38	33	36	42	31	24	42	38	33	43	40
Mathematics/computer sciences	752	691	617	687	700	785	853	987	967	1,122	1,223	1,243
Computer sciences	329	311	308	323	345	397	421	535	514	569	605	624
Mathematics/statistics	423	380	309	364	355	388	432	452	453	553	618	619
Medical/other health sciences	687	766	955	830	1,016	1,460	1,639	1,918	1,886	1,878	878	927
Medical sciences	261	239	245	241	235	269	286	281	292	280	351	344
Other health sciences	426	527	710	589	781	1,191	1,353	1,637	1,594	1,598	527	583
Physical sciences	1,585	1,557	1,466	1,461	1,414	1,426	1,528	1,553	1,615	1,677	1,677	1,792
Astronomy	56	62	43	58	50	45	47	58	87	57	69	68
Chemistry	885	905	892	911	889	871	943	912	898	966	932	941
Physics	626	576	510	480	469	499	526	573	615	637	662	765
Other physical sciences	18	14	21	12	6	11	12	10	15	17	14	18
Social/behavioral sciences	2,859	2,824	2,706	2,607	2,721	2,518	2,509	2,483	2,558	2,456	2,484	2,568
Psychology	1,296	1,369	1,293	1,255	1,293	1,274	1,147	1,215	1,217	1,040	980	1,016
Social sciences	1,563	1,455	1,413	1,352	1,428	1,244	1,362	1,268	1,341	1,416	1,504	1,552
Anthropology	167	144	175	160	218	157	180	166	157	164	177	196
Area/ethnic studies	81	69	92	56	80	65	81	88	81	67	87	93
Economics	336	275	288	260	274	231	251	251	283	274	302	300

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
History of science	13	17	13	11	8	11	14	6	13	9	14	16
Linguistics	46	41	31	43	38	33	45	49	52	51	50	61
Political science/public administration	523	543	456	488	481	446	472	409	418	487	520	537
Sociology	206	186	185	190	165	153	162	164	177	201	186	194
Other social sciences	191	180	173	144	164	148	157	135	160	163	168	155
Non-S&E	6,696	6,604	6,239	6,404	6,280	6,466	6,798	7,036	7,008	7,094	7,196	7,471
Female												
All fields	16,705	17,044	17,119	18,050	19,040	21,121	22,040	24,567	24,906	25,138	22,583	23,498
S&E	8,689	8,925	9,086	9,634	10,649	12,188	13,320	14,998	14,999	14,966	12,126	12,751
Engineering	496	483	451	430	493	511	606	677	804	856	906	920
Aerospace	17	16	10	9	9	10	11	16	13	18	20	15
Chemical	89	86	87	70	95	83	117	94	130	126	140	141
Civil	71	76	67	79	79	96	85	91	111	108	113	115
Electrical	84	63	57	60	74	90	63	90	109	114	119	130
Industrial	23	32	39	27	29	28	44	41	46	38	35	37
Materials	54	47	44	43	36	50	66	74	67	87	92	66
Mechanical	54	42	37	39	49	42	59	57	67	81	62	84
Other	104	121	110	103	122	112	161	214	261	284	325	332
Science	8,193	8,442	8,635	9,204	10,156	11,677	12,714	14,321	14,195	14,110	11,220	11,831
Natural sciences	4,086	4,128	4,540	5,082	5,960	7,195	8,260	9,631	9,587	9,886	7,342	7,430
Agricultural sciences	194	210	205	238	234	235	259	278	274	350	321	317
Biological sciences	1,703	1,616	1,550	1,833	1,929	2,145	2,140	2,327	2,560	2,825	2,930	2,916
Earth, atmospheric, and ocean sciences	120	119	135	127	130	126	148	205	168	191	199	190
Atmospheric sciences	11	6	11	14	13	12	13	18	8	16	18	22
Earth sciences	85	87	98	78	93	83	111	143	122	132	143	131
Oceanography	24	26	26	35	24	31	24	44	38	43	38	37
Mathematics/computer sciences	238	229	231	239	263	255	281	338	371	396	422	378
Computer sciences	73	84	102	90	110	103	130	145	153	161	177	148
Mathematics/statistics	165	145	129	149	153	152	151	193	218	235	245	230
Medical/other health sciences	1,268	1,355	1,841	2,046	2,849	3,824	4,777	5,770	5,522	5,315	2,658	2,769
Medical sciences	354	343	323	336	420	466	530	581	618	568	791	764
Other health sciences	914	1,012	1,518	1,710	2,429	3,358	4,247	5,189	4,904	4,747	1,867	2,005
Physical sciences	563	599	578	599	555	610	655	713	692	809	812	860
Astronomy	20	16	10	21	25	28	26	31	30	41	50	40
Chemistry	451	478	463	463	432	495	518	552	516	620	610	651
Physics	82	101	94	111	93	86	109	123	139	144	146	163
Other physical sciences	10	4	11	4	5	1	2	7	7	4	6	6
Social/behavioral sciences	4,107	4,314	4,095	4,122	4,196	4,482	4,454	4,690	4,608	4,224	3,878	4,401
Psychology	2,746	3,012	2,749	2,804	2,898	3,178	3,083	3,235	3,142	2,730	2,354	2,678
Social sciences	1,361	1,302	1,346	1,318	1,298	1,304	1,371	1,455	1,466	1,494	1,524	1,723
Anthropology	242	212	255	260	248	235	245	267	259	267	267	309
Area/ethnic studies	99	111	88	93	88	89	106	114	109	111	104	121

Appendix table 2-31

Earned doctoral degrees, by citizenship, field, and sex: 2000–11

Citizenship, field, and sex	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Economics	138	147	131	117	122	137	120	118	155	134	157	156
History of science	5	3	3	13	6	10	14	10	16	3	11	8
Linguistics	59	59	53	59	67	62	69	74	62	94	68	85
Political science/public administration	333	316	365	339	328	360	355	402	404	432	447	476
Sociology	304	287	289	302	295	283	304	295	300	298	318	361
Other social sciences	181	167	162	135	144	128	158	175	161	155	152	207
Non-S&E	8,016	8,119	8,033	8,416	8,391	8,933	8,720	9,569	9,907	10,172	10,457	10,747

NOTES: Data in this table differ from doctoral degree data in other tables and figures in this report that are based on the National Science Foundation Survey of Earned Doctorates and that refer to research doctorates only. The greatest differences are in psychology, education, and medical/other life sciences. Before 2008, the National Center for Education Statistics (NCES) used two doctoral degree categories (doctor's and first-professional). Data in this table for those years include only the doctor's category. In 2008 and 2009, NCES allowed optional reporting in three new doctoral degree categories (doctor's—research/scholarship, doctor's—professional practice, and doctor's—other) in addition to the doctor's category. For those 2 years, data in this table include only doctorates reported in the doctor's category plus those reported in doctor's research/scholarship. In 2010, NCES required institutions to use only the three new doctoral degree categories, and data in this table for 2010 and later include only doctorates reported in the category doctor's—research/scholarship. This change primarily affects data for Other health sciences.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-32

Median number of years from S&E doctorate recipients' entry to graduate school to receipt of doctorate, by field: 1981–2011

Year	All S&E	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Engineering	Mathematics	Medical and other health sciences	Physical sciences	Psychology	Social sciences
1981	6.7	6.2	6.2	6.5	7.2	6.7	6.2	8.7	5.7	7.0	8.2
1982	6.7	6.7	6.2	6.7	7.3	6.7	6.2	8.7	5.7	7.2	8.7
1983	6.9	6.7	6.7	7.2	7.5	6.7	6.7	9.2	5.9	7.7	8.7
1984	7.2	6.9	6.7	7.5	7.7	6.7	6.7	9.0	5.9	7.9	8.7
1985	7.2	7.2	6.7	7.4	7.4	6.7	6.7	9.7	6.0	7.9	9.0
1986	7.2	7.7	6.7	7.6	7.7	6.7	6.6	9.9	6.0	8.2	9.2
1987	7.2	7.5	6.9	7.7	7.9	6.7	6.9	9.9	5.9	8.2	9.3
1988	7.2	7.7	6.9	7.7	8.2	6.7	6.9	10.7	6.0	8.3	9.4
1989	7.2	8.0	6.9	7.7	7.7	6.7	6.7	10.7	6.1	8.2	9.2
1990	7.6	8.1	7.2	7.2	7.7	6.7	6.9	11.2	6.2	8.5	9.3
1991	7.5	8.3	6.9	7.7	8.0	6.9	6.9	11.2	6.2	8.2	9.4
1992	7.7	8.3	7.2	7.7	8.2	7.1	7.5	11.7	6.4	8.4	9.2
1993	7.7	8.2	7.2	7.9	8.7	7.2	7.2	11.7	6.7	8.2	9.3
1994	7.7	8.2	7.2	8.1	8.9	7.2	7.2	11.7	6.7	7.9	9.3
1995	7.7	8.5	7.2	8.1	8.9	7.3	7.2	11.2	6.7	7.9	9.3
1996	7.7	8.7	7.2	8.2	9.2	7.2	7.0	11.7	6.7	7.7	8.9
1997	7.7	8.7	7.0	8.3	8.7	7.2	7.2	11.7	6.3	7.7	8.9
1998	7.3	8.7	6.7	8.2	8.4	7.2	6.7	11.7	6.2	7.2	8.7
1999	7.2	8.2	6.7	8.2	8.2	7.2	6.7	10.7	6.2	7.2	8.7
2000	7.5	8.7	6.9	8.2	8.3	7.2	6.8	11.2	6.2	7.2	8.7
2001	7.2	8.7	6.7	7.9	8.2	7.1	6.8	10.7	6.2	7.2	8.9
2002	7.5	8.7	6.7	8.0	8.2	7.2	6.7	11.0	6.2	7.7	8.9
2003	7.6	8.2	6.7	8.2	8.0	7.3	6.7	10.3	6.2	7.2	9.2
2004	7.2	7.9	6.7	7.8	7.7	7.2	6.7	9.5	6.2	7.0	8.7
2005	7.3	7.9	6.7	7.7	7.8	7.2	6.8	9.7	6.3	7.3	9.0
2006	7.2	7.9	6.7	7.7	7.7	6.9	6.7	9.7	6.2	7.0	8.7
2007	7.0	7.7	6.7	7.4	7.4	6.7	6.7	9.6	6.3	6.9	8.7
2008	7.0	7.9	6.5	7.3	7.3	6.7	6.7	9.3	6.3	6.9	8.7
2009	7.0	8.0	6.7	7.6	7.3	6.9	6.7	9.7	6.2	6.9	8.5
2010	7.0	7.8	6.6	7.6	7.3	6.9	6.3	9.3	6.3	6.9	8.7
2011	7.0	8.0	6.7	7.7	7.7	6.8	6.3	9.4	6.3	6.9	8.7

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2012) of the 2011 Survey of Earned Doctorates.

Science and Engineering Indicators 2014

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All citizenships, races, and ethnicities												
All fields	44,947	45,068	44,311	46,177	48,560	52,855	56,309	60,887	61,716	61,730	57,405	59,847
S&E	27,862	28,096	27,588	28,746	30,979	34,468	37,541	40,980	41,480	41,111	36,711	38,470
Engineering	5,384	5,561	5,196	5,282	5,931	6,548	7,402	8,066	8,110	7,915	7,812	8,478
Aerospace	203	202	193	178	190	205	209	234	232	257	228	237
Chemical	665	680	693	608	708	872	911	915	950	886	929	951
Civil	628	647	669	685	736	830	864	935	909	902	851	894
Electrical	1,515	1,527	1,361	1,402	1,634	1,782	2,124	2,380	2,279	2,090	2,169	2,352
Industrial	218	262	275	258	280	286	302	364	346	333	290	319
Materials	454	454	381	457	494	514	611	663	665	661	653	651
Mechanical	821	906	813	786	835	963	1,139	1,138	1,149	1,186	1,022	1,172
Other	880	883	811	908	1,054	1,096	1,242	1,437	1,580	1,600	1,670	1,902
Science	22,478	22,535	22,392	23,464	25,048	27,920	30,139	32,914	33,370	33,196	28,899	29,992
Natural sciences	14,296	14,084	14,385	15,340	16,773	19,329	21,563	24,052	24,466	24,649	20,809	21,313
Agricultural sciences	984	934	969	1,060	1,016	1,004	1,037	1,068	1,080	1,143	982	1,053
Biological sciences	4,992	4,750	4,596	5,212	5,491	5,925	6,138	6,703	7,319	7,429	7,571	7,596
Earth, atmospheric, and ocean sciences	579	542	562	544	540	572	600	727	683	724	713	687
Atmospheric sciences	87	70	68	78	77	96	95	87	106	110	100	120
Earth sciences	393	380	404	368	369	379	430	513	469	503	496	467
Oceanography	99	92	90	98	94	97	75	127	108	111	117	100
Mathematics/computer sciences	1,858	1,769	1,677	1,825	1,975	2,301	2,713	2,953	3,058	3,110	3,155	3,152
Computer sciences	777	768	750	816	910	1,121	1,416	1,597	1,696	1,574	1,561	1,562
Mathematics/statistics	1,081	1,001	927	1,009	1,065	1,180	1,297	1,356	1,362	1,536	1,594	1,590
Medical/other health sciences	2,439	2,643	3,334	3,321	4,406	5,907	7,089	8,392	8,121	7,827	4,062	4,265
Medical sciences	893	864	882	850	1,010	1,144	1,252	1,293	1,320	1,254	1,506	1,497
Other health sciences	1,546	1,779	2,452	2,471	3,396	4,763	5,837	7,099	6,801	6,573	2,556	2,768
Physical sciences	3,444	3,446	3,247	3,378	3,345	3,620	3,986	4,209	4,205	4,416	4,326	4,560
Astronomy	101	103	70	101	101	115	114	128	163	143	160	166
Chemistry	2,090	2,134	2,037	2,158	2,105	2,226	2,502	2,606	2,495	2,652	2,564	2,685
Physics	1,208	1,169	1,096	1,089	1,119	1,254	1,341	1,442	1,507	1,580	1,570	1,670
Other physical sciences	45	40	44	30	20	25	29	33	40	41	32	39
Social/behavioral sciences	8,182	8,451	8,007	8,124	8,275	8,591	8,576	8,862	8,904	8,547	8,090	8,679
Psychology	4,200	4,538	4,185	4,258	4,389	4,681	4,484	4,696	4,600	4,046	3,606	3,952
Social sciences	3,982	3,913	3,822	3,866	3,886	3,910	4,092	4,166	4,304	4,501	4,484	4,727
Anthropology	471	428	508	487	537	459	480	519	491	527	534	596
Area/ethnic studies	212	216	209	176	204	184	220	226	246	226	237	257
Economics	1,001	1,016	961	967	978	1,111	1,057	1,107	1,172	1,172	1,120	1,152
History of science	23	21	20	27	20	28	34	27	34	19	31	27
Linguistics	202	193	152	201	194	172	216	219	215	240	203	235
Political science/public administration	1,019	1,047	992	1,055	1,001	1,049	1,098	1,093	1,104	1,244	1,312	1,314
Sociology	602	550	547	598	564	534	574	573	594	635	612	671
Other social sciences	452	442	433	355	388	373	413	402	448	438	435	475

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Non-S&E	17,085	16,972	16,723	17,431	17,581	18,387	18,768	19,907	20,236	20,619	20,694	21,377
U.S. citizen or permanent resident												
All fields	34,113	34,105	33,382	34,551	35,807	38,512	40,334	43,888	44,509	45,019	41,759	43,514
S&E	19,401	19,382	19,110	19,731	21,136	23,113	24,816	27,283	27,594	27,753	24,106	25,296
Engineering	2,656	2,562	2,261	2,237	2,347	2,452	2,714	2,994	3,180	3,374	3,507	3,713
Aerospace	125	101	77	72	73	91	80	108	103	137	122	130
Chemical	364	357	354	295	340	360	423	373	417	437	469	440
Civil	319	300	273	283	257	296	296	359	330	348	347	353
Electrical	641	587	506	478	531	567	560	645	704	711	757	815
Industrial	104	109	115	93	119	107	117	129	125	112	116	124
Materials	240	217	172	198	205	191	242	286	284	281	316	283
Mechanical	384	414	335	336	307	338	388	376	406	472	425	505
Other	479	477	429	482	515	502	608	718	811	876	955	1,063
Science	16,745	16,820	16,849	17,494	18,789	20,661	22,102	24,289	24,414	24,379	20,599	21,583
Natural sciences	9,779	9,682	10,048	10,765	11,872	13,661	15,139	17,116	17,248	17,699	14,237	14,614
Agricultural sciences	553	544	549	626	601	611	640	643	668	715	639	660
Biological sciences	3,724	3,579	3,443	3,901	4,118	4,330	4,377	4,713	5,091	5,310	5,447	5,513
Earth, atmospheric, and ocean sciences	409	362	368	376	356	360	389	481	436	477	481	472
Atmospheric sciences	57	40	43	46	45	54	45	48	58	68	50	83
Earth sciences	280	258	266	259	245	244	296	347	302	333	350	312
Oceanography	72	64	59	71	66	62	48	86	76	76	81	77
Mathematics/computer sciences	990	920	848	926	963	1,040	1,134	1,325	1,338	1,518	1,645	1,621
Computer sciences	402	395	410	413	455	500	551	680	667	730	782	772
Mathematics/statistics	588	525	438	513	508	540	583	645	671	788	863	849
Medical/other health sciences	1,955	2,121	2,796	2,876	3,865	5,284	6,416	7,688	7,408	7,193	3,536	3,696
Medical sciences	615	582	568	577	655	735	816	862	910	848	1,142	1,108
Other health sciences	1,340	1,539	2,228	2,299	3,210	4,549	5,600	6,826	6,498	6,345	2,394	2,588
Physical sciences	2,148	2,156	2,044	2,060	1,969	2,036	2,183	2,266	2,307	2,486	2,489	2,652
Astronomy	76	78	53	79	75	73	73	89	117	98	119	108
Chemistry	1,336	1,383	1,355	1,374	1,321	1,366	1,461	1,464	1,414	1,586	1,542	1,592
Physics	708	677	604	591	562	585	635	696	754	781	808	928
Other physical sciences	28	18	32	16	11	12	14	17	22	21	20	24
Social/behavioral sciences	6,966	7,138	6,801	6,729	6,917	7,000	6,963	7,173	7,166	6,680	6,362	6,969
Psychology	4,042	4,381	4,042	4,059	4,191	4,452	4,230	4,450	4,359	3,770	3,334	3,694
Social sciences	2,924	2,757	2,759	2,670	2,726	2,548	2,733	2,723	2,807	2,910	3,028	3,275
Anthropology	409	356	430	420	466	392	425	433	416	431	444	505
Area/ethnic studies	180	180	180	149	168	154	187	202	190	178	191	214
Economics	474	422	419	377	396	368	371	369	438	408	459	456
History of science	18	20	16	24	14	21	28	16	29	12	25	24
Linguistics	105	100	84	102	105	95	114	123	114	145	118	146
Political science/public administration	856	859	821	827	809	806	827	811	822	919	967	1,013
Sociology	510	473	474	492	460	436	466	459	477	499	504	555

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Other social sciences	372	347	335	279	308	276	315	310	321	318	320	362
Non-S&E	14,712	14,723	14,272	14,820	14,671	15,399	15,518	16,605	16,915	17,266	17,653	18,218
White												
All fields	26,471	25,865	25,319	25,864	26,425	28,152	29,114	31,355	31,342	31,526	28,670	29,455
S&E	14,975	14,663	14,620	14,926	15,765	17,082	18,057	19,929	19,824	20,004	16,736	17,346
Engineering	1,948	1,844	1,592	1,571	1,633	1,696	1,818	1,973	2,112	2,235	2,286	2,393
Aerospace	108	79	65	48	61	73	60	81	81	99	90	93
Chemical	275	271	240	209	242	275	297	250	296	312	331	307
Civil	238	225	205	216	188	209	208	245	231	241	235	228
Electrical	436	374	325	282	331	346	346	367	397	415	426	468
Industrial	79	79	83	67	88	73	77	82	71	71	66	77
Materials	191	170	135	150	159	136	163	191	209	194	208	183
Mechanical	261	285	236	254	200	242	274	265	282	320	310	343
Other	360	361	303	345	364	342	393	492	545	583	620	694
Science	13,027	12,819	13,028	13,355	14,132	15,386	16,239	17,956	17,712	17,769	14,450	14,953
Natural sciences	7,621	7,387	7,863	8,263	9,052	10,324	11,300	12,877	12,716	13,094	10,033	10,333
Agricultural sciences	470	453	474	522	502	519	526	541	534	576	480	509
Biological sciences	2,845	2,689	2,613	2,912	3,047	3,172	3,206	3,426	3,608	3,782	3,759	3,787
Earth, atmospheric, and ocean sciences	344	301	332	318	311	300	328	400	349	390	395	385
Atmospheric sciences	50	33	40	36	37	43	30	39	49	61	43	67
Earth sciences	230	210	242	224	212	204	258	289	235	263	280	258
Oceanography	64	58	50	58	62	53	40	72	65	66	72	60
Mathematics/computer sciences	746	687	624	671	697	706	784	895	936	1,042	1,140	1,141
Computer sciences	289	287	264	282	309	308	356	437	446	483	506	514
Mathematics/statistics	457	400	360	389	388	398	428	458	490	559	634	627
Medical/other health sciences	1,544	1,643	2,247	2,249	2,995	4,101	4,811	5,948	5,604	5,452	2,458	2,598
Medical sciences	465	417	422	398	471	475	531	578	583	553	736	657
Other health sciences	1,079	1,226	1,825	1,851	2,524	3,626	4,280	5,370	5,021	4,899	1,722	1,941
Physical sciences	1,672	1,614	1,573	1,591	1,500	1,526	1,645	1,667	1,685	1,852	1,801	1,913
Astronomy	55	52	41	61	63	62	57	63	94	85	97	84
Chemistry	1,030	1,028	1,031	1,078	986	1,021	1,080	1,071	993	1,145	1,095	1,131
Physics	561	516	473	437	442	435	496	519	582	603	592	681
Other physical sciences	26	18	28	15	9	8	12	14	16	19	17	17
Social/behavioral sciences	5,406	5,432	5,165	5,092	5,080	5,062	4,939	5,079	4,996	4,675	4,417	4,620
Psychology	3,186	3,373	3,104	3,145	3,057	3,241	3,034	3,171	3,036	2,664	2,342	2,471
Social sciences	2,220	2,059	2,061	1,947	2,023	1,821	1,905	1,908	1,960	2,011	2,075	2,149
Anthropology	332	283	326	313	349	296	325	330	299	308	318	365
Area/ethnic studies	123	116	106	84	93	84	91	103	109	95	92	113
Economics	349	325	318	272	286	244	237	233	292	281	322	279
History of science	11	15	12	20	13	17	19	13	20	11	21	20
Linguistics	82	66	65	74	82	73	74	86	95	99	89	104
Political science/public administration	659	636	625	596	605	591	580	573	578	622	648	627

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sociology	375	343	340	356	352	301	337	326	321	354	355	375
Other social sciences	289	275	269	232	243	215	242	244	246	241	230	266
Non-S&E	11,496	11,202	10,699	10,938	10,660	11,070	11,057	11,426	11,518	11,522	11,934	12,109
Asian or Pacific Islander												
All fields	2,297	2,440	2,184	2,259	2,464	2,695	2,996	3,251	3,201	3,203	3,183	3,180
S&E	1,714	1,767	1,606	1,651	1,816	2,071	2,249	2,414	2,393	2,394	2,325	2,370
Engineering	380	398	357	292	346	372	470	508	501	504	517	603
Aerospace	9	11	3	8	8	8	11	8	9	16	12	16
Chemical	50	49	65	44	64	43	70	63	55	56	65	59
Civil	37	33	30	19	25	40	44	50	38	35	37	46
Electrical	120	127	111	112	97	128	121	156	174	156	154	179
Industrial	13	14	10	12	14	17	10	15	17	15	15	14
Materials	27	26	22	14	27	17	38	55	27	32	43	46
Mechanical	67	76	49	40	52	42	66	52	45	50	46	59
Other	57	62	67	43	59	77	110	109	136	144	145	184
Science	1,334	1,369	1,249	1,359	1,470	1,699	1,779	1,906	1,892	1,890	1,808	1,767
Natural sciences	979	982	914	1,000	1,086	1,313	1,361	1,451	1,442	1,461	1,393	1,353
Agricultural sciences	26	24	17	28	28	22	25	24	34	34	32	29
Biological sciences	429	399	388	475	489	508	477	563	575	567	650	608
Earth, atmospheric, and ocean sciences	15	25	12	15	12	16	23	11	17	15	15	22
Atmospheric sciences	3	5	1	6	4	6	6	1	1	1	2	6
Earth sciences	12	19	8	7	8	6	16	8	12	10	11	12
Oceanography	0	1	3	2	0	4	1	2	4	4	2	4
Mathematics/computer sciences	127	108	98	98	110	142	155	190	140	194	208	220
Computer sciences	56	53	72	55	62	88	92	111	87	116	124	130
Mathematics/statistics	71	55	26	43	48	54	63	79	53	78	84	90
Medical/other health sciences	196	211	229	214	276	416	461	441	460	447	271	264
Medical sciences	69	69	67	67	69	107	124	104	107	102	136	135
Other health sciences	127	142	162	147	207	309	337	337	353	345	135	129
Physical sciences	186	215	170	170	171	209	220	222	216	204	217	210
Astronomy	8	4	3	5	7	6	6	6	4	3	4	4
Chemistry	124	138	120	111	127	139	160	155	150	148	151	139
Physics	52	73	45	53	37	62	54	60	57	53	60	65
Other physical sciences	2	0	2	1	0	2	0	1	5	0	2	2
Social/behavioral sciences	355	387	335	359	384	386	418	455	450	429	415	414
Psychology	181	209	177	195	224	221	242	265	252	207	197	190
Social sciences	174	178	158	164	160	165	176	190	198	222	218	224
Anthropology	16	19	13	22	23	17	23	23	29	18	19	24
Area/ethnic studies	7	11	13	17	18	13	14	16	9	10	21	22
Economics	44	42	44	38	33	46	47	50	49	48	53	56
History of science	0	0	0	1	0	1	2	1	1	0	0	1
Linguistics	15	13	10	10	10	10	20	24	9	27	12	14

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Political science/public administration	44	46	41	42	38	41	38	42	45	60	71	59
Sociology	27	33	25	25	25	26	21	23	38	38	28	37
Other social sciences	21	14	12	9	13	11	11	11	18	21	14	11
Non-S&E	583	673	578	608	648	624	747	837	808	809	858	810
Black or African American												
All fields	2,147	2,091	2,268	2,362	2,725	2,854	2,884	3,452	3,478	3,645	3,372	3,759
S&E	821	838	871	893	1,034	1,071	1,204	1,287	1,352	1,451	1,239	1,426
Engineering	91	98	80	94	99	101	110	117	128	139	154	141
Aerospace	4	1	1	1	0	1	4	2	2	3	3	4
Chemical	8	15	10	8	7	9	13	18	17	11	14	15
Civil	8	9	11	11	6	10	9	10	9	9	12	14
Electrical	23	28	17	19	33	28	20	24	21	30	27	32
Industrial	6	5	6	6	10	6	11	8	18	10	16	13
Materials	5	5	4	9	6	7	11	8	13	15	18	10
Mechanical	24	17	16	12	18	12	13	16	23	19	15	13
Other	13	18	15	28	19	28	29	31	25	42	49	40
Science	730	740	791	799	935	970	1,094	1,170	1,224	1,312	1,085	1,285
Natural sciences	316	308	344	366	459	492	605	664	754	831	661	740
Agricultural sciences	20	16	16	26	20	19	28	24	26	28	47	21
Biological sciences	106	101	112	110	159	152	173	173	229	252	206	249
Earth, atmospheric, and ocean sciences	3	3	3	11	5	3	3	7	7	6	5	5
Atmospheric sciences	1	0	1	2	1	0	2	2	1	2	0	1
Earth sciences	2	3	2	6	3	2	0	3	5	4	5	3
Oceanography	0	0	0	3	1	1	1	2	1	0	0	1
Mathematics/computer sciences	28	26	35	36	26	37	41	51	46	57	57	54
Computer sciences	15	9	21	17	18	19	21	30	24	30	33	31
Mathematics/statistics	13	17	14	19	8	18	20	21	22	27	24	23
Medical/other health sciences	94	90	109	118	185	229	305	323	369	410	266	325
Medical sciences	36	30	29	36	46	62	74	75	73	78	106	132
Other health sciences	58	60	80	82	139	167	231	248	296	332	160	193
Physical sciences	65	72	69	65	64	52	55	86	77	78	80	86
Astronomy	1	0	1	1	1	0	1	2	0	0	2	1
Chemistry	45	56	46	47	51	37	43	64	62	66	59	67
Physics	19	16	22	17	11	15	11	20	15	11	18	17
Other physical sciences	0	0	0	0	1	0	0	0	0	1	1	1
Social/behavioral sciences	414	432	447	433	476	478	489	506	470	481	424	545
Psychology	214	240	231	241	281	275	256	278	271	259	212	275
Social sciences	200	192	216	192	195	203	233	228	199	222	212	270
Anthropology	20	12	25	23	26	24	21	19	18	22	21	18
Area/ethnic studies	17	25	28	17	22	21	36	38	36	33	30	30
Economics	22	9	19	11	19	9	18	18	15	8	10	19
History of science	0	1	1	0	0	1	1	1	0	1	0	0

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Linguistics	1	4	1	0	4	2	5	0	2	2	2	5
Political science/public administration	70	79	78	79	67	83	90	85	67	94	80	121
Sociology	50	42	44	51	40	44	45	47	45	48	51	47
Other social sciences	20	20	20	11	17	19	17	20	16	14	18	30
Non-S&E	1,326	1,253	1,397	1,469	1,691	1,783	1,680	2,165	2,126	2,194	2,133	2,333
Hispanic[a]												
All fields	1,382	1,594	1,503	1,609	1,739	1,914	1,980	2,138	2,410	2,419	2,294	2,457
S&E	775	905	840	878	1,057	1,121	1,190	1,301	1,499	1,335	1,312	1,397
Engineering	86	88	88	106	101	98	105	138	130	153	196	182
Aerospace	2	7	3	4	3	4	0	7	3	8	7	8
Chemical	18	8	17	13	9	20	20	16	20	22	33	23
Civil	11	14	6	14	21	13	16	25	14	21	26	18
Electrical	17	17	26	22	19	14	11	33	27	27	42	41
Industrial	3	4	9	2	2	4	12	12	9	6	11	10
Materials	7	10	5	9	6	13	12	9	7	10	19	9
Mechanical	10	16	11	15	13	14	12	13	17	28	23	31
Other	18	12	11	27	28	16	22	23	33	31	35	42
Science	689	817	752	772	956	1,023	1,085	1,163	1,369	1,182	1,116	1,215
Natural sciences	319	386	342	382	468	503	573	619	803	727	674	692
Agricultural sciences	13	21	20	16	17	14	36	15	18	21	33	45
Biological sciences	149	155	139	171	186	216	212	226	274	282	326	324
Earth, atmospheric, and ocean sciences	9	10	4	8	10	11	12	18	17	14	16	14
Atmospheric sciences	1	0	1	1	0	1	2	2	2	0	0	1
Earth sciences	6	6	1	3	10	9	10	12	13	12	13	11
Oceanography	2	4	2	4	0	1	0	4	2	2	3	2
Mathematics/computer sciences	25	29	28	28	41	38	33	38	45	58	48	48
Computer sciences	13	12	19	11	18	17	6	17	16	23	17	19
Mathematics/statistics	12	17	9	17	23	21	27	21	29	35	31	29
Medical/other health sciences	56	90	82	94	141	148	187	230	337	237	143	138
Medical sciences	16	28	22	29	31	30	34	51	84	38	63	67
Other health sciences	40	62	60	65	110	118	153	179	253	199	80	71
Physical sciences	67	81	69	65	73	76	93	92	112	115	108	123
Astronomy	3	4	1	2	2	2	1	5	3	4	4	5
Chemistry	45	59	48	44	58	57	70	65	89	86	72	79
Physics	19	18	19	19	13	16	21	22	20	25	32	37
Other physical sciences	0	0	1	0	0	1	1	0	0	0	0	2
Social/behavioral sciences	370	431	410	390	488	520	512	544	566	455	442	523
Psychology	267	308	297	247	339	388	367	417	420	316	277	335
Social sciences	103	123	113	143	149	132	145	127	146	139	165	188
Anthropology	8	19	20	29	37	20	25	18	29	34	27	40
Area/ethnic studies	7	9	10	8	13	12	13	14	11	8	16	14
Economics	18	18	13	20	25	22	21	22	16	18	22	16

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
History of science	1	2	0	0	0	1	2	1	0	0	2	1
Linguistics	1	5	3	4	2	3	4	3	3	4	3	3
Political science/public administration	28	34	35	36	43	35	35	34	36	37	46	50
Sociology	24	24	22	37	24	29	37	23	38	22	29	49
Other social sciences	16	12	10	9	5	10	8	12	13	16	20	15
Non-S&E	607	689	663	731	682	793	790	837	911	1,084	982	1,060
American Indian or Alaska Native												
All fields	155	170	175	185	206	224	214	232	244	282	224	232
S&E	82	88	84	106	117	109	111	128	139	154	121	122
Engineering	5	10	6	12	8	6	7	8	15	19	10	15
Aerospace	0	0	0	0	0	1	0	0	1	0	0	0
Chemical	0	3	1	1	1	0	1	1	2	5	0	4
Civil	1	0	1	0	1	0	0	3	2	3	1	1
Electrical	1	3	0	3	3	0	2	1	2	2	4	0
Industrial	0	0	0	0	0	0	1	0	1	0	1	0
Materials	0	0	1	0	0	1	0	0	1	1	1	3
Mechanical	2	2	2	1	1	2	2	1	3	2	2	4
Other	1	2	1	7	2	2	1	2	3	6	1	3
Science	77	78	78	94	109	103	104	120	124	135	111	107
Natural sciences	34	33	36	39	53	56	50	62	74	83	63	62
Agricultural sciences	2	1	0	1	7	4	1	3	8	5	6	5
Biological sciences	8	14	14	18	16	18	19	23	20	27	21	25
Earth, atmospheric, and ocean sciences	6	0	0	1	3	3	0	2	2	2	2	0
Atmospheric sciences	0	0	0	0	1	1	0	0	0	0	1	0
Earth sciences	5	0	0	1	2	2	0	1	2	1	1	0
Oceanography	1	0	0	0	0	0	0	1	0	1	0	0
Mathematics/computer sciences	2	3	2	2	1	0	6	4	2	5	5	8
Computer sciences	0	1	1	1	1	0	6	3	0	2	3	3
Mathematics/statistics	2	2	1	1	0	0	0	1	2	3	2	5
Medical/other health sciences	8	10	11	11	14	24	15	23	37	34	18	14
Medical sciences	4	4	2	4	2	2	3	5	5	7	4	5
Other health sciences	4	6	9	7	12	22	12	18	32	27	14	9
Physical sciences	8	5	9	6	12	7	9	7	5	10	11	10
Astronomy	1	0	0	0	0	0	0	0	0	0	1	0
Chemistry	7	5	7	6	9	6	6	3	4	7	8	7
Physics	0	0	2	0	3	1	3	4	1	3	2	3
Other physical sciences	0	0	0	0	0	0	0	0	0	0	0	0
Social/behavioral sciences	43	45	42	55	56	47	54	58	50	52	48	45
Psychology	28	27	24	31	36	29	32	36	31	23	19	23
Social sciences	15	18	18	24	20	18	22	22	19	29	29	22
Anthropology	4	3	6	6	5	4	4	6	1	6	9	4
Area/ethnic studies	2	2	3	2	3	4	5	6	6	11	6	6

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Economics	0	0	0	2	1	0	2	2	1	1	1	1
History of science	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	1	0	0	0	0	1	1	2	0	1	0
Political science/public administration	3	7	1	4	4	3	4	0	6	6	5	4
Sociology	4	4	7	6	1	5	0	4	3	3	3	4
Other social sciences	2	1	1	4	6	2	6	3	0	2	4	3
Non-S&E	73	82	91	79	89	115	103	104	105	128	103	110
Other/unknown race or ethnicity												
All fields	1,661	1,945	1,933	2,272	2,248	2,673	3,146	3,460	3,834	3,944	4,016	4,431
S&E	1,034	1,121	1,089	1,277	1,347	1,659	2,005	2,224	2,387	2,415	2,373	2,635
Engineering	146	124	138	162	160	179	204	250	294	324	344	379
Aerospace	2	3	5	11	1	4	5	10	7	11	10	9
Chemical	13	11	21	20	17	13	22	25	27	31	26	32
Civil	24	19	20	23	16	24	19	26	36	39	36	46
Electrical	44	38	27	40	48	51	60	64	83	81	104	95
Industrial	3	7	7	6	5	7	6	12	9	10	7	10
Materials	10	6	5	16	7	17	18	23	27	29	27	32
Mechanical	20	18	21	14	23	26	21	29	36	53	29	55
Other	30	22	32	32	43	37	53	61	69	70	105	100
Science	888	997	951	1,115	1,187	1,480	1,801	1,974	2,093	2,091	2,029	2,256
Natural sciences	510	586	549	715	754	973	1,250	1,443	1,459	1,503	1,413	1,434
Agricultural sciences	22	29	22	33	27	33	24	36	48	51	41	51
Biological sciences	187	221	177	215	221	264	290	302	385	400	485	520
Earth, atmospheric, and ocean sciences	32	23	17	23	15	27	23	43	44	50	48	46
Atmospheric sciences	2	2	0	1	2	3	5	4	5	4	4	8
Earth sciences	25	20	13	18	10	21	12	34	35	43	40	28
Oceanography	5	1	4	4	3	3	6	5	4	3	4	10
Mathematics/computer sciences	62	67	61	91	88	117	115	147	169	162	187	150
Computer sciences	29	33	33	47	47	68	70	82	94	76	99	75
Mathematics/statistics	33	34	28	44	41	49	45	65	75	86	88	75
Medical/other health sciences	57	77	118	190	254	366	637	723	601	613	380	357
Medical sciences	25	34	26	43	36	59	50	49	58	70	97	112
Other health sciences	32	43	92	147	218	307	587	674	543	543	283	245
Physical sciences	150	169	154	163	149	166	161	192	212	227	272	310
Astronomy	8	18	7	10	2	3	8	13	16	6	11	14
Chemistry	85	97	103	88	90	106	102	106	116	134	157	169
Physics	57	54	43	65	56	56	50	71	79	86	104	125
Other physical sciences	0	0	1	0	1	1	1	2	1	1	0	2
Social/behavioral sciences	378	411	402	400	433	507	551	531	634	588	616	822
Psychology	166	224	209	200	254	298	299	283	349	301	287	400
Social sciences	212	187	193	200	179	209	252	248	285	287	329	422
Anthropology	29	20	40	27	26	31	27	37	40	43	50	54

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Area/ethnic studies	24	17	20	21	19	20	28	25	19	21	26	29
Economics	41	28	25	34	32	47	46	44	65	52	51	85
History of science	6	2	3	3	1	1	4	0	8	0	2	2
Linguistics	6	11	5	14	7	7	10	9	3	13	11	20
Political science/public administration	52	57	41	70	52	53	80	77	90	100	117	152
Sociology	30	27	36	17	18	31	26	36	32	34	38	43
Other social sciences	24	25	23	14	24	19	31	20	28	24	34	37
Non-S&E	627	824	844	995	901	1,014	1,141	1,236	1,447	1,529	1,643	1,796
Temporary resident												
All fields	10,834	10,963	10,929	11,626	12,753	14,343	15,975	16,999	17,207	16,711	15,646	16,333
S&E	8,461	8,714	8,478	9,015	9,843	11,355	12,725	13,697	13,886	13,358	12,605	13,174
Engineering	2,728	2,999	2,935	3,045	3,584	4,096	4,688	5,072	4,930	4,541	4,305	4,765
Aerospace	78	101	116	106	117	114	129	126	129	120	106	107
Chemical	301	323	339	313	368	512	488	542	533	449	460	511
Civil	309	347	396	402	479	534	568	576	579	554	504	541
Electrical	874	940	855	924	1,103	1,215	1,564	1,735	1,575	1,379	1,412	1,537
Industrial	114	153	160	165	161	179	185	235	221	221	174	195
Materials	214	237	209	259	289	323	369	377	381	380	337	368
Mechanical	437	492	478	450	528	625	751	762	743	714	597	667
Other	401	406	382	426	539	594	634	719	769	724	715	839
Science	5,733	5,715	5,543	5,970	6,259	7,259	8,037	8,625	8,956	8,817	8,300	8,409
Natural sciences	4,517	4,402	4,337	4,575	4,901	5,668	6,424	6,936	7,218	6,950	6,572	6,699
Agricultural sciences	431	390	420	434	415	393	397	425	412	428	343	393
Biological sciences	1,268	1,171	1,153	1,311	1,373	1,595	1,761	1,990	2,228	2,119	2,124	2,083
Earth, atmospheric, and ocean sciences	170	180	194	168	184	212	211	246	247	247	232	215
Atmospheric sciences	30	30	25	32	32	42	50	39	48	42	50	37
Earth sciences	113	122	138	109	124	135	134	166	167	170	146	155
Oceanography	27	28	31	27	28	35	27	41	32	35	36	23
Mathematics/computer sciences	868	849	829	899	1,012	1,261	1,579	1,628	1,720	1,592	1,510	1,531
Computer sciences	375	373	340	403	455	621	865	917	1,029	844	779	790
Mathematics/statistics	493	476	489	496	557	640	714	711	691	748	731	741
Medical/other health sciences	484	522	538	445	541	623	673	704	713	634	526	569
Medical sciences	278	282	314	273	355	409	436	431	410	406	364	389
Other health sciences	206	240	224	172	186	214	237	273	303	228	162	180
Physical sciences	1,296	1,290	1,203	1,318	1,376	1,584	1,803	1,943	1,898	1,930	1,837	1,908
Astronomy	25	25	17	22	26	42	41	39	46	45	41	58
Chemistry	754	751	682	784	784	860	1,041	1,142	1,081	1,066	1,022	1,093
Physics	500	492	492	498	557	669	706	746	753	799	762	742
Other physical sciences	17	22	12	14	9	13	15	16	18	20	12	15
Social/behavioral sciences	1,216	1,313	1,206	1,395	1,358	1,591	1,613	1,689	1,738	1,867	1,728	1,710
Psychology	158	157	143	199	198	229	254	246	241	276	272	258
Social sciences	1,058	1,156	1,063	1,196	1,160	1,362	1,359	1,443	1,497	1,591	1,456	1,452

Appendix table 2-33

Earned doctoral degrees, by citizenship, field, and race or ethnicity: 2000–11

Citizenship, field, and race or ethnicity	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Anthropology	62	72	78	67	71	67	55	86	75	96	90	91
Area/ethnic studies	32	36	29	27	36	30	33	24	56	48	46	43
Economics	527	594	542	590	582	743	686	738	734	764	661	696
History of science	5	1	4	3	6	7	6	11	5	7	6	3
Linguistics	97	93	68	99	89	77	102	96	101	95	85	89
Political science/public administration	163	188	171	228	192	243	271	282	282	325	345	301
Sociology	92	77	73	106	104	98	108	114	117	136	108	116
Other social sciences	80	95	98	76	80	97	98	92	127	120	115	113
Non-S&E	2,373	2,249	2,451	2,611	2,910	2,988	3,250	3,302	3,321	3,353	3,041	3,159

[a] Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

NOTES: Racial and ethnic breakouts include U.S. citizens and permanent residents only; temporary resident includes all racial and ethnic groups. Data in this table differ from doctoral degree data in other tables and figures in this report that are based on the National Science Foundation Survey of Earned Doctorates and that refer to research doctorates only. The greatest differences are in psychology, education, and medical/other health sciences. Before 2008, the National Center for Education Statistics (NCES) used two doctoral degree categories (doctor's and first-professional). Data in this table for those years include only the doctor's category. In 2008 and 2009, NCES allowed optional reporting in three new doctoral degree categories (doctor's—research/scholarship, doctor's—professional practice, and doctor's—other) in addition to the doctor's category. For those 2 years, data in this table include only doctorates reported in the doctor's category plus those reported in doctor's—research/scholarship. In 2010, NCES required institutions to use only the three new doctoral degree categories, and data in this table for 2010 and later include only doctorates reported in the category doctor's—research/scholarship. This change primarily affects data for Other health sciences.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-34

Expenditures on tertiary education as a percentage of GDP: 1995, 2000, 2005, and 2009

Country	Expenditures on tertiary education as a percentage of GDP			
	1995	2000	2005	2009
OECD countries				
Australia	1.6	1.4	1.5	1.6
Austria	1.2	1.1	1.3	1.4
Belgium	NA	1.3	1.2	1.5
Canada[a]	2.1	2.3	2.7	2.5
Czech Republic	0.9	0.8	1.0	1.3
Denmark[a]	1.6	1.6	1.7	1.9
Finland	1.9	1.7	1.7	1.9
France	1.4	1.3	1.3	1.5
Germany	1.1	1.1	1.1	1.3
Greece	0.6	0.8	1.5	NA
Hungary	0.8	0.9	0.9	1.0
Iceland	NA	1.1	1.2	1.3
Ireland	1.3	1.5	1.1	1.6
Italy	0.7	0.9	0.9	1.0
Japan	1.3	1.4	1.4	1.6
Luxembourg	NA	NA	NA	NA
Mexico	1.0	1.0	1.2	1.4
Netherlands	1.6	1.4	1.5	1.7
New Zealand	NA	NA	1.5	1.6
Norway	1.6	1.2	1.3	1.4
Poland	0.8	1.1	1.6	1.5
Portugal	0.9	1.0	1.3	1.4
Slovak Republic	0.7	0.8	0.9	0.9
South Korea	NA	2.2	2.3	2.6
Spain	1.0	1.1	1.1	1.3
Sweden	1.5	1.6	1.6	1.8
Switzerland	0.9	1.1	1.4	1.3
Turkey	0.5	0.8	NA	NA
United Kingdom	1.1	1.0	1.3	1.3
United States	2.3	2.7	2.8	2.6
OECD average	1.2	1.3	1.5	1.6
EU average	1.1	1.1	1.3	1.4
G20 average	NA	NA	NA	1.5
Partner countries (countries added are other G20)				
Argentina	NA	NA	NA	1.4
Brazil	0.7	0.7	0.8	0.8
Chile[b]	NA	NA	1.8	2.5
China	NA	NA	NA	NA
Estonia	1.1	1.2	1.3	1.6
India	NA	NA	NA	1.3
Indonesia	NA	NA	NA	0.7
Israel	1.7	1.9	1.9	1.6
Russian Federation	NA	0.5	0.6	1.8

Appendix table 2-34

Expenditures on tertiary education as a percentage of GDP: 1995, 2000, 2005, and 2009

Country	Expenditures on tertiary education as a percentage of GDP			
	1995	2000	2005	2009
Saudi Arabia	NA	NA	NA	2.3
Slovenia	NA	NA	1.3	1.3
South Africa	NA	NA	NA	0.6

NA = not available.

EU = European Union; in this table EU excludes Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Malta, and Romania. G20 = a group of 20 finance ministers and central bank governors from 20 major economies. GDP = gross domestic product. OECD = Organisation for Economic Cooperation and Development.

[a] Year of reference is 2008 instead of 2009.
[b] Year of reference is 2010 instead of 2009.

NOTES: Data for Brazil, Hungary, India, Saudi Arabia, South Africa, Switzerland, and Turkey are for public expenditures only. Data for Estonia, New Zealand, and the Russian Federation are for public expenditures for 1995 and 2000 only.

SOURCE: Organisation for Economic Co-operation and Development, *Education at a Glance 2012: OECD Indicators*, Indicator B1, table B2.1, http://www.oecd.org/edu/eag2012.htm, accessed 18 March 2013.

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Appendix table 2-35

Tertiary-type A, advanced research programs, and tertiary education, by age group and country: 2010

(Percent)

Country	Tertiary-type A and advanced research programs		All tertiary education	
	25–64 years	25–34 years	25–64 years	25–34 years
OECD average	22	28	31	38
Australia	27	34	38	44
Austria	12	15	19	21
Belgium	17	23	35	44
Brazil	11	12	11	12
Canada	26	31	51	56
Chile	17	25	27	38
China	1	2	5	6
Czech Republic	17	23	17	23
Denmark	27	31	33	38
Estonia	22	24	35	38
Finland	23	37	38	39
France	18	26	29	43
Germany	17	19	27	26
Greece	17	20	25	31
Hungary	20	25	20	26
Iceland	29	34	33	36
Ireland	22	30	37	48
Israel	31	32	46	44
Italy	14	20	15	21
Japan	25	33	45	57
Luxembourg	21	26	35	44
Mexico	16	21	17	22
Netherlands	30	38	32	41
New Zealand	24	31	41	46
Norway	35	46	37	47
Poland	23	37	23	37
Portugal	15	25	15	25
Russian Federation[a]	21	21	54	55
Slovak Republic	17	23	17	24
Slovenia	13	19	24	31
South Korea	28	39	40	65
Spain	21	27	31	39
Sweden	25	34	34	42
Switzerland	24	31	35	40
Turkey	13	17	13	17
United Kingdom	28	38	38	46
United States	32	33	42	42

OECD = Organisation for Economic Co-operation and Development; ISCED = International Standard Classification of Education.

[a] Data correspond to 2002.

NOTES: Tertiary education includes ISCED levels 5A, 5B, and 6 programs. ISCED 5A programs are largely theory-based and designed to provide sufficient qualifications for entry into advanced research programs and professions with high skill requirements. ISCED 5B programs focus on practical, technical, or occupational skills for direct entry into labor market. ISCED 6 programs are devoted to advanced studies and original research leading to award of an advanced research qualification. In the United States, ISCED 5B corresponds to associate's, ISCED 5A corresponds to bachelor's and master's, and ISCED 6 corresponds to doctoral degrees.

SOURCE: Organisation for Economic Co-operation and Development, *Education at a Glance 2012: OECD Indicators.*

Science and Engineering Indicators 2014

Appendix table 2-36

First university degrees, by selected region and country/economy: 2010 or most recent year

Region/country/economy	Field of first university degree										
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]	S&E (%)	Natural sciences (%)	Engineering (%)
Asia[b]											
Armenia	25,761	6,511	903	1,617	1,094	220	2,677	19,250	25.3	14.0	10.4
Bangladesh (2003)	180,258	74,844	18,905	5,598	1,469	48,002	870	105,414	41.5	14.4	0.5
Brunei	894	80	45	17	0	18	NA	814	8.9	6.9	NA
Cambodia (2009)	12,987	5,168	250	1,313	256	2,835	514	7,819	39.8	14.0	4.0
China	2,590,535	1,288,999	269,053	NA	48,442	158,286	813,218	1,301,536	49.8	12.3	31.4
Georgia (2007)	34,052	6,514	1,407	646	1,141	101	3,219	27,538	19.1	18.8	9.5
India (2003)	2,052,197	463,186	327,775	NA	7,801	NA	127,610	1,589,011	22.6	16.3	6.2
Japan[c]	541,428	321,168	18,413	NA	17,071	196,061	89,623	220,260	59.3	6.6	16.6
Kyrgyzstan	38,106	9,950	282	1,798	214	4,183	3,473	28,156	26.1	6.0	9.1
Malaysia (2009)	117,792	53,640	8,636	13,495	852	12,319	18,338	64,152	45.5	19.5	15.6
Mongolia	32,400	9,061	803	1,030	538	2,822	3,868	23,339	28.0	7.3	11.9
Philippines (2006)	350,804	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Singapore[d]	12,451	5,552	1,766	NA	NA	NA	3,786	6,899	44.6	14.2	30.4
South Korea	308,162	123,658	15,732	16,476	3,743	13,937	73,770	184,504	40.1	11.7	23.9
Taiwan	227,174	88,294	7,118	17,235	4,154	7,322	52,465	138,880	38.9	12.5	23.1
Middle East[b]											
Iran (2007)	341,631	180,053	26,906	10,511	17,949	25,000	99,687	161,578	52.7	16.2	29.2
Iraq (2004)	54,396	11,629	1,606	1,289	1,185	570	6,979	42,767	21.4	7.5	12.8
Israel	59,240	24,757	2,949	2,343	298	13,220	5,947	34,483	41.8	9.4	10.0
Jordan (2007)	40,787	13,633	2,596	4,491	630	1,432	4,484	27,154	33.4	18.9	11.0
Lebanon	29,632	10,418	2,833	1,260	150	2,580	3,595	19,214	35.2	14.3	12.1
Oman	10,647	4,544	460	1,954	115	55	1,960	6,103	42.7	23.8	18.4
Palestine	23,231	6,210	683	1,371	94	2,388	1,674	17,021	26.7	9.2	7.2
Qatar	1,249	411	23	71	NA	150	167	838	32.9	7.5	13.4
Saudi Arabia	88,653	29,688	9,194	8,688	362	7,416	4,028	58,965	33.5	20.6	4.5
Turkey	289,013	103,173	12,020	9,072	4,792	53,021	24,268	185,840	35.7	9.0	8.4
Africa[b]											
Algeria (2007)	142,694	57,849	10,841	8,716	2,087	18,355	17,850	84,845	40.5	15.2	12.5
Burundi (2004)	680	207	0	74	51	70	12	473	30.4	18.4	1.8
Cameroon (2008)	27,368	10,877	3,424	853	121	6,125	354	16,491	39.7	16.1	1.3
Egypt	409,959	NA	NA	NA	NA	NA	NA	NA			
Eritrea	1,856	251	NA	NA	NA	NA	251	1,605	13.5	NA	13.5
Ethiopia	74,723	30,688	5,485	5,135	7,405	7,656	5,007	44,035	41.1	24.1	6.7
Ghana (2009)	11,323	5,046	NA	NA	NA	4,702	344	6,277	44.6	NA	3.0
Kenya (2001)	15,620	3,870	1,120	71	1,494	445	740	11,750	24.8	17.2	4.7
Lesotho (2003)	475	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Madagascar	9,469	3,505	1,417	179	100	1,625	184	5,964	37.0	17.9	1.9

Appendix table 2-36

First university degrees, by selected region and country/economy: 2010 or most recent year

Region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]	S&E (%)	Natural sciences (%)	Engineering (%)
	Field of first university degree										
Morocco	33,555	12,273	2,846	1,677	570	4,728	2,452	21,282	36.6	15.2	7.3
Mozambique (2011)	9,567	1,985	183	111	377	765	549	7,582	20.7	7.0	5.7
Namibia (2008)	2,825	262	NA	38	154	NA	70	2,563	9.3	6.8	2.5
Swaziland (2006)	1,843	237	44	0	118	69	6	1,606	12.9	8.8	0.3
Uganda (2004)	9,621	3,153	304	150	306	1,640	753	6,468	32.8	14.2	7.8
Europe[b]											
EU											
Austria	32,143	11,397	1,846	1,722	190	3,126	4,513	20,746	35.5	11.7	14.0
Belgium	25,949	8,912	950	449	352	3,371	3,790	17,037	34.3	6.7	14.6
Bulgaria	52,998	18,976	1,155	1,527	726	7,284	8,284	34,022	35.8	6.4	15.6
Cyprus	2,732	862	80	196	0	269	317	1,870	31.6	10.1	11.6
Czech Republic	60,525	19,156	2,505	3,113	1,661	4,359	7,518	41,369	31.6	12.0	12.4
Denmark	32,073	7,565	982	1,010	88	2,215	3,270	24,508	23.6	6.5	10.2
Estonia	7,336	2,492	434	417	173	628	840	4,844	34.0	14.0	11.5
Finland	32,946	11,487	876	1,466	732	1,721	6,692	21,459	34.9	9.3	20.3
France (2009)	286,450	100,118	17,196	16,490	2,198	23,033	41,201	186,332	35.0	12.5	14.4
Germany	369,059	138,583	30,047	27,954	2,918	28,653	49,011	230,476	37.6	16.5	13.3
Greece	32,723	14,552	1,928	2,409	836	5,176	4,203	18,171	44.5	15.8	12.8
Hungary	49,380	14,740	1,838	2,079	1,191	4,225	5,407	34,640	29.9	10.3	10.9
Ireland	27,084	7,398	1,534	1,194	174	1,366	3,130	19,686	27.3	10.7	11.6
Italy	211,770	76,449	10,967	4,905	2,977	24,881	32,719	135,321	36.1	8.9	15.5
Latvia	21,455	5,273	496	655	157	2,050	1,915	16,182	24.6	6.1	8.9
Lithuania	31,954	11,444	693	1,318	504	3,795	5,134	20,510	35.8	7.9	16.1
Luxembourg (2008)	330	128	6	51	0	58	13	202	38.8	17.3	3.9
Netherlands	91,389	21,736	1,160	4,027	898	8,587	7,064	69,653	23.8	6.7	7.7
Poland	355,220	124,186	13,759	16,120	6,866	49,069	38,372	231,034	35.0	10.3	10.8
Portugal	54,011	17,064	1,870	1,012	509	4,692	8,981	36,947	31.6	6.3	16.6
Romania	300,456	132,867	7,240	7,007	3,084	78,981	36,555	167,589	44.2	5.8	12.2
Slovak Republic	42,027	11,233	1,459	1,779	659	2,315	5,021	30,794	26.7	9.3	11.9
Slovenia	11,029	3,709	376	288	249	1,363	1,433	7,320	33.6	8.3	13.0
Spain	197,890	63,046	6,336	10,070	3,005	12,500	31,135	134,844	31.9	9.8	15.7
Sweden	40,702	13,114	1,303	955	170	3,958	6,728	27,588	32.2	6.0	16.5
United Kingdom[e]	350,855	117,705	32,690	20,730	3,035	39,295	21,955	233,150	33.5	16.1	6.3
Other Europe											
Albania (2003)	22,721	5,512	678	825	1,207	1,304	1,498	17,209	24.3	11.9	6.6
Croatia	23,779	7,385	1,166	995	795	1,321	3,108	16,394	31.1	12.4	13.1
Iceland	2,864	806	100	85	14	318	289	2,058	28.1	6.9	10.1
Macedonia	10,230	2,626	331	910	232	330	823	7,604	25.7	14.4	8.0

Appendix table 2-36

First university degrees, by selected region and country/economy: 2010 or most recent year

Region/country/economy	Field of first university degree										
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]	S&E (%)	Natural sciences (%)	Engineering (%)
Norway	28,581	6,584	610	873	127	2,173	2,801	21,997	23.0	5.6	9.8
Switzerland	28,622	7,916	1,437	785	120	2,494	3,080	20,706	27.7	8.2	10.8
Russian Federation	1,437,876	320,976	21,950	48,996	30,961	83,695	135,374	1,116,900	22.3	7.1	9.4
Ukraine	527,294	200,700	14,251	14,026	18,088	49,464	104,871	326,594	38.1	8.8	19.9
America[b]											
North America											
Canada	178,827	65,639	16,240	6,060	875	29,183	13,281	113,188	36.7	13.0	7.4
Mexico	372,997	131,518	10,089	13,971	3,750	32,260	71,448	241,479	35.3	7.5	19.2
United States	1,668,227	525,374	112,819	56,939	20,400	260,817	74,399	1,142,853	31.5	11.4	4.5
Central America and Caribbean											
Cuba	151,809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
El Salvador	11,474	2,256	161	962	70	42	1,021	9,218	19.7	10.4	8.9
Guatemala (2007)	4,105	1,482	144	0	244	236	858	2,623	36.1	9.5	20.9
Honduras (2003)	4,386	1,391	25	103	414	57	792	2,995	31.7	12.4	18.1
Panama	18,002	3,848	137	492	140	895	2,184	14,154	21.4	4.3	12.1
South America											
Argentina (2009)	85,925	22,905	2,603	2,771	1,801	8,543	7,187	63,020	26.7	8.4	8.4
Bolivia (2000)	15,341	5,115	563	392	1,006	997	2,157	10,226	33.3	12.8	14.1
Brazil	850,787	121,465	14,912	20,261	10,462	29,261	46,569	729,322	14.3	5.4	5.5
Chile	68,461	17,991	1,011	1,512	1,352	5,563	8,553	50,470	26.3	5.7	12.5
Colombia	161,330	46,176	5,507	8,051	1,103	11,102	20,413	115,154	28.6	9.1	12.7
Guyana	327	124	26	11	0	87	0	203	37.9	11.3	0.0
Uruguay	6,895	2,082	288	257	221	748	568	4,813	30.2	11.1	8.2
Venezuela (2004)	56,122	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix table 2-36

First university degrees, by selected region and country/economy: 2010 or most recent year

Region/country/economy	Field of first university degree										
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]	S&E (%)	Natural sciences (%)	Engineering (%)
Oceania[b]											
Australia	191,080	46,652	11,305	7,976	1,058	13,067	13,246	144,428	24.4	10.6	6.9
New Zealand	30,657	10,572	2,559	1,850	193	3,607	2,363	20,085	34.5	15.0	7.7

NA = not available.

EU = European Union.

[a] Includes field unknown or unspecified.
[b] Includes only locations for which relatively recent data are available.
[c] Japan social science data include business administration.
[d] Singapore data include social sciences in humanities (non-S&E) and mathematical sciences in physical and biological sciences.
[e] Includes former colleges and polytechnic institutions. Data are rounded to the nearest 5. Detail may not add to total because of rounding. Ratios are based on unrounded data.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Natural sciences include physical, biological, agricultural, and computer sciences and mathematics. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A. First university degree programs in most countries take less than 5 years to complete; however, in some countries, especially European, some level 5A degree programs take more than 5 years. Data for some countries include degrees comparable with U.S. master's or first professional degrees.

SOURCES: Organisation for Economic Co-operation and Development, OECD.Stat Extracts, http://stats.oecd.org/Index.aspx/; UNESCO, Institute for Statistics, International Education Database, special tabulations (as of November 2012); China—National Bureau of Statistics of China, *China Statistical Yearbook, 2011* (Beijing); India—Government of India, Ministry of Human Resource Development, Department of Higher Education 2008, *Education Statistics at a Glance 2005–06*; Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education (2012); Russian Federation—State University Higher School of Economics, special tabulations (2012); Singapore—Ministry of Education, Education Statistics Digest: 2011 (2011); Taiwan—Ministry of Education, Educational Statistics of the Republic of China: 2010 (2010); United Kingdom—Higher Education Statistics Agency, special tabulations (2012); and United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-37

S&E first university degrees, by selected Western or Asian country/economy and field: 2000–10

Country/economy and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Australia											
All fields	112,745	129,499	137,877	152,287	130,298	176,906	171,582	176,136	177,155	181,457	191,080
S&E fields	29,859	33,899	41,132	45,627	42,984	50,840	49,836	49,507	47,940	46,348	46,652
Physical/biological sciences	8,523	8,945	8,545	8,444	9,389	10,483	10,982	11,400	11,338	11,363	11,305
Mathematics/computer sciences	5,765	7,453	11,703	15,549	12,574	14,563	13,215	11,621	10,108	8,643	7,976
Agricultural sciences	1,116	1,364	1,120	1,200	1,246	1,132	1,072	1,114	1,037	1,012	1,058
Social/behavioral sciences	4,918	5,699	8,097	8,297	9,732	12,328	12,210	12,709	12,968	12,440	13,067
Engineering	9,537	10,438	11,667	12,137	10,043	12,334	12,357	12,663	12,489	12,890	13,246
Canada											
All fields	127,131	NA	NA	NA	137,296	149,910	176,910	160,428	181,580	178,673	178,827
S&E fields	53,350	NA	NA	NA	53,201	59,970	58,908	60,552	69,046	66,919	65,639
Physical/biological sciences	10,353	NA	NA	NA	9,894	9,750	9,807	14,208	17,097	16,633	16,240
Mathematics/computer sciences	5,424	NA	NA	NA	7,267	8,895	7,896	7,350	6,480	6,055	6,060
Agricultural sciences	1,236	NA	NA	NA	1,537	1,152	987	834	934	872	875
Social/behavioral sciences	26,660	NA	NA	NA	23,845	27,861	27,849	25,851	30,932	29,821	29,183
Engineering	9,677	NA	NA	NA	10,658	12,312	12,369	12,309	13,603	13,538	13,281
China											
All fields	495,624	567,839	655,763	929,598	1,196,290	1,465,786	1,726,674	1,995,944	2,256,783	2,455,359	2,590,535
S&E fields	359,478	337,352	384,529	533,582	672,463	796,430	911,846	1,031,911	1,143,338	1,225,642	1,288,999
Physical/biological sciences	49,214	63,517	72,526	103,409	134,164	163,076	194,807	228,090	251,610	264,494	269,053
Mathematics/computer sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	19,154	19,005	22,462	29,758	34,078	35,419	36,740	43,270	45,649	46,847	48,442
Social/behavioral sciences	78,205	35,267	37,517	48,878	61,758	80,710	104,665	126,807	141,475	150,666	158,286
Engineering	212,905	219,563	252,024	351,537	442,463	517,225	575,634	633,744	704,604	763,635	813,218
France											
All fields	275,316	300,088	309,009	328,784	328,784	273,523	285,238	287,035	287,234	286,450	NA
S&E fields	116,160	125,738	111,877	118,954	118,954	94,605	100,524	100,979	100,257	100,118	NA
Physical/biological sciences	33,511	36,659	27,750	29,472	29,472	17,894	19,075	18,838	17,986	17,196	NA
Mathematics/computer sciences	15,042	16,281	14,707	15,613	15,613	14,946	16,134	15,971	15,913	16,490	NA
Agricultural sciences	2,257	2,379	306	327	327	2,193	2,737	2,483	2,112	2,198	NA
Social/behavioral sciences	31,057	34,233	27,893	29,635	29,635	21,170	23,169	23,143	23,223	23,033	NA
Engineering	34,293	36,186	41,221	43,907	43,907	38,402	39,409	40,544	41,023	41,201	NA
Germany											
All fields	178,618	173,407	176,025	183,322	196,608	197,770	267,597	294,357	322,651	356,522	369,059
S&E fields	66,559	62,917	63,400	66,530	71,675	74,970	95,101	104,882	118,486	129,899	138,583
Physical/biological sciences	11,516	10,818	11,243	11,052	11,705	12,454	16,952	19,797	24,539	27,934	30,047
Mathematics/computer sciences	8,700	8,532	9,146	10,630	13,716	16,103	21,656	24,311	26,398	28,571	27,954
Agricultural sciences	2,140	2,051	2,106	2,424	2,575	2,321	2,367	2,457	2,847	2,937	2,918
Social/behavioral sciences	7,884	7,414	8,106	8,876	9,580	10,727	19,919	21,829	24,573	26,293	28,653
Engineering	36,319	34,102	32,799	33,548	34,099	33,365	34,207	36,488	40,129	44,164	49,011
Italy											
All fields	150,677	159,276	171,806	201,019	264,574	291,304	273,451	251,155	231,082	222,631	211,770

Appendix table 2-37

S&E first university degrees, by selected Western or Asian country/economy and field: 2000–10

Country/economy and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
S&E fields	57,263	59,082	62,842	72,199	98,767	108,181	100,963	90,332	81,057	79,628	76,449
Physical/biological sciences	8,885	9,059	9,650	10,260	13,469	14,062	13,073	11,519	11,161	11,043	10,967
Mathematics/computer sciences	4,827	4,432	4,491	5,766	6,492	6,354	6,037	5,321	4,763	4,922	4,905
Agricultural sciences	1,345	1,468	1,835	2,529	3,340	3,725	3,611	3,564	3,256	3,322	2,977
Social/behavioral sciences	14,521	15,350	16,701	18,282	29,567	34,916	33,813	30,800	26,924	26,072	24,881
Engineering	27,685	28,773	30,165	35,362	45,899	49,124	44,429	39,128	34,953	34,269	32,719
Japan											
All fields	538,683	545,512	547,711	544,894	548,897	551,016	558,184	559,090	555,690	559,539	541,428
S&E fields	353,465	359,019	357,282	352,088	351,299	349,015	350,137	344,990	336,815	333,553	321,168
Physical/biological sciences	13,300	14,192	19,369	19,549	19,727	19,260	19,805	19,536	19,094	18,790	18,413
Mathematics/computer sciences	4,941	4,965	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	15,562	14,084	16,393	15,933	15,865	16,015	16,019	16,122	16,113	16,797	17,071
Social/behavioral sciences	216,506	221,300	217,838	215,205	217,276	215,809	217,638	213,179	206,392	204,282	196,061
Engineering	103,156	104,478	103,682	101,401	98,431	97,931	96,675	96,153	95,216	93,684	89,623
Mexico											
All fields	287,019	296,485	321,799	280,589	276,690	309,266	339,340	343,328	336,810	362,241	372,997
S&E fields	86,351	90,482	99,936	86,588	93,858	107,981	117,304	122,997	116,835	128,571	131,518
Physical/biological sciences	6,194	6,251	7,695	6,885	7,093	8,150	8,837	9,244	9,582	10,307	10,089
Mathematics/computer sciences	19,351	22,306	23,557	24,946	24,584	28,860	30,268	29,052	27,805	26,979	13,971
Agricultural sciences	3,475	3,755	4,381	3,533	3,912	3,722	4,143	4,116	4,068	4,668	3,750
Social/behavioral sciences	16,996	17,168	19,621	4,110	15,423	19,921	21,801	27,803	22,554	30,084	32,260
Engineering	40,335	41,002	44,682	47,114	42,846	47,328	52,255	52,782	52,826	56,533	71,448
Poland											
All fields	207,791	240,976	260,953	269,861	278,509	287,607	293,045	309,526	321,762	327,241	355,220
S&E fields	66,160	77,351	83,773	87,774	90,587	93,698	107,355	116,614	117,144	115,942	124,186
Physical/biological sciences	5,613	6,695	7,550	7,128	6,379	6,541	11,585	11,989	12,281	11,984	13,759
Mathematics/computer sciences	4,082	5,752	6,363	8,114	12,785	15,295	17,597	17,274	16,124	15,222	16,120
Agricultural sciences	4,481	4,848	5,252	4,869	4,759	5,114	5,240	6,375	6,438	6,115	6,866
Social/behavioral sciences	26,986	33,513	35,987	36,962	37,389	37,628	38,857	43,882	46,622	47,522	49,069
Engineering	24,998	26,543	28,621	30,701	29,275	29,120	34,076	37,094	35,679	35,099	38,372
South Korea											
All fields	214,498	239,702	244,852	258,126	267,058	268,833	270,546	277,858	315,204	310,025	308,162
S&E fields	96,859	111,060	113,097	115,770	119,338	117,921	116,231	116,651	129,641	125,150	123,658
Physical/biological sciences	13,427	13,915	12,864	17,035	15,811	14,093	14,237	14,343	14,973	15,506	15,732
Mathematics/computer sciences	9,299	14,510	13,591	10,131	14,287	14,494	15,321	16,505	18,453	17,159	16,476
Agricultural sciences	5,859	5,555	5,910	2,387	3,228	4,401	4,021	3,687	4,288	4,078	3,743
Social/behavioral sciences	11,766	14,764	15,790	15,717	15,638	14,131	14,051	14,133	14,689	13,969	13,937
Engineering	56,508	62,316	64,942	70,500	70,374	70,802	68,601	67,983	77,238	74,438	73,770
Spain											
All fields	207,578	211,349	211,979	209,373	202,435	195,946	192,178	185,151	187,420	193,523	197,890
S&E fields	65,813	70,643	70,828	70,693	67,316	64,889	63,201	61,394	60,005	62,338	63,046
Physical/biological sciences	10,908	10,959	10,405	9,930	8,872	8,188	7,770	7,009	6,735	6,466	6,336

Appendix table 2-37

S&E first university degrees, by selected Western or Asian country/economy and field: 2000–10

Country/economy and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mathematics/computer sciences	9,010	9,952	9,354	9,546	9,929	10,250	10,641	10,458	10,226	10,177	10,070
Agricultural sciences	4,739	4,359	4,865	4,770	4,401	4,279	3,511	3,224	2,862	3,084	3,005
Social/behavioral sciences	13,975	15,079	15,410	14,303	13,326	13,310	12,750	12,320	12,002	12,263	12,500
Engineering	27,181	30,294	30,794	32,144	30,788	28,862	28,529	28,383	28,180	30,348	31,135
Taiwan											
All fields	100,171	117,430	146,166	176,044	192,854	210,763	219,919	228,645	230,198	227,885	227,174
S&E fields	39,804	48,624	61,540	72,540	79,283	85,891	89,741	92,167	92,636	88,859	88,294
Physical/biological sciences	3,448	3,684	3,982	4,294	4,550	4,953	5,425	6,101	6,726	7,010	7,118
Mathematics/computer sciences	8,043	9,391	12,252	15,791	18,546	21,284	23,224	18,733	18,727	17,500	17,235
Agricultural sciences	3,259	3,200	3,583	4,016	5,074	5,024	4,988	4,253	4,455	4,349	4,154
Social/behavioral sciences	5,489	5,762	6,277	6,492	7,002	7,760	7,971	7,005	6,938	7,320	7,322
Engineering	19,565	26,587	35,446	41,947	44,111	46,870	48,133	56,075	55,790	52,680	52,465
Turkey											
All fields	118,882	142,275	140,631	143,813	188,134	150,421	203,108	223,559	245,140	26,582	289,013
S&E fields	49,069	52,292	53,338	53,773	53,793	55,429	71,120	78,202	91,243	98,264	103,173
Physical/biological sciences	8,744	9,685	9,587	9,198	9,224	9,146	9,877	11,674	13,011	13,768	12,020
Mathematics/computer sciences	4,276	5,099	5,377	5,502	5,655	6,235	6,573	7,404	8,551	9,342	9,072
Agricultural sciences	4,913	4,737	5,201	4,524	4,298	4,267	4,455	4,623	5,179	6,050	4,792
Social/behavioral sciences	15,543	16,802	17,006	18,068	17,615	17,674	31,891	34,617	41,883	44,988	53,021
Engineering	15,593	15,969	16,167	16,481	17,001	18,107	18,324	19,884	22,619	24,116	24,268
United States											
All fields	1,254,618	1,260,308	1,308,970	1,365,694	1,417,421	1,456,401	1,502,922	1,541,704	1,580,413	1,619,028	1,668,227
S&E fields	398,602	400,435	415,983	442,755	458,658	470,214	478,858	485,772	496,168	505,435	525,374
Physical/biological sciences	83,484	80,124	79,656	81,576	82,872	86,936	93,349	100,432	104,364	108,058	112,819
Mathematics/computer sciences	49,233	55,034	61,960	70,789	73,703	69,404	63,310	58,147	54,763	54,704	56,939
Agricultural sciences	18,245	17,465	17,359	17,703	17,058	17,120	17,307	17,696	18,474	19,152	20,400
Social/behavioral sciences	188,153	188,598	196,403	208,898	220,345	230,602	236,665	241,223	248,659	252,921	260,817
Engineering	59,487	59,214	60,605	63,789	64,680	66,152	68,227	68,274	69,908	70,600	74,399
United Kingdom[a]											
All fields	265,270	274,440	272,660	282,380	292,090	306,360	315,990	319,260	334,790	350,860	369,010
S&E fields	92,530	95,310	95,180	104,120	109,940	112,500	113,580	111,810	114,250	117,710	124,035
Physical/biological sciences	31,630	33,630	32,570	27,300	27,540	28,290	28,540	29,120	30,780	32,695	34,780
Mathematics/computer sciences	15,300	17,120	18,420	23,340	25,600	25,370	24,340	22,090	20,720	20,725	21,470

Appendix table 2-37

S&E first university degrees, by selected Western or Asian country/economy and field: 2000–10

Country/economy and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Agricultural sciences	2,340	2,910	2,970	2,710	3,070	2,920	2,820	2,830	3,040	3,035	3,375
Social/behavioral sciences	22,710	21,170	20,930	31,310	33,940	36,350	38,110	37,870	39,330	39,300	41,505
Engineering	20,550	20,490	20,280	19,460	19,780	19,580	19,770	19,900	20,400	21,955	22,905

NA = not available.

[a] Includes former colleges and polytechnic institutions. Data are rounded to the nearest 10. Detail may not add to total because of rounding.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A.

SOURCES: China—National Bureau of Statistics of China, *China Statistical Yearbook*, annual series (Beijing) (various years); Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education (annual series; various years); Taiwan—Ministry of Education, Educational Statistics of the Republic of China (annual series; various years); United Kingdom—Higher Education Statistics Agency, special tabulations (various years); United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov; and other countries—Organisation for Economic Co-operation and Development (OECD), OECD Stat Extracts, http://stats.oecd.org/Index.aspx.

Science and Engineering Indicators 2014

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Male								
Asia								
Armenia	10,579	3,890	379	889	649	21	1,952	6,689
Bangladesh (2003)	119,532	51,103	13,861	4,709	1,223	30,532	778	68,429
Brunei	294	33	21	5	0	7	NA	261
Cambodia (2008)	8,893	4,039	222	1,165	205	1,958	489	4,854
Georgia (2007)	17,571	4,376	568	380	905	28	2,495	13,195
India (2003)	1,235,444	303,725	196,058	NA	6,524	NA	101,143	931,719
Japan (2009)[b]	319,614	245,908	13,934	NA	9,454	138,014	84,506	73,706
Kyrgyzstan	15,958	5,083	89	980	156	1,507	2,351	10,875
Mongolia	11,539	4,449	347	602	175	1,012	2,313	7,090
Philippines (2004)	133,772	0	NA	NA	NA	NA	NA	133,772
Singapore[c]	6,237	3,434	594	NA	NA	NA	2,840	2,803
South Korea	162,474	84,726	8,017	11,525	2,089	7,332	55,763	77,748
Taiwan	109,686	68,637	4,579	10,692	2,013	5,299	46,054	41,049
Middle East								
Iran	170,144	102,323	7,901	3,085	9,314	9,132	72,891	67,821
Iraq (2004)	33,021	8,203	725	680	799	339	5,660	24,818
Israel	25,132	12,334	1,312	1,652	145	4,839	4,386	12,798
Jordan (2007)	19,051	7,449	847	2,560	267	536	3,239	11,602
Lebanon	13,085	4,923	789	764	56	658	2,656	8,162
Oman	4,563	2,301	109	701	50	23	1,418	2,262
Palestine	9,227	3,192	209	664	78	1,132	1,109	6,035
Qatar	355	141	0	26	NA	34	81	214
Saudi Arabia	33,434	10,052	2,067	2,681	247	1,173	3,884	23,382
Turkey	158,788	62,012	6,380	5,441	3,142	29,272	17,777	96,776
Africa								
Algeria	52,949	25,101	2,499	3,902	984	5,861	11,855	27,848
Burundi (2004)	504	163	0	62	40	49	12	341
Egypt	199,735	NA	NA	NA	NA	NA	NA	NA
Ethiopia	57,684	25,234	4,596	4,002	6,421	5,894	4,321	32,450
Ghana (2009)	6,835	2,951	NA	NA	NA	2,640	311	3,884
Madagascar	4,714	2,056	882	140	52	835	147	2,658
Morocco	17,122	6,674	1,399	1,050	374	2,286	1,565	10,448
Mozambique (2011)	7,307	1,300	121	92	256	374	457	6,007
Swaziland (2006)	847	144	31	0	77	32	4	703
Uganda (2004)	5,532	2,572	200	603	262	969	538	2,960

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Europe								
EU								
Austria	13,876	6,792	849	1,392	79	1,088	3,384	7,084
Belgium	11,716	5,129	544	361	226	1,159	2,839	6,587
Bulgaria	20,937	9,614	352	870	368	2,555	5,469	11,323
Cyprus	955	411	27	99	0	63	222	544
Czech Republic	23,398	11,348	1,021	2,533	695	1,367	5,732	12,050
Denmark	11,986	4,533	437	790	35	914	2,357	7,453
Estonia	2,243	1,211	151	274	86	179	521	1,032
Finland	12,204	7,481	324	1,022	374	467	5,294	4,723
France	130,466	59,178	8,163	12,651	1,062	7,397	29,905	71,288
Germany	161,749	82,798	13,557	18,404	1,666	10,905	38,266	78,951
Greece	11,717	6,879	846	1,318	422	1,760	2,533	4,838
Hungary	18,439	8,428	784	1,594	603	1,244	4,203	10,011
Ireland	11,417	4,695	669	898	97	477	2,554	6,722
Italy	86,052	41,244	4,202	3,353	1,885	9,789	22,015	44,808
Latvia	6,106	2,452	161	486	68	407	1,330	3,654
Lithuania	10,941	5,994	304	958	243	835	3,654	4,947
Luxembourg	165	67	3	41	0	10	13	98
Netherlands	39,673	13,325	611	3,582	490	2,779	5,863	26,348
Poland	128,916	61,379	4,220	12,404	3,059	15,339	26,357	67,537
Portugal	21,368	9,628	700	693	284	1,568	6,383	11,740
Romania	109,806	54,309	2,208	4,042	2,005	21,751	24,303	55,497
Slovak Republic	14,827	6,448	537	1,467	352	637	3,455	8,379
Slovenia	3,761	1,747	119	216	97	369	946	2,014
Spain	78,937	36,995	2,449	7,743	1,759	4,365	20,679	41,942
Sweden	13,799	7,121	403	702	68	1,254	4,694	6,678
United Kingdom[d]	152,330	65,800	17,275	15,475	880	13,855	18,315	86,530
Other Europe								
Albania (2011)	8,274	2,439	188	362	643	285	961	5,835
Croatia	9,069	3,770	385	514	377	359	2,135	5,299
Iceland	888	379	28	68	7	103	173	509
Macedonia	4,553	1,556	144	613	164	142	493	2,997
Norway	10,550	3,826	259	748	64	696	2,059	6,724
Switzerland	13,172	4,996	826	695	69	881	2,525	8,176
North America								
Canada	69,212	31,344	6,648	4,405	431	9,456	10,404	37,868
Mexico	166,447	74,732	4,395	7,998	2,614	8,518	51,207	91,715
United States	713,336	261,091	50,454	42,385	9,691	97,855	60,706	452,245

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Central America and Caribbean								
Cuba	62,610	NA	NA	NA	NA	NA	NA	NA
El Salvador	4,487	1,405	60	579	49	24	693	3,082
Guatemala	2,254	928	38	0	197	59	634	1,326
Panama	5,925	2,029	84	272	60	336	1,277	3,896
South America								
Argentina (2009)	34,573	11,240	812	1,889	1,181	2,446	4,912	23,333
Brazil	315,019	70,695	5,630	16,264	7,067	8,436	33,298	244,324
Chile	29,642	10,628	518	1,201	786	1,804	6,319	19,014
Colombia	70,202	25,389	2,480	5,449	681	3,475	13,304	44,813
Guyana	109	40	13	6	0	21	0	69
Uruguay	2,512	1,032	108	198	165	245	316	1,480
Oceania								
Australia	78,307	26,435	5,242	6,357	559	4,081	10,196	51,872
New Zealand	12,206	5,612	1,140	1,308	104	1,404	1,656	6,594
Female								
Asia								
Armenia	15,182	2,621	524	728	445	199	725	12,561
Bangladesh (2003)	60,726	23,741	5,044	889	246	17,470	92	36,985
Brunei	600	38	24	3	0	11	NA	562
Cambodia (2008)	4,094	1,129	28	148	51	877	25	2,965
Georgia (2007)	16,481	2,138	839	266	236	73	724	14,343
India (2003)	816,753	159,461	131,717	NA	1,277	NA	26,467	657,292
Japan (2009)[a]	236,076	90,907	5,160	NA	6,659	68,378	10,710	145,169
Kyrgyzstan	22,148	4,867	193	818	58	2,676	1,122	17,281
Mongolia	20,861	4,612	456	428	363	1,810	1,555	16,249
Philippines (2006)	217,032	0	NA	NA	NA	NA	NA	217,032
Singapore[b]	6,214	2,118	1,172	NA	NA	NA	946	4,096
South Korea	145,688	38,932	7,715	4,951	1,654	6,605	18,007	106,756
Taiwan	117,499	19,657	2,539	6,543	2,141	2,023	6,411	97,842
Middle East								
Iran	171,487	77,730	19,005	7,426	8,635	15,868	26,796	93,757
Iraq (2004)	21,375	3,426	881	609	386	231	1,319	17,949
Israel	34,108	12,423	1,637	691	153	8,381	1,561	21,685
Jordan (2007)	21,736	6,184	1,749	1,931	363	896	1,245	15,552
Lebanon	16,547	5,495	2,044	496	94	1,922	939	11,052
Oman	6,084	2,243	351	1,253	65	32	542	3,841
Palestine	14,004	3,018	474	707	16	1,256	565	10,986

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Qatar	894	270	23	45	NA	116	86	624
Saudi Arabia	55,219	19,636	7,127	6,007	115	6,243	144	35,583
Turkey	130,225	41,161	5,640	3,631	1,650	23,749	6,491	89,064
Africa								
Algeria	89,745	32,748	8,342	4,814	1,103	12,494	5,995	56,997
Burundi (2004)	176	44	0	12	11	21	0	132
Egypt	210,224	NA	NA	NA	NA	NA	NA	NA
Ethiopia	17,039	5,454	889	1,133	984	1,762	686	11,585
Ghana (2009)	4,488	2,246	NA	NA	151	2,062	33	2,242
Madagascar	4,755	1,449	535	39	48	790	37	3,306
Morocco	16,433	5,599	1,447	627	196	2,442	887	10,834
Mozambique (2011)	2,260	685	62	19	121	391	92	1,575
Swaziland (2006)	996	93	13	0	41	37	2	903
Uganda (2004)	4,089	1,184	104	150	44	671	215	2,905
Europe								
EU								
Austria	18,267	4,605	997	330	111	2,038	1,129	13,662
Belgium	14,233	3,783	406	88	126	2,212	951	10,450
Bulgaria	32,061	9,362	803	657	358	4,729	2,815	22,699
Cyprus	1,777	451	53	97	0	206	95	1,326
Czech Republic	37,127	7,808	1,484	580	966	2,992	1,786	29,319
Denmark	20,087	3,032	545	220	53	1,301	913	17,055
Estonia	5,093	1,281	283	143	87	449	319	3,812
Finland	20,742	4,006	552	444	358	1,254	1,398	16,736
France (2009)	155,984	40,940	9,033	3,839	1,136	15,636	11,296	115,044
Germany	207,310	55,785	16,490	9,550	1,252	17,748	10,745	151,525
Greece	21,006	7,673	1,082	1,091	414	3,416	1,670	13,333
Hungary	30,941	6,312	1,054	485	588	2,981	1,204	24,629
Ireland	15,667	2,703	865	296	77	889	576	12,964
Italy	125,718	35,205	6,765	1,552	1,092	15,092	10,704	90,513
Latvia	15,349	2,821	335	169	89	1,643	585	12,528
Lithuania	21,013	5,450	389	360	261	2,960	1,480	15,563
Luxembourg	165	61	3	10	0	48	0	104
Netherlands	51,716	8,411	549	445	408	5,808	1,201	43,305
Poland	226,304	62,807	9,539	3,716	3,807	33,730	12,015	163,497
Portugal	32,643	7,436	1,170	319	225	3,124	2,598	25,207
Romania	190,650	78,558	5,032	2,965	1,079	57,230	12,252	112,092
Slovak Republic	27,200	4,785	922	312	307	1,678	1,566	22,415
Slovenia	7,268	1,962	257	72	152	994	487	5,306

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Spain	118,953	26,051	3,887	2,327	1,246	8,135	10,456	92,902
Sweden	26,903	5,993	900	253	102	2,704	2,034	20,910
United Kingdom[d]	198,525	51,905	15,415	5,255	2,155	25,440	3,640	146,620
Other Europe								
Albania (2011)	14,447	3,073	490	463	564	1,019	537	11,374
Croatia	14,710	3,615	781	481	418	962	973	11,095
Iceland	1,976	427	72	17	7	215	116	1,549
Macedonia	5,677	1,070	187	297	68	188	330	4,607
Norway	18,031	2,758	351	125	63	1,477	742	15,273
Switzerland	15,450	2,920	611	90	51	1,613	555	12,530
North America								
Canada	109,615	34,295	9,592	1,655	444	19,727	2,877	75,320
Mexico	206,550	56,786	5,694	5,973	1,136	23,742	20,241	149,764
United States	954,891	264,283	62,365	14,554	10,709	162,962	13,693	690,608
Central America and Caribbean								
Cuba	84,795	NA	NA	NA	NA	NA	NA	NA
El Salvador	6,987	851	101	383	21	18	328	6,136
Guatemala (2007)	1,851	554	106	0	47	177	224	1,297
Panama	12,077	1,819	53	220	80	559	907	10,258
South America								
Argentina (2009)	51,352	11,665	1,791	882	620	6,097	2,275	39,687
Brazil	535,768	50,670	9,282	3,997	3,395	20,825	13,171	485,098
Chile	38,819	7,363	493	311	566	3,759	2,234	31,456
Colombia	91,128	20,787	3,027	2,602	422	7,627	7,109	70,341
Guyana	219	84	13	5	0	66	0	135
Uruguay	4,383	1,050	180	59	56	503	252	3,333

Appendix table 2-38

First university degrees, by field, sex, and region/country/economy: 2010 or most recent year

Sex and region/country/economy	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E[a]
Oceania								
Australia	112,773	20,217	6,063	1,619	499	8,986	3,050	92,556
New Zealand	18,451	4,960	1,419	542	89	2,203	707	13,491

NA = not available.

EU = European Union.

[a] Includes field unknown or unspecified.
[b] Japan social science data include business administration.
[c] Singapore data include social sciences in humanities (non-S&E) and mathematical sciences with physical and biological sciences.
[d] Includes former colleges and polytechnic institutions. Data are rounded to the nearest 5. Detail may not add to total because of rounding.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A. Long (more than 5 years) and short (less than 5 years) first university degrees are combined.

SOURCES: Organisation for Economic Co-operation and Development (OECD), OECD.Stat Extracts, http://stats.oecd.org/Index.aspx; UNESCO, Institute for Statistics, special tabulations (2011); India—Government of India, Ministry of Human Resource Development, Department of Higher Education 2008, *Education Statistics at a Glance 2005–06;* Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education, special tabulations (2011); Taiwan—Ministry of Education, Educational Statistics of the Republic of China: 2010 (2010); United Kingdom—Higher Education Statistics Agency, special tabulations (2012); and United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-39

Earned S&E doctoral degrees, by selected region/country/economy and field: 2010 or most recent year

Region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Asia[a]								
Armenia	614	210	111	0	9	31	59	404
China	48,987	31,410	9,638	NA	1,973	2,371	17,428	17,577
Georgia (2007)	605	202	105	0	20	17	60	403
India (2006)	18,730	7,982	5,625	NA	1,299	NA	1,058	10,748
Japan (2009)[b]	15,872	7,396	1,480	NA	1,170	988	3,758	8,476
Kyrgyzstan	559	302	63	31	6	146	56	257
Malaysia (2009)	750	479	153	65	0	114	147	271
Mongolia	136	60	14	2	13	13	18	76
Philippines (2004)	1,748	56	0	13	0	36	7	1,692
South Korea	10,542	4,165	910	185	206	358	2,506	6,377
Taiwan	3,705	2,509	507	134	95	165	1,608	1,196
Tajikistan	295	91	45	0	28	4	14	204
Uzbekistan	809	118	NA	NA	NA	NA	118	691
Thailand	2,989	1,055	534	NA	74	247	200	1,934
Middle East[a]								
Iran	4,788	1,685	536	131	203	225	590	3,103
Iraq (2004)	5,056	1,335	285	86	132	38	794	3,721
Israel	1,534	966	507	126	30	175	128	568
Jordan (2009)	472	54	13	9	4	23	5	418
Lebanon	124	21	3	0	0	18	0	103
Saudi Arabia	349	71	16	5	1	42	7	278
Turkey	4,684	2,307	643	209	254	508	693	2,377
Africa[a]								
Algeria	7,959	4,108	1,131	625	182	953	1,217	3,851
Cameroon	680	505	242	25	0	218	20	175
Madagascar	565	284	128	26	57	48	25	281
Morocco	6,480	2,970	1,421	403	0	673	473	3,510
Uganda (2004)	1,014	371	22	121	57	153	18	643
Europe[a]								
EU								
Austria	2,500	1,301	402	190	29	219	461	1,199
Belgium	2,126	1,216	367	109	52	187	501	910
Bulgaria	596	296	75	16	15	60	130	300
Czech Republic	2,228	1,345	525	136	109	126	449	883
Denmark	1,388	728	0	261	0	134	333	660
Estonia	175	106	54	14	4	9	25	69
Finland	1,750	924	237	89	24	200	374	826

Appendix table 2-39

Earned S&E doctoral degrees, by selected region/country/economy and field: 2010 or most recent year

Region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
France (2009)	11,941	8,220	4,631	999	13	1,198	1,379	3,721
Germany	26,039	11,989	6,291	1,363	399	1,422	2,514	14,050
Greece	1,892	1,040	227	184	145	123	361	852
Hungary	1,275	599	303	93	40	63	100	676
Ireland	1,222	672	306	88	19	77	182	550
Italy (2007)	10,188	4,639	2,243	437	NA	NA	1,959	5,549
Latvia	132	73	16	4	7	18	28	59
Lithuania	406	240	66	20	8	65	81	166
Netherlands	3,736	709	NA	NA	NA	NA	709	3,027
Poland (2009)	5,068	862	NA	NA	NA	NA	862	4,206
Portugal	2,927	1,240	348	101	34	358	399	1,687
Romania	4,764	2,307	133	NA	397	745	1,032	2,457
Slovak Republic	2,878	1,314	356	113	105	176	564	1,564
Slovenia	465	293	134	21	10	35	93	172
Spain	8,696	4,674	1,894	511	170	803	1,296	4,022
Sweden	3,371	1,936	574	205	42	272	843	1,435
United Kingdom[c]	18,750	11,055	4,185	1,355	215	2,770	2,530	7,695
Other Europe								
Croatia	838	421	157	32	29	69	134	417
Iceland	36	26	16	3	1	0	6	10
Macedonia	157	37	7	5	0	14	11	120
Norway	1,202	493	0	432	0	55	6	709
Russia[d]	25,652	15,714	4,296	NA	796	6,017	4,605	9,938
Switzerland	3,800	1,754	871	154	35	256	438	2,046
Ukraine (2011)	8,918	4,888	946	360	334	1,673	1,575	4,030
America[a]								
North America								
Canada	5,416	3,814	1,579	349	102	748	1,036	1,602
Mexico	4,167	1,999	850	66	89	587	407	2,168
United States	57,405	32,649	12,610	3,155	982	8,090	7,812	24,756
Central America and Caribbean								
Cuba	617	NA	NA	NA	NA	NA	NA	NA
South America								
Argentina (2009)	937	662	366	74	18	136	68	275
Brazil (2008)	10,705	5,470	2,122	248	1,081	798	1,221	5,235
Chile	423	318	211	14	20	21	52	105
Colombia	202	144	76	8	9	20	31	58
Panama	22	8	0	0	0	8	0	14

Appendix table 2-39

Earned S&E doctoral degrees, by selected region/country/economy and field: 2010 or most recent year

Region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Uruguay	39	36	26	1	0	6	3	3
Oceania[a]								
Australia	5,825	3,131	1,226	272	175	679	779	2,694
New Zealand	987	510	248	59	6	103	94	477

NA = not available.

EU = European Union.

[a] Includes only locations for which relatively recent data are available.
[b] Includes thesis doctorates, called *ronbun hakase*, earned by employees in industry.
[c] Data are rounded to the nearest 5. Detail may not add to total because of rounding.
[d] For Russia, mathematics is included with physical/biological sciences.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for doctoral degrees use International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields.

SOURCES: Organisation for Economic Co-operation and Development (OECD), OECD.Stat Extracts, http://stats.oecd.org/Index.apsx; UNESCO, Institute for Statistics, special tabulations (2012); China—*China Statistical Yearbook 2011*; India—University Grants Commission, *Annual Report 2005–06*; Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education, special tabulations (2012), and Division of Higher Education, special tabulations (2012); Taiwan—Ministry of Education, Educational Statistics of the Republic of China: 2010 (2010); United Kingdom—Higher Education Statistics Agency, special tabulations (2012); Russia—State University Higher School of Economics, special tabulations (2012); Brazil—Centro de Gestão e Estudos Estratégicos: Ciência, Tecnologia e Inovação. Doutores 2010: Estudos da demografia da base técnico-científica brasileira, http://www.cgee.org.br/busca/ConsultaProdutoNcomTopo.php?f=1&idProduto=6401, accessed November 2012; and United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-40

Earned S&E doctoral degrees, by sex, selected region/country/economy, and field: 2010 or most recent year

Sex and region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Male								
Asia								
Armenia	393	166	86	0	3	24	53	227
Georgia (2007)	444	136	62	0	8	13	53	308
Kyrgyzstan	252	137	29	14	3	66	25	115
Malaysia (2009)	495	325	86	42	0	77	120	170
Mongolia	61	32	4	2	5	10	11	29
South Korea	7,172	3,282	639	132	146	241	2,124	3,890
Taiwan	2,749	2,081	364	89	72	105	1,451	668
Thailand	1,273	567	289	NA	31	111	136	706
Middle East								
Iran	3,257	1,249	322	100	155	178	494	2,008
Iraq (2004)	3,434	984	153	50	104	27	650	2,450
Israel	756	529	248	103	12	73	93	227
Jordan (2009)	316	29	4	8	4	8	5	287
Lebanon	76	14	1	0	0	13	0	62
Morocco	3,916	1,775	752	277	0	416	330	2,141
Saudi Arabia	227	43	10	2	1	23	7	184
Turkey	2,591	1,300	322	115	127	316	420	1,291
Africa								
Algeria	4,310	2,337	458	382	93	575	829	1,973
Madagascar	307	173	69	17	37	31	19	134
Uganda (2004)	673	257	19	96	38	88	16	416
Europe								
EU								
Austria	1,436	828	229	152	20	90	337	608
Belgium	1,221	769	222	79	32	87	349	452
Bulgaria	311	158	31	7	4	28	88	153
Czech Republic	1,358	875	283	109	66	61	356	483
Denmark	764	477	0	170	0	72	235	287
Estonia	83	59	27	12	1	2	17	24
Finland	813	528	119	65	11	67	266	285
France (2009)	6,856	5,045	2,652	768	6	616	1,003	1,811
Germany	14,506	7,761	3,621	1,113	229	672	2,126	6,745
Greece	1,100	672	122	145	82	59	264	428
Hungary	680	356	162	75	28	26	65	324
Ireland	638	400	153	68	10	28	141	238
Italy (2007)	4,960	3,191	1,013	277	252	369	1,280	1,769
Latvia	53	35	9	2	2	4	18	18

Appendix table 2-40

Earned S&E doctoral degrees, by sex, selected region/country/economy, and field: 2010 or most recent year

Sex and region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Lithuania	171	103	25	8	1	19	50	68
Netherlands	2,165	550	0	NA	NA	NA	550	1,615
Poland (2009)	2,505	625	NA	NA	NA	NA	625	1,880
Portugal	1,111	526	141	49	21	117	198	585
Romania	2,490	1,492	60	170	208	331	723	998
Slovak Republic	1,471	769	164	76	66	74	389	702
Slovenia	251	175	59	18	4	15	79	76
Spain	4,608	2,595	897	357	106	385	850	2,013
Sweden	1,744	1,182	311	145	19	122	585	562
United Kingdom[a]	10,265	6,610	2,385	1,070	100	1,060	1,995	3,655
Other Europe								
Croatia	410	221	59	24	17	30	91	189
Iceland	20	16	10	2	0	0	4	4
Macedonia	77	19	2	3	0	6	8	58
Norway	664	324	0	291	0	29	4	340
Switzerland	2,196	1,141	529	136	17	120	339	1,055
Ukraine (2011)	4,080	2,437	484	213	184	509	1,047	1,643
America								
Argentina (2009)	422	291	142	45	8	61	35	131
Canada	3,021	2,308	905	263	57	285	798	713
Chile	231	183	111	11	11	8	42	48
Colombia	124	101	48	8	5	16	24	23
Mexico	2,280	1,157	478	51	64	311	253	1,123
United States	29,008	19,238	6,943	2,343	527	3,428	5,997	9,770
Uruguay	16	14	8	1	0	3	2	2
Oceania								
Australia	2,914	1,769	663	193	85	231	597	1,145
New Zealand	461	263	118	38	2	35	70	198
Female								
Asia								
Armenia	221	44	25	0	6	7	6	177
Georgia (2007)	161	66	43	0	12	4	7	95
Kyrgyzstan	307	165	34	17	3	80	31	142
Malaysia (2009)	255	154	67	23	0	37	27	101
Mongolia	75	28	10	0	8	3	7	47
South Korea	3,370	883	271	53	60	117	382	2,487
Taiwan	956	428	143	45	23	60	157	528
Thailand	1,716	488	245	NA	43	136	64	1,228
Middle East								

Appendix table 2-40

Earned S&E doctoral degrees, by sex, selected region/country/economy, and field: 2010 or most recent year

Sex and region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Iran	1,531	436	214	31	48	47	96	1,095
Iraq (2004)	1,622	351	132	36	28	11	144	1,271
Israel	778	437	259	23	18	102	35	341
Jordan (2009)	156	25	9	1	0	15	0	131
Lebanon	48	7	2	0	0	5	0	41
Morocco	2,564	1,195	669	126	0	257	143	1,369
Saudi Arabia	122	28	6	3	0	19	0	94
Turkey	2,093	1,007	321	94	127	192	273	1,086
Africa								
Algeria	3,649	1,771	673	243	89	378	388	1,878
Madagascar	258	111	59	9	20	17	6	147
Uganda (2004)	341	114	3	25	19	65	2	227
Europe								
EU								
Austria	1,064	473	173	38	9	129	124	591
Belgium	905	447	145	30	20	100	152	458
Bulgaria	285	138	44	9	11	32	42	147
Czech Republic	870	470	242	27	43	65	93	400
Denmark	624	251	0	91	0	62	98	373
Estonia	92	47	27	2	3	7	8	45
Finland	937	396	118	24	13	133	108	541
France (2009)	5,085	3,175	1,979	231	7	582	376	1,910
Germany	11,533	4,228	2,670	250	170	750	388	7,305
Greece	792	368	105	39	63	64	97	424
Hungary	595	243	141	18	12	37	35	352
Ireland	584	272	153	20	9	49	41	312
Italy (2007)	5,228	2,758	1,230	160	259	430	679	2,470
Latvia	79	38	7	2	5	14	10	41
Lithuania	235	137	41	12	7	46	31	98
Netherlands	1,571	159	NA	NA	NA	NA	159	1,412
Poland (2009)	2,563	237	NA	NA	NA	NA	237	2,326
Portugal	1,816	473	207	52	13	NA	201	1,343
Romania	2,274	1,102	73	117	189	414	309	1,172
Slovak Republic	1,407	545	192	37	39	102	175	862
Slovenia	214	118	75	3	6	20	14	96
Spain	4,088	2,079	997	154	64	418	446	2,009
Sweden	1,627	754	263	60	23	150	258	873
United Kingdom[a]	8,485	4,445	1,800	285	115	1,710	535	4,040

Appendix table 2-40

Earned S&E doctoral degrees, by sex, selected region/country/economy, and field: 2010 or most recent year

Sex and region/country/economy	All fields	S&E field						Non-S&E
		All S&E	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	
Other Europe								
Croatia	428	200	98	8	12	39	43	228
Iceland	16	10	6	1	1	0	2	6
Macedonia	80	18	5	2	0	8	3	62
Norway	538	169	0	141	0	26	2	369
Switzerland	1,604	613	342	18	18	136	99	991
Ukraine (2011)	4,838	2,451	462	147	150	1,164	528	2,387
America								
Argentina (2009)	515	371	224	29	10	75	33	144
Canada	2,395	1,506	674	86	45	463	238	889
Chile	192	135	100	3	9	13	10	57
Colombia	78	43	28	0	4	4	7	35
Mexico	1,887	842	372	15	25	276	154	1,045
United States	28,397	13,411	5,667	812	455	4,662	1,815	14,986
Uruguay	23	22	18	0	0	3	1	1
Oceania								
Australia	2,911	1,362	563	79	90	448	182	1,549
New Zealand	526	247	130	21	4	68	24	279

NA = not available.

EU = European Union.

[a] Data are rounded to the nearest 10. Detail may not add to total because of rounding.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for doctoral degrees use International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields.

SOURCES: Organisation for Economic Co-operation and Development (OECD), OECD.Stat Extracts, http://stats.oecd.org/Index.aspx; UNESCO, Institute for Statistics, special tabulations (2012); Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education (2012); Taiwan—Ministry of Education, Educational Statistics of the Republic of China: 2010 (2010); United Kingdom—Higher Education Statistics Agency, special tabulations (2012); and United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

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Appendix table 2-41

S&E doctoral degrees in the United States and selected European countries, by field: 2000–10

Country and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Austria	1,790	1,871	2,125	2,197	2,443	2,228	2,158	2,085	2,205	2,284	2,500
All S&E	913	983	1,049	995	1,107	1,129	1,135	1,088	1,151	1,221	1,301
Physical/biological sciences	321	353	398	332	326	384	370	309	350	411	402
Mathematics/computer sciences	91	52	100	108	118	108	106	120	140	149	190
Agricultural sciences	30	37	46	38	42	40	31	40	50	31	29
Social/behavioral sciences	131	141	160	195	224	192	195	185	174	202	219
Engineering	340	400	345	322	397	405	433	434	437	428	461
France	9,903	10,404	10,404	8,420	8,420	9,578	9,818	10,650	11,309	11,941	NA
All S&E	6,577	6,890	6,890	5,585	5,585	6,464	6,770	7,285	7,710	8,220	NA
Physical/biological sciences	3,959	4,160	4,160	3,366	3,366	3,677	3,903	4,183	4,398	4,631	NA
Mathematics/computer sciences	800	829	828	676	676	756	886	948	972	999	NA
Agricultural sciences	22	23	23	18	18	35	26	13	18	13	NA
Social/behavioral sciences	876	922	922	746	746	1,055	932	969	1,048	1,198	NA
Engineering	920	956	957	779	779	941	1,023	1,172	1,274	1,379	NA
Germany	25,780	24,796	23,838	23,043	23,138	25,952	24,946	24,439	25,604	25,527	26,039
All S&E	11,306	10,694	10,016	9,751	9,554	10,866	10,243	10,469	11,314	11,110	11,989
Physical/biological sciences	6,414	5,888	5,398	5,113	5,107	5,697	5,281	5,478	5,791	5,907	6,291
Mathematics/computer sciences	964	943	882	975	918	994	1,074	1,053	1,163	1,159	1,363
Agricultural sciences	380	371	334	363	418	438	376	404	402	346	399
Social/behavioral sciences	1,106	1,159	1,031	1,087	1,004	1,392	1,325	1,297	1,417	1,404	1,422
Engineering	2,442	2,333	2,371	2,213	2,107	2,345	2,187	2,237	2,541	2,294	2,514
Italy	3,557	4,044	3,977	4,456	6,351	8,466	9,604	10,188	NA	NA	NA
All S&E	1,731	2,100	1,958	2,674	3,834	4,966	5,613	5,949	NA	NA	NA
Physical/biological sciences	55	821	818	1,109	1,650	1,999	2,155	2,243	NA	NA	NA
Mathematics/computer sciences	704	0	0	198	281	338	380	437	NA	NA	NA
Agricultural sciences	163	350	342	220	276	387	421	511	NA	NA	NA
Social/behavioral sciences	92	121	60	294	450	703	830	799	NA	NA	NA
Engineering	717	808	738	853	1,177	1,539	1,827	1,959	NA	NA	NA
Russia[a]	27,667	22,638	26,387	28,361	29,850	34,300	34,613	34,494	27,719	27,554	27,634
All S&E	15,745	12,035	13,991	15,722	16,003	18,237	18,587	19,725	14,915	15,149	16,554
Physical/biological sciences	4,692	3,473	4,169	4,012	4,442	4,563	4,975	4,829	3,538	4,601	4,296
Mathematics/computer sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	805	716	858	745	893	900	880	812	618	800	796
Social/behavioral sciences	4,375	3,884	4,208	6,103	5,910	6,771	7,186	8,052	6,857	4,808	6,857
Engineering	5,873	3,962	4,756	4,862	4,758	6,003	5,546	6,032	3,902	4,940	4,605
Spain	6,007	6,453	6,905	7,479	8,168	6,902	7,159	7,150	7,302	7,915	8,696
All S&E	2,730	2,937	3,162	3,446	3,672	3,303	3,430	3,633	3,649	3,959	4,674
Physical/biological sciences	1,438	1,534	1,686	1,701	1,856	1,646	1,867	1,842	1,846	2,006	1,894
Mathematics/computer sciences	323	308	383	430	393	316	336	332	327	396	511
Agricultural sciences	144	121	141	179	186	171	143	131	162	149	170
Social/behavioral sciences	417	436	477	591	634	542	553	675	632	630	803
Engineering	408	538	475	545	603	628	531	653	682	778	1,296

Appendix table 2-41

S&E doctoral degrees in the United States and selected European countries, by field: 2000–10

Country and field	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sweden	3,049	3,388	3,517	3,558	3,834	2,778	3,781	3,904	3,625	3,564	3,371
All S&E	1,848	1,960	2,099	2,163	2,385	1,468	2,331	2,268	2,150	1,999	1936
Physical/biological sciences	540	604	638	653	689	461	593	656	600	584	574
Mathematics/computer sciences	149	142	162	217	255	121	262	266	242	242	205
Agricultural sciences	65	59	85	42	49	49	59	53	43	41	42
Social/behavioral sciences	253	244	287	294	296	211	278	281	303	253	272
Engineering	841	911	927	957	1,096	626	1,139	1,012	962	879	843
Switzerland	2,733	2,745	2,800	2,742	2,952	3,303	3,381	3,428	3,426	3,641	3,800
All S&E	1,223	1,241	1,284	1,184	1,282	1,527	1,684	1,700	1,617	1,746	1,754
Physical/biological sciences	722	650	676	653	697	852	948	915	864	884	871
Mathematics/computer sciences	129	145	148	98	94	127	135	150	113	143	154
Agricultural sciences	40	50	38	39	32	31	28	22	30	29	35
Social/behavioral sciences	72	74	100	117	140	177	197	196	215	226	256
Engineering	260	322	322	277	319	340	376	417	395	464	438
United Kingdom[b]	11,550	14,120	14,210	14,870	15,260	15,780	16,516	17,545	16,610	18,750	20,075
All S&E	7,180	8,520	8,520	8,810	9,150	9,390	9,761	10,310	9,470	11,055	11,580
Physical/biological sciences	3,570	4,310	4,380	3,780	3,960	4,040	3,977	4,140	3,750	4,185	4,370
Mathematics/computer sciences	660	770	760	750	880	960	1,162	1,190	1,155	1,355	1,460
Agricultural sciences	270	270	340	300	320	310	315	250	195	215	220
Social/behavioral sciences	970	1,170	1,180	1,970	1,950	2,070	2,102	2,330	2,230	2,770	2,940
Engineering	1,710	2,010	1,860	2,020	2,040	2,020	2,204	2,400	2,140	2,530	2,590
United States	44,947	45,068	44,311	46,177	48,560	52,855	56,309	60,887	61,716	61,730	57,405
All S&E	25,423	25,453	24,254	25,425	26,573	28,561	30,452	32,588	33,359	33,284	32,649
Physical/biological sciences	9,015	8,738	8,405	9,134	9,376	10,117	10,724	11,639	12,207	12,569	12,610
Mathematics/computer sciences	1,858	1,769	1,677	1,825	1,975	2,301	2,713	2,953	3,058	3,110	3,155
Agricultural sciences	984	934	969	1,060	1,016	1,004	1,037	1,068	1,080	1,143	982
Social/behavioral sciences	8,182	8,451	8,007	8,124	8,275	8,591	8,576	8,862	8,904	8,547	8,090
Engineering	5,384	5,561	5,196	5,282	5,931	6,548	7,402	8,066	8,110	7,915	7,812

NA = not available.

[a] Physical/biological sciences includes mathematics.
[b] Data are rounded to the nearest 5.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for doctoral degrees use International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields.

SOURCES: Organisation for Economic Co-operation and Development (OECD), OECD.Stat Extracts, http://stats.oecd.org/Index.aspx; United Kingdom—Higher Education Statistics Agency, special tabulations (various years) (2011); United States—National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 2-42

S&E doctoral degrees, by selected Asian country/economy and field: 1996–2010

Country/economy and field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
China	4,950	6,793	8,518	10,160	11,383	12,465	14,638	18,806	23,446	27,677	36,247	41,464	43,759	48,658	48,987
All S&E	4,428	5,308	6,358	6,778	7,766	8,153	9,523	12,238	14,858	17,595	22,953	26,582	28,439	31,423	31,410
Physical/biological sciences	1,479	1,678	2,246	2,135	2,306	2,655	2,808	3,705	4,518	5,458	7,241	8,051	8,953	9,570	9,638
Mathematics/computer sciences	264	334	350	417	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	256	328	416	444	462	536	626	756	977	1,093	1,544	1,903	1,936	2,006	1,973
Social/behavioral sciences	234	325	446	513	514	621	837	1,204	1,309	1,617	2,038	2,149	2,274	2,461	2,371
Engineering	2,195	2,643	2,900	3,269	4,484	4,341	5,252	6,573	8,054	9,427	12,130	14,479	15,276	17,386	17,428
India	10,397	10,408	11,066	10,951	11,296	11,544	11,974	13,733	17,853	17,898	18,730	NA	NA	NA	NA
All S&E	5,153	4,916	5,609	5,418	5,541	5,504	5,637	6,471	7,636	7,537	7,982	NA	NA	NA	NA
Physical/biological sciences	3,861	3,498	3,894	3,836	3,885	3,727	3,955	4,497	5,612	5,549	5,625	NA	NA	NA	NA
Mathematics/computer sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	918	1,120	971	886	933	999	948	1,195	1,142	1,020	1,299	NA	NA	NA	NA
Social/behavioral sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering	374	298	744	696	723	778	734	779	882	968	1,058	NA	NA	NA	NA
Japan[a]	13,820	13,921	14,800	15,470	15,357	16,078	16,183	16,314	16,909	16,851	17,396	17,291	16,735	15,872	NA
All S&E	6,006	6,157	6,575	7,082	7,089	7,401	7,461	7,581	7,912	7,658	8,122	8,017	7,761	7,396	NA
Physical/biological sciences	1,243	1,315	1,481	1,542	1,579	1,586	1,602	1,651	1,679	1,543	1,633	1,686	1,525	1,480	NA
Mathematics/computer sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences	1,108	1,043	1,094	1,100	1,147	1,241	1,248	1,258	1,348	1,257	1,321	1,233	1,222	1,170	NA
Social/behavioral sciences	358	388	420	506	563	610	656	751	808	943	973	1,025	1,060	988	NA
Engineering	3,297	3,411	3,580	3,934	3,800	3,964	3,955	3,921	4,077	3,915	4,195	4,073	3,954	3,758	NA
South Korea	4,723	4,999	4,999	5,586	6,143	6,208	6,690	7,172	7,946	8,449	8,657	9,082	9,369	9,912	10,542
All S&E	2,046	2,189	2,316	2,607	2,865	2,956	3,225	3,192	3,531	3,653	3,779	3,649	3,716	3,833	4,165
Physical/biological sciences	391	427	421	438	614	581	590	711	788	737	817	744	798	906	910
Mathematics/computer sciences	178	187	187	188	247	282	258	222	232	148	173	128	156	135	185
Agricultural sciences	199	178	190	230	242	260	288	169	203	228	214	212	209	200	206
Social/behavioral sciences	236	240	160	168	108	195	190	222	268	267	308	316	311	290	358
Engineering	1,042	1,157	1,358	1,583	1,654	1,638	1,899	1,868	2,040	2,273	2,267	2,249	2,242	2,302	2,506
Taiwan	1,053	1,187	1,282	1,307	1,455	1,463	1,501	1,759	1,964	2,165	2,614	2,850	3,140	3,589	3,705
All S&E	783	839	907	901	970	970	966	1,167	1,291	1,385	1,643	1,905	2,005	2,295	2,509
Physical/biological sciences	154	163	172	159	143	144	166	202	206	270	319	371	413	469	507
Mathematics/computer sciences	63	88	93	119	106	107	107	127	136	166	182	87	108	115	134

Appendix table 2-42

S&E doctoral degrees, by selected Asian country/economy and field: 1996–2010

Country/economy and field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Agricultural sciences	65	79	78	76	87	90	93	93	116	83	92	72	77	104	95
Social/behavioral sciences	66	76	87	65	108	108	72	89	111	108	111	157	165	172	165
Engineering	435	433	477	482	526	521	528	656	722	758	939	1,219	1,242	1,435	1,608

NA = not available.

[a] Japan data include thesis doctorates, called *ronbun hakase,* earned by employees in industry. In higher education data for Japan, mathematics are included in natural sciences and computer sciences are included in engineering.

NOTES: Physical/biological sciences include physical; biological; and earth, atmospheric, and ocean sciences. Data for doctoral degrees use International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields.

SOURCES: China—National Research Center for Science and Technology for Development and *Education Statistics Yearbook of China* (various years); India—Department of Science and Technology (various years); Japan—Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Higher Education Bureau (various years); South Korea—Organisation for Economic Co-operation and Development (OECD) (various years), OECD.Stat Extracts, http://stats.oecd.org (various years); and Taiwan—Ministry of Education, Educational Statistics of the Republic of China (annual series).

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Appendix table 2-43

Trends in population age 20–24, by selected country and region: 2010–60

(Thousands)

Year	Western Europe	Eastern Europe	Africa	South America	United States	Oceania	China	Japan	South Korea	India	Russia	Brazil
2010	11,679	24,024	97,210	34,593	NA	2,838	119,963	6,576	3,089	114,273	12,346	17,081
2015	10,748	17,737	105,952	34,455	22,580	2,941	104,812	6,056	3,416	119,279	8,374	16,307
2020	10,580	14,114	116,286	35,200	21,651	3,026	94,441	5,925	3,149	120,868	6,669	17,053
2025	10,335	14,068	129,900	35,054	21,646	3,089	83,003	5,685	2,363	121,661	7,147	16,940
2030	10,272	16,037	143,303	33,177	21,940	3,318	80,154	5,507	2,353	124,043	8,257	14,880
2035	10,305	16,491	156,877	32,606	22,979	3,470	77,782	5,417	2,374	123,873	8,469	14,322
2040	10,454	15,781	169,347	31,807	23,863	3,574	71,733	5,208	2,383	122,259	7,985	13,747
2045	10,506	14,435	179,343	30,827	24,263	3,641	66,439	5,036	2,372	119,536	7,172	13,134
2050	10,492	13,274	189,446	29,628	24,463	3,667	63,032	4,963	2,316	116,514	6,576	12,385
2055	10,475	13,054	200,043	28,527	24,775	3,698	60,952	4,940	2,194	113,412	6,644	11,725
2060	10,508	13,609	210,501	27,587	25,305	3,760	59,281	4,921	2,075	109,914	7,059	11,223

NA = not available.

SOURCES: United Nations Secretariat, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision, http://esa.un.org/unpd/wpp/unpp/panel_indicators.htm, accessed 3 January 2013; and Census Bureau, Population Division, 2012 National Population Projections: Downloadable File (NP2012-D1), http://www.census.gov/population/projections/data/national/2012/downloadablefiles.html, accessed 13 January 2013.

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Appendix table 2-44

Foreign S&E student enrollment in UK universities, by enrollment level, place of origin, and field: Academic years 1994–95, 2010–11, and 2011–12

Academic year, enrollment level, and place of origin	All S&E fields	Physical/biological/ agricultural sciences	Mathematics/ computer sciences	Social/behavioral sciences	Engineering
1994–95					
All undergraduates	393,040	131,370	69,730	79,260	112,690
All foreign	34,530	7,770	4,270	6,550	15,940
Greece	3,830	720	610	570	1,920
Malaysia	3,760	170	490	400	2,700
Ireland	3,110	1,300	340	220	1,260
Germany	2,660	1,010	210	640	800
France	2,640	880	270	470	1,010
Hong Kong	2,200	220	410	470	1,110
Singapore	1,990	140	200	260	1,390
United States	1,220	520	50	560	90
Canada	160	90	20	40	20
China	150	10	20	10	110
Other	12,820	2,730	1,660	2,910	5,530
Foreign (%)	8.8	5.9	6.1	8.3	14.1
All graduates	99,980	35,270	15,170	22,890	26,650
All foreign	28,850	8,100	3,490	8,010	9,260
Greece	2,410	580	460	500	870
Malaysia	1,570	320	200	220	820
China	1,330	410	140	120	660
Germany	1,290	390	200	340	360
United States	1,090	240	70	670	110
Ireland	1,040	490	110	170	280
Hong Kong	1,030	90	190	400	360
France	950	290	80	190	400
Canada	600	140	40	320	110
Singapore	570	80	150	90	250
Other	16,970	5,070	1,870	4,990	5,040
Foreign (%)	28.9	23.0	23.0	35.0	34.7
2010–11					
All undergraduates	600,115	184,215	111,795	188,175	115,930
All foreign	76,185	12,800	14,955	21,895	26,535
China	10,260	815	2,935	2,505	4,005
Malaysia	3,755	500	585	580	2,090
Cyprus	3,240	735	935	525	1,045
France	3,190	625	620	855	1,090
Hong Kong	3,120	645	540	1,215	720
India	3,120	275	780	375	1,690
Germany	3,035	655	365	1,195	820
Nigeria	2,885	295	815	555	1,220
United States	2,280	800	120	1,240	120

Appendix table 2-44

Foreign S&E student enrollment in UK universities, by enrollment level, place of origin, and field: Academic years 1994–95, 2010–11, and 2011–12

Academic year, enrollment level, and place of origin	All S&E fields	Physical/biological/ agricultural sciences	Mathematics/ computer sciences	Social/behavioral sciences	Engineering
Saudi Arabia	2,255	250	525	115	1,365
Other	39,045	7,205	6,735	12,735	12,370
Foreign (%)	12.7	6.9	13.4	11.6	22.9
All graduates	186,430	45,880	31,370	58,680	50,500
All foreign	89,555	17,085	18,710	23,585	30,175
India	13,300	1,750	5,160	935	5,455
China	11,360	1,355	2,175	3,085	4,745
Nigeria	5,375	890	1,210	755	2,520
United States	3,615	725	290	2,305	295
Germany	3,345	935	485	1,260	665
Greece	3,340	545	625	945	1,225
Pakistan	3,040	360	995	425	1,260
Saudi Arabia	2,555	690	1,045	220	600
Ireland	2,465	715	145	775	830
France (includes Corsica)	2,440	600	330	465	1,045
Other	38,720	8,520	6,250	12,415	11,535
Foreign (%)	48.0	37.2	59.6	40.2	59.8
2011–12					
All undergraduates	621,305	191,445	113,835	196,000	120,025
All foreign	80,595	13,915	15,230	24,120	27,330
China	11,090	975	3,110	2,770	4,235
Hong Kong	3,940	510	610	670	2,150
Cyprus	3,400	855	970	565	1,010
Malaysia	3,390	695	560	1,385	750
Germany	3,155	245	645	475	1,790
France	3,075	645	510	900	1,020
United States	3,065	355	875	540	1,295
Nigeria	2,940	680	310	1,245	705
India	2,615	930	145	1,405	135
Romania	2,445	240	585	105	1,515
Other	41,480	7,785	6,910	14,060	12,725
Foreign (%)	13.0	7.3	13.4	12.3	22.8
All graduates	181,110	46,400	27,745	59,255	47,710
All foreign	84,915	16,895	15,820	24,200	28,000
China	13,455	1,565	2,455	3,780	5,655
India	8,845	1,365	3,045	900	3,535
Nigeria	5,135	1,010	1,175	690	2,260
United States	3,635	770	270	2,300	295
Germany	3,350	915	445	1,325	665
Greece	3,265	530	650	905	1,180
France	2,355	545	350	470	990

Appendix table 2-44

Foreign S&E student enrollment in UK universities, by enrollment level, place of origin, and field: Academic years 1994–95, 2010–11, and 2011–12

Academic year, enrollment level, and place of origin	All S&E fields	Physical/biological/ agricultural sciences	Mathematics/ computer sciences	Social/behavioral sciences	Engineering
Pakistan	2,345	310	685	390	960
Saudi Arabia	2,330	675	875	225	555
Italy	2,270	680	255	820	515
Other	37,930	8,530	5,615	12,395	11,390
Foreign (%)	46.9	36.4	57.0	40.8	58.7

UK = United Kingdom.

NOTES: Academic year 1995 includes enrollment between 1 August 1994 and 31 July 1995. Academic year 2011 includes enrollment between 1 August 2010 and 31 July 2011. Academic year 2012 includes enrollment between 1 August 2011 and 31 July 2012. Data are rounded to the nearest 5. Detail may not add to total because of rounding. Percentages are based on rounded data. Physical sciences include earth, atmospheric, and ocean sciences.

SOURCE: Higher Education Statistics Agency, special tabulations (2012 and 2013).

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Appendix table 2-45

Foreign S&E student enrollment in Japanese universities, by enrollment level, place of origin, and field: 2004 and 2012

Year, enrollment level, and place of origin	S&E field					
	All S&E	Physical/biological sciences	Agricultural sciences	Social/behavioral sciences	Engineering	Non-S&E
2004						
All undergraduates	1,557,939	87,398	69,672	961,762	439,107	947,984
Foreign	39,914	595	540	32,916	5,863	18,050
China	29,192	324	318	25,470	3,080	11,980
South Korea	7,018	185	122	5,403	1,308	4,911
Malaysia	1,142	15	15	198	914	97
Vietnam	424	6	10	242	166	115
Indonesia	233	3	14	152	64	65
Thailand	226	3	12	179	32	62
Mongolia	160	1	9	133	17	53
Sri Lanka	146	1	2	101	42	25
United Kingdom	78	1	0	73	4	59
United States	76	7	0	65	4	157
Other	1,219	49	38	900	232	526
Foreign (%)	2.6	0.7	0.8	3.4	1.3	1.9
All graduates	140,822	20,298	12,691	29,014	78,819	95,336
Master's	109,062	13,954	8,337	21,536	65,235	53,650
Doctorate	31,760	6,344	4,354	7,478	13,584	41,686
Foreign	16,784	916	2,164	7,383	6,321	9,702
China	8,981	336	833	4,979	2,833	5,500
South Korea	2,095	110	220	803	962	1,901
Indonesia	655	66	157	104	328	141
Thailand	604	24	152	128	300	237
Bangladesh	505	63	134	79	229	208
Vietnam	480	14	94	175	197	124
Malaysia	288	15	25	74	174	74
Philippines	241	34	60	74	73	80
Myanmar	170	10	46	51	63	58
Sri Lanka	159	13	37	37	72	45
Other	2,606	231	406	879	1,090	1,334
Foreign (%)	11.9	4.5	17.1	25.4	8.0	10.2
2012						
All undergraduates	1,409,144	80,990	75,741	861,881	390,532	1,151,765
Foreign	47,552	704	614	37,540	8,694	32,525
China	33,189	398	347	27,477	4,967	17,787
South Korea	8,625	198	120	6,949	1,358	7,467
Vietnam	1,486	31	30	910	515	480
Malaysia	1,194	12	20	160	1,002	177
Thailand	357	7	10	279	61	413
Nepal	309	4	0	252	53	563

Appendix table 2-45

Foreign S&E student enrollment in Japanese universities, by enrollment level, place of origin, and field: 2004 and 2012

Year, enrollment level, and place of origin	S&E field					
	All S&E	Physical/biological sciences	Agricultural sciences	Social/behavioral sciences	Engineering	Non-S&E
Mongolia	289	3	15	201	70	160
Myanmar	215	0	2	192	21	159
Saudi Arabia	210	0	0	30	180	28
Indonesia	196	10	5	168	13	302
Other	1,482	41	65	922	454	4,989
Foreign (%)	3.4	0.9	0.8	4.4	2.2	2.8
All graduates	141,910	19,473	13,055	25,027	84,355	101,309
Master's	112,500	14,295	9,257	18,334	70,614	56,403
Doctorate	29,410	5,178	3,798	6,693	13,741	44,906
Foreign	23,557	1,535	2,212	9,751	10,059	18,318
China	13,987	756	1,017	6,979	5,235	11,232
South Korea	2,056	127	142	754	1,033	1,875
Indonesia	1,080	114	171	240	555	530
Vietnam	953	66	116	239	532	383
Thailand	764	39	131	142	452	354
Malaysia	498	30	33	68	367	161
Bangladesh	423	43	112	73	195	278
India	230	45	24	28	133	141
Mongolia	199	23	22	93	61	178
Nepal	197	25	37	67	68	146
Other	3,170	267	407	1,068	1,428	3,040
Foreign (%)	16.6	7.9	16.9	39.0	11.9	18.1

NOTES: Data are for students of non-Japanese citizenship, including permanent residents. Undergraduates include those attending 4-year colleges and universities. Engineering includes computer sciences. Physical sciences include earth, atmospheric, and ocean sciences and mathematics. Social/behavioral sciences include business and law. Enrollment is as of May of the reference year.

SOURCE: Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, Monbusho Survey of Education, special tabulations (2013).

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Appendix table 2-46

S&E student enrollment in Canadian universities, by enrollment level, top place of origin, and field: 2000 and 2010

Year, enrollment level, and place of origin	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering
2000						
Undergraduates	281,169	60,867	37,041	10,698	117,009	55,554
Foreign	14,724	2,088	4,029	276	4,476	3,855
United States	1,689	405	174	63	816	231
China	1,449	84	885	9	270	201
France	999	162	114	24	408	291
Hong Kong	750	90	210	12	258	180
Morocco	654	30	195	9	75	345
Pakistan	372	39	192	3	63	75
South Korea	357	75	72	3	138	69
Taiwan	336	45	90	6	114	81
India	321	33	120	3	51	114
Japan	291	42	51	12	162	24
Other	7,506	1,083	1,926	132	2,121	2,244
Foreign (%)	5.2	3.4	10.9	2.6	3.8	6.9
Graduates	49,359	12,768	5,070	3,486	16,038	11,997
Foreign	9,369	1,980	1,431	621	2,229	3,108
China	1,722	255	507	45	177	738
France	1,065	342	63	90	297	273
United States	792	258	78	45	258	153
Morocco	375	69	90	12	39	165
Iran	291	57	33	21	27	153
India	288	45	33	15	48	147
Mexico	258	48	24	27	60	99
Tunisia	252	24	84	12	60	72
Romania	243	57	54	3	36	93
Algeria	201	33	45	12	21	90
Other	3,882	792	420	339	1,206	1,125
Foreign (%)	19.0	15.5	28.2	17.8	13.9	25.9
2010						
Undergraduates	352,779	72,882	26,514	11,802	177,336	76,047
Foreign	23,367	3,498	2,646	756	8,850	8,373
China	3,021	408	717	231	936	960
France	2,613	273	147	60	1,287	906
United States	2,463	519	147	156	1,353	444
Morocco	1,194	63	111	12	258	762
South Korea	648	192	87	15	228	141
India	585	78	72	12	120	315
Pakistan	564	75	51	6	189	249
United Arab Emirates	528	84	39	6	123	282
Saudi Arabia	522	60	57	0	84	321
Algeria	486	78	69	18	153	186
Other	10,743	1,668	1,149	240	4,119	3,807
Foreign (%)	6.6	4.8	10.0	6.4	5.0	11.0
Graduates	75,942	19,065	8,475	4,923	25,761	22,641
Foreign	14,232	3,024	1,980	804	3,036	6,192
France	1,809	549	135	183	585	540
Iran	1,605	198	189	18	57	1,161
China	1,503	294	276	57	258	675
United States	1,047	327	165	75	369	186
India	906	171	147	42	33	555
Tunisia	453	81	105	24	57	210
Algeria	405	75	66	21	39	225
Morocco	387	60	51	15	57	219

Appendix table 2-46

S&E student enrollment in Canadian universities, by enrollment level, top place of origin, and field: 2000 and 2010

Year, enrollment level, and place of origin	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering
Colombia	366	75	21	24	87	183
Bangladesh	336	27	84	9	39	186
Other	5,415	1,167	741	336	1,455	2,052
Foreign (%)	18.7	15.9	23.4	16.3	11.8	27.3

NOTES: Enrollment is as of 31 October of the reference year. Data exclude respondents with unknown country of permanent residence. Data are rounded to the nearest 3. Detail may not add to total because of rounding. Physical sciences include earth, atmospheric, and ocean sciences. Engineering includes architecture. Social/behavioral sciences include law.

SOURCE: Statistics Canada, Center for Education Statistics, special tabulations (2013).

Science and Engineering Indicators 2014

Appendix table 3-1

S&E occupations in the 1960 U.S. Census and 2011 American Community Survey

Census, 1960	American Community Survey, 2011
Biological, agricultural, and environmental life scientists	Biological, agricultural, and environmental life scientists
Agricultural scientists	Agricultural and food scientists
Biological scientists	Biological scientists
Foresters and conservationists	Conservation scientists and foresters
	Medical scientists, and life scientists, all other
Mathematical scientists	Computer and mathematical scientists
Mathematicians	Computer and information research scientists
Statisticians and actuaries	Computer network architects
	Computer support specialists
	Computer systems analysts
	Database administrators
	Information security analysts
	Network and computer systems administrators
	Operations research analysts
	Software developers, applications and systems software
	Web developers
	Computer occupations, all other
	Miscellaneous mathematical science occupations, including mathematicians and statisticians
Physical scientists	Physical scientists
Chemists	Astronomers and physicists
Geologists and geophysicists	Atmospheric and space scientists
Physicists	Chemists and materials scientists
Miscellaneous natural scientists	Environmental scientists and geoscientists
	Physical scientists, all other
Social scientists	Social scientists
Economists	Economists
Psychologists	Psychologists
Miscellaneous social scientists	Urban and regional planners
	Miscellaneous social scientists, including survey researchers and sociologists
Engineers	Engineers
Aeronautical engineers	Aerospace engineers
Chemical engineers	Biomedical and agricultural engineers
Civil engineers	Chemical engineers
Electrical engineers	Civil engineers
Industrial engineers	Computer hardware engineers
Mechanical engineers	Electrical and electronics engineers
Metallurgical engineers and metallurgists	Environmental engineers
Mining engineers	Industrial engineers, including health and safety engineers
Sales engineers	Marine engineers and naval architects
Engineers nec	Materials engineers
	Mechanical engineers

Appendix table 3-1

S&E occupations in the 1960 U.S. Census and 2011 American Community Survey

Census, 1960	American Community Survey, 2011
	Petroleum, mining, and geological engineers, including mining safety engineers
	Sales engineers
	Miscellaneous engineers, including nuclear engineers

nec = not elsewhere classified.

NOTES: The data reported in *Science and Engineering Indicators* on S&E employment level for 1960 are calculated using the Census Bureau's 1960 Decennial Census microdata, adjusted by the Integrated Public Use Microdata Series (IPUMS) from the University of Minnesota's Minnesota Population Center (www.ipums.org). The data on S&E employment level for 2011 are calculated using the 2011 American Community Survey (ACS) public use microdata sample files from the Census Bureau (http://www.census.gov/acs/www/data_documentation/public_use_microdata_sample/). Computer occupations were not present in the occupational classification system used in 1960. For more information on how occupational classification systems have changed over time, see Ian Wyatt's and Daniel Hecker's report, "Occupational Changes During the 20th Century" (*Monthly Labor Review*, March 2006). S&E employment levels for 1960 and 2011 do not include S&E postsecondary teachers. Although the 1960 Census data allow for separate identification of S&E postsecondary teachers, the 2011 ACS data aggregate postsecondary teachers of both S&E and non-S&E fields into one occupation code.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, based on 1960 Decennial Census and 2011 ACS, Census Bureau.

Science and Engineering Indicators 2014

Appendix table 3-2

Bureau of Labor Statistics projections of occupational employment: 2010–20

(Thousands)

Occupation	BLS National Employment Matrix 2010 estimate	BLS projected 2020 employment	Job openings from growth and net replacements, 2010–20	10-year growth in total employment (%)	10-year job openings as % of 2010 employment
Total, all occupations	143,068	163,537	54,787	14.3	38.3
All S&E	5,546	6,585	2,197	18.7	39.6
Computer and mathematical scientists	3,157	3,886	1,290	23.1	40.9
Computer and information scientists, research	28	34	11	18.7	37.6
Computer software engineers	913	1,184	366	29.7	40.1
Computer support specialists	607	717	270	18.1	44.4
Computer systems analysts	544	665	223	22.1	40.9
Database administrators	111	145	53	30.6	47.6
Network and computer systems administrators	347	444	155	27.8	44.7
Information security analysts, Web developers, and computer network architects	302	368	110	21.7	36.5
All other computer specialists	210	222	52	5.9	24.6
Mathematicians	3	4	2	15.7	74.2
Operations research analysts	65	74	30	14.6	46.4
Statisticians	25	29	19	14.1	74.5
Mathematical scientists, all other	1	2	1	14.7	71.4
Engineers	1,519	1,679	526	10.6	34.6
Aerospace engineers	81	85	22	4.9	26.9
Agricultural engineers	3	3	1	9.1	29.6
Biomedical engineers	16	25	13	61.7	83.4
Chemical engineers	30	32	11	5.9	37.7
Civil engineers	263	314	104	19.4	39.7
Computer hardware engineers	70	76	23	9.0	32.7
Electrical and electronics engineers	294	312	88	6.0	30.1
Electrical engineers	154	165	48	7.0	31.0
Electronics engineers, except computer	140	147	41	4.9	29.0
Environmental engineers	51	63	23	21.9	44.0
Industrial engineers, including health and safety	228	244	66	7.1	28.9
Health and safety engineers, except mining safety engineers and inspectors	24	27	8	13.0	34.6
Industrial engineers	204	217	58	6.4	28.2
Marine engineers and naval architects	6	7	2	17.5	39.0
Materials engineers	22	24	8	8.7	36.3
Mechanical engineers	243	265	100	8.8	41.0
Mining and geological engineers, including mining safety engineers	6	7	2	9.6	31.3
Nuclear engineers	19	21	6	10.2	32.5
Petroleum engineers	30	35	12	17.0	39.1
All other engineers	157	167	45	6.6	28.6
Life scientists	286	344	106	20.4	37.1
Agricultural and food scientists	34	37	17	10.4	51.3
Animal scientists	3	4	2	12.8	54.5
Food scientists and technologists	14	15	7	8.0	48.9
Soil and plant scientists	16	18	9	12.1	52.8
Biological scientists	101	115	37	14.0	36.5
Biochemists and biophysicists	25	33	13	30.8	53.4
Microbiologists	20	23	7	13.3	35.5
Zoologists and wildlife biologists	20	21	6	7.4	29.8
Biological scientists, all other	36	38	10	6.3	28.8
Conservation scientists and foresters	35	37	6	5.0	17.2
Conservation scientists	23	25	4	5.2	17.1
Foresters	12	12	2	4.7	16.5

Appendix table 3-2

Bureau of Labor Statistics projections of occupational employment: 2010–20

(Thousands)

Occupation	BLS National Employment Matrix 2010 estimate	BLS projected 2020 employment	Job openings from growth and net replacements, 2010–20	10-year growth in total employment (%)	10-year job openings as % of 2010 employment
Medical scientists	105	143	44	35.8	42.0
Epidemiologists	5	6	2	23.6	30.0
Medical scientists, except epidemiologists	100	137	43	36.4	42.6
All other life scientists	12	13	2	11.7	18.1
Physical scientists	282	318	122	12.7	43.2
Astronomers and physicists	21	23	9	13.8	43.2
Astronomers	2	3	1	11.0	40.9
Physicists	18	21	8	14.2	43.7
Atmospheric and space scientists	10	10	2	10.6	22.1
Chemists and materials scientists	91	95	34	4.5	37.0
Chemists	82	85	30	3.8	36.4
Materials scientists	9	10	4	10.2	42.5
Environmental scientists and geoscientists	131	156	64	19.3	48.9
Environmental scientists and specialists, including health	89	106	43	18.7	48.3
Geoscientists, except hydrologists and geographers	34	41	17	21.2	50.6
Hydrologists	8	9	4	17.8	47.4
All other physical scientists	30	33	13	8.5	43.9
Social and related scientists	302	358	152	18.5	50.4
Economists	15	16	6	6.1	37.7
Survey researchers	20	24	10	24.1	50.5
Psychologists	174	212	93	21.6	53.2
Clinical, counseling, and school psychologists	154	188	82	21.9	53.3
Industrial-organizational psychologists	2	3	2	34.9	68.2
Psychologists, all other	18	21	9	18.2	49.7
Sociologists	4	5	2	18.1	45.0
Urban and regional planners	40	47	17	16.2	41.7
Miscellaneous social scientists and related workers	49	54	26	10.7	52.4
Anthropologists and archeologists	6	7	4	20.7	62.3
Geographers	2	2	1	35.4	81.3
Political scientists	6	6	3	7.9	50.0
Social scientists and related workers, all other	35	38	18	8.1	49.7
Selected other occupations					
S&E managers	534	609	186	14.0	34.8
Computer and information systems managers	308	364	103	18.1	33.4
Architectural and engineering managers	177	192	50	8.6	28.1
Natural sciences managers	49	53	34	7.7	68.0
S&E technicians	808	873	275	8.0	34.1
Agricultural and food science technicians	21	23	9	7.0	40.8
Biological technicians	80	91	38	13.5	47.3
Chemical technicians	61	65	13	6.7	21.1
Geological and petroleum technicians	14	17	7	14.7	48.6
Nuclear technicians	7	8	3	13.5	46.5
Social science research assistants	30	34	17	15.0	57.2
Other life, physical, and social science technicians	141	157	76	11.6	54.1
Aerospace engineering and operations technicians	9	9	2	-1.6	19.5
Civil engineering technicians	79	89	25	12.0	31.1
Electrical and electronic engineering technicians	151	154	32	1.9	21.0
Electro-mechanical technicians	16	17	3	0.5	19.5
Environmental engineering technicians	19	23	8	24.3	43.6
Industrial engineering technicians	63	65	15	4.2	23.4
Mechanical engineering technicians	45	47	10	3.9	23.2
Engineering technicians, except drafters, all other	71	74	17	4.7	23.8

Appendix table 3-2

Bureau of Labor Statistics projections of occupational employment: 2010–20

(Thousands)

Occupation	BLS National Employment Matrix 2010 estimate	BLS projected 2020 employment	Job openings from growth and net replacements, 2010–20	10-year growth in total employment (%)	10-year job openings as % of 2010 employment
Mathematical technicians	1	1	1	6.2	63.6
Health care practitioners and technical occupations	7,799	9,819	3,591	25.9	46.0
Health diagnosing and treating practitioners	4,852	6,128	2,219	26.3	45.7
Chiropractors	53	67	25	28.3	48.1
Dentists	156	188	78	20.7	50.4
Dentists, general	131	158	66	21.1	50.8
Oral and maxillofacial surgeons	8	10	4	21.3	51.3
Orthodontists	8	10	4	21.1	50.6
Prosthodontists	1	1	1	21.4	50.0
Dentists, all other specialists	8	9	3	11.7	41.0
Dietitians and nutritionists	64	77	35	19.7	55.0
Optometrists	34	46	23	33.1	68.4
Pharmacists	275	345	140	25.4	50.8
Physicians and surgeons	691	859	305	24.4	44.2
Physician assistants	84	108	41	29.5	48.6
Podiatrists	13	16	5	20.0	39.5
Registered nurses	2,737	3,449	1,207	26.0	44.1
Therapists	616	806	298	30.9	48.3
Occupational therapists	109	145	57	33.5	52.5
Physical therapists	199	276	101	39.0	50.7
Radiation therapists	17	20	7	20.3	39.6
Recreational therapists	22	26	12	17.1	53.1
Respiratory therapists	113	144	53	27.7	46.8
Speech-language pathologists	123	152	52	23.4	42.5
Therapists, all other	33	42	16	27.9	49.2
Audiologists	13	18	6	36.8	43.1
Veterinarians	61	83	34	35.9	55.7
Health diagnosing and treating practitioners, all other	56	66	21	19.0	38.1
Health technologists and technicians	2,799	3,519	1,297	25.7	46.3
Clinical laboratory technologists and technicians	331	374	107	13.0	32.5
Medical and clinical laboratory technologists	169	189	52	11.3	30.8
Medical and clinical laboratory technicians	161	185	55	14.7	34.2
Dental hygienists	182	250	105	37.7	57.7
Diagnostic-related technologists and technicians	345	448	157	29.9	45.4
Cardiovascular technologists and technicians	49	64	22	29.3	44.7
Diagnostic medical sonographers	54	77	32	43.5	59.0
Nuclear medicine technologists	22	26	8	18.9	34.2
Radiologic technologists and technicians	220	281	95	27.8	43.2
Emergency medical technicians and paramedics	227	302	121	33.3	53.3
Health diagnosing and treating practitioner support technicians	621	805	292	29.6	47.0
Dietetic technicians	24	28	8	16.0	33.5
Pharmacy technicians	334	443	166	32.4	49.7
Psychiatric technicians	75	86	25	15.5	32.8
Respiratory therapy technicians	14	14	3	4.1	21.7
Surgical technologists	94	111	34	18.9	36.2
Veterinary technologists and technicians	80	122	56	52.0	69.5
Licensed practical and licensed vocational nurses	752	921	369	22.4	49.1
Medical records and health information technicians	180	217	74	21.0	41.1
Opticians, dispensing	63	81	31	28.9	48.9
Orthotists and prosthetists	6	7	2	12.1	31.7
Health care technologists and technicians, all other	94	115	40	23.2	43.2
Other health care practitioners and technical occupations	148	171	75	15.8	51.0

Appendix table 3-2

Bureau of Labor Statistics projections of occupational employment: 2010–20

(Thousands)

Occupation	BLS National Employment Matrix 2010 estimate	BLS projected 2020 employment	Job openings from growth and net replacements, 2010–20	10-year growth in total employment (%)	10-year job openings as % of 2010 employment
Occupational health and safety specialists	59	64	26	8.5	43.8
Occupational health and safety technicians	11	12	5	12.9	48.1
Athletic trainers	18	24	12	30.0	65.4
Health care practitioners and technical workers, all other	60	72	33	19.0	54.3
Lawyers	728	802	212	10.1	29.1
Postsecondary teachers	1,756	2,062	586	17.4	33.4
Computer programmers	363	407	128	12.0	35.3

BLS = Bureau of Labor Statistics.

NOTES: Estimates of current and projected employment for 2010–20 period are from BLS's National Employment Matrix. Data in the matrix are from the Occupational Employment Statistics (OES) survey and the Current Population Survey (CPS). Together, these sources cover paid workers, self-employed workers, and unpaid family workers in all industries, agriculture, and private households. Because the numbers are derived from multiple sources, data can often differ from employment data provided by OES, CPS, or other employment surveys alone. BLS does not make projections for S&E occupations as a group; numbers in the table are based on the sum of BLS projections in occupations that the National Science Foundation considers S&E.

SOURCE: BLS, Employment Projections program, 2010–2020, special tabulations (2013) of 2010–20 Employment Projections.

Science and Engineering Indicators 2014

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E: All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering	S&E-related fields	Non-S&E fields
All occupations	21,903,000	11,385,000	1,886,000	1,764,000	693,000	4,363,000	2,679,000	5,273,000	5,245,000
S&E occupations	5,398,000	4,000,000	1,013,000	529,000	353,000	559,000	1,546,000	325,000	1,073,000
Computer and mathematical scientists	2,394,000	1,579,000	960,000	52,000	49,000	164,000	354,000	131,000	684,000
Computer and information scientists	2,179,000	1,429,000	865,000	45,000	44,000	136,000	339,000	114,000	635,000
Computer and information scientists, research	35,000	27,000	17,000	S	1,000	3,000	5,000	2,000	6,000
Computer network architect	42,000	23,000	11,000	S	S	3,000	7,000	1,000	S
Computer support specialists	219,000	125,000	78,000	6,000	3,000	19,000	18,000	12,000	82,000
Computer system analysts	325,000	204,000	136,000	6,000	5,000	22,000	36,000	22,000	99,000
Database administrators	107,000	63,000	36,000	7,000	3,000	5,000	11,000	3,000	42,000
Information security analysts	37,000	27,000	17,000	S	S	3,000	6,000	S	9,000
Network and computer systems administrators	181,000	106,000	68,000	4,000	5,000	14,000	16,000	11,000	64,000
Software developers—applications and systems software	431,000	321,000	193,000	6,000	9,000	19,000	93,000	27,000	83,000
Web developers	130,000	65,000	39,000	4,000	2,000	13,000	6,000	7,000	58,000
Other computer information science occupations	236,000	121,000	68,000	7,000	4,000	22,000	19,000	8,000	107,000
Computer engineers—software	435,000	348,000	202,000	2,000	10,000	13,000	121,000	19,000	69,000
Mathematical scientists	121,000	79,000	37,000	7,000	3,000	25,000	7,000	5,000	38,000
Mathematicians	12,000	6,000	5,000	S	S	S	S	S	S
Operations research analysts, including modeling	53,000	32,000	14,000	2,000	1,000	10,000	5,000	2,000	19,000
Statisticians	41,000	27,000	15,000	5,000	2,000	5,000	1,000	3,000	S
Other mathematical scientists	S	S	3,000	S	S	S	1,000	S	1,000
Postsecondary teachers—computer and math sciences	94,000	71,000	58,000	1,000	2,000	2,000	8,000	12,000	11,000
Computer science	25,000	19,000	13,000	S	S	1,000	4,000	1,000	5,000
Mathematics and statistics	69,000	52,000	45,000	S	1,000	1,000	4,000	11,000	6,000
Biological, agricultural, and environmental life scientists	597,000	468,000	3,000	396,000	35,000	22,000	12,000	70,000	59,000
Agricultural and food scientists	62,000	58,000	S	51,000	2,000	3,000	S	2,000	3,000
Biological and medical scientists	426,000	316,000	2,000	261,000	29,000	13,000	11,000	61,000	49,000
Biochemists and biophysicists	58,000	56,000	S	41,000	12,000	S	2,000	2,000	S
Biological scientists (e.g., botanists, ecologists zoologists)	129,000	114,000	S	104,000	3,000	5,000	2,000	8,000	7,000
Medical scientists (excluding practitioners)	130,000	88,000	1,000	68,000	10,000	5,000	4,000	40,000	2,000
Other biological and life scientists	109,000	58,000	S	48,000	4,000	3,000	2,000	10,000	40,000
Forestry and conservation scientists	31,000	27,000	S	25,000	1,000	1,000	S	S	3,000
Postsecondary teachers—life and related sciences	77,000	67,000	S	59,000	4,000	4,000	1,000	6,000	4,000
Agriculture	6,000	5,000	S	4,000	S	S	S	S	S
Biological sciences	62,000	54,000	S	51,000	2,000	2,000	S	5,000	2,000
Other natural sciences	9,000	8,000	S	4,000	2,000	S	S	S	S
Physical and related scientists	320,000	293,000	3,000	47,000	212,000	8,000	24,000	11,000	16,000

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E: All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering	S&E-related fields	Non-S&E fields
Chemists, except biochemists	103,000	96,000	S	17,000	72,000	S	6,000	2,000	6,000
Earth scientists, geologists, and oceanographers	69,000	64,000	S	3,000	55,000	2,000	4,000	1,000	4,000
Atmospheric and space scientists	14,000	13,000	S	S	12,000	S	1,000	S	S
Geologists, including earth scientists	50,000	47,000	S	2,000	41,000	1,000	2,000	S	3,000
Oceanographers	5,000	4,000	S	S	2,000	S	S	S	S
Physicists and astronomers	34,000	33,000	S	S	26,000	S	5,000	1,000	S
Astronomers	4,000	4,000	S	S	3,000	S	S	S	S
Physicists, except biophysicists	31,000	29,000	S	S	23,000	S	5,000	1,000	S
Other physical and related scientists	46,000	39,000	S	19,000	10,000	3,000	7,000	3,000	5,000
Postsecondary teachers—physical and related sciences	67,000	62,000	S	8,000	48,000	2,000	3,000	S	S
Chemistry	29,000	29,000	S	4,000	23,000	S	1,000	S	S
Earth, environmental, and marine science	19,000	15,000	S	4,000	9,000	2,000	1,000	S	S
Physics	19,000	18,000	S	S	16,000	S	1,000	S	S
Social and related scientists	518,000	365,000	5,000	6,000	2,000	349,000	4,000	23,000	130,000
Economists	30,000	27,000	S	S	S	24,000	S	S	3,000
Political scientists	23,000	11,000	S	S	S	11,000	S	S	S
Psychologists, including clinical	171,000	149,000	S	2,000	S	146,000	S	4,000	19,000
Sociologists and anthropologists	18,000	18,000	S	S	S	18,000	S	S	S
Anthropologists	11,000	11,000	S	S	S	10,000	S	S	S
Sociologists	8,000	7,000	S	S	S	7,000	S	S	S
Other social and related scientists	126,000	56,000	1,000	3,000	1,000	48,000	3,000	15,000	56,000
Postsecondary teachers—social and related sciences	150,000	105,000	1,000	1,000	S	103,000	S	4,000	40,000
Economics	19,000	16,000	S	S	S	16,000	S	S	2,000
Political science	18,000	15,000	S	S	S	15,000	S	S	3,000
Psychology	38,000	36,000	S	S	S	36,000	S	S	2,000
Sociology	19,000	16,000	S	S	S	15,000	S	S	2,000
Other social sciences	56,000	22,000	S	S	S	21,000	S	4,000	30,000
Engineers	1,569,000	1,294,000	42,000	28,000	55,000	17,000	1,151,000	90,000	185,000
Aerospace, aeronautical, or astronautical engineers	91,000	79,000	6,000	S	5,000	S	68,000	3,000	9,000
Chemical engineers	69,000	63,000	S	S	4,000	S	55,000	1,000	5,000
Civil, architectural, or sanitary engineers	228,000	208,000	1,000	1,000	4,000	4,000	199,000	10,000	9,000
Electrical or computer hardware engineers	385,000	314,000	17,000	1,000	13,000	1,000	283,000	17,000	54,000
Computer engineer—hardware	70,000	49,000	9,000	S	4,000	S	36,000	S	20,000
Electrical and electronics engineers	316,000	265,000	8,000	S	8,000	S	247,000	16,000	35,000
Industrial engineers	74,000	48,000	4,000	2,000	1,000	S	41,000	7,000	19,000
Mechanical engineers	299,000	250,000	3,000	S	3,000	2,000	242,000	20,000	30,000
Other engineers	380,000	293,000	10,000	20,000	25,000	9,000	229,000	30,000	57,000
Agricultural engineers	7,000	6,000	S	S	S	S	5,000	S	S

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E: All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering	S&E-related fields	Non-S&E fields
Bioengineers or biomedical engineers	22,000	19,000	S	1,000	S	S	17,000	S	1,000
Environmental engineers	64,000	57,000	S	10,000	8,000	S	39,000	3,000	4,000
Marine engineers and naval architects	10,000	8,000	S	S	S	S	8,000	S	S
Materials and metallurgical engineers	32,000	29,000	S	S	4,000	S	24,000	S	1,000
Mining and geological engineers	7,000	7,000	S	S	S	S	6,000	S	S
Nuclear engineers	21,000	18,000	S	S	1,000	S	15,000	S	3,000
Petroleum engineers	19,000	15,000	S	S	1,000	S	14,000	S	3,000
Sales engineers	63,000	42,000	3,000	2,000	3,000	3,000	30,000	10,000	11,000
Other engineers	136,000	91,000	6,000	4,000	7,000	4,000	70,000	13,000	31,000
Postsecondary teachers—engineering	43,000	39,000	1,000	1,000	2,000	S	35,000	2,000	S
S&E-related occupations	6,957,000	1,584,000	304,000	461,000	104,000	330,000	384,000	3,835,000	1,537,000
Health-related occupations	4,325,000	532,000	18,000	267,000	31,000	195,000	21,000	3,190,000	604,000
Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)	1,051,000	45,000	S	32,000	3,000	8,000	1,000	992,000	15,000
Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners	1,977,000	133,000	S	63,000	4,000	60,000	4,000	1,693,000	151,000
Health technologists and technicians (e.g., dental hygienists, health record technicians, licensed practical nurses, laboratory/radiology technicians)	504,000	155,000	9,000	86,000	11,000	44,000	S	203,000	147,000
Other health occupations	652,000	178,000	7,000	72,000	12,000	77,000	10,000	204,000	269,000
Postsecondary teachers—health and related sciences	141,000	21,000	S	14,000	1,000	6,000	S	98,000	22,000
S&E managers	861,000	417,000	97,000	48,000	22,000	46,000	204,000	232,000	212,000
Computer and information systems managers	237,000	134,000	86,000	1,000	4,000	17,000	26,000	9,000	94,000
Engineering managers	272,000	206,000	11,000	4,000	6,000	S	176,000	22,000	44,000
Medical and health services managers	309,000	42,000	S	20,000	1,000	19,000	S	195,000	72,000
Natural sciences managers	43,000	36,000	S	22,000	11,000	1,000	2,000	5,000	2,000
S&E precollege teachers	917,000	196,000	54,000	61,000	20,000	50,000	11,000	185,000	536,000
Secondary—computer, math, or sciences	618,000	165,000	54,000	60,000	20,000	21,000	11,000	155,000	298,000
Secondary—social sciences	299,000	31,000	S	S	S	29,000	S	30,000	238,000
S&E technicians and technologists	654,000	405,000	114,000	85,000	29,000	37,000	141,000	81,000	168,000
Technologists and technicians in the biological/life sciences	92,000	73,000	S	58,000	6,000	4,000	4,000	11,000	8,000
Computer programmers (business, scientific, process control)	189,000	117,000	82,000	2,000	5,000	7,000	21,000	20,000	51,000
Electrical, electronic, industrial, and mechanical technicians	165,000	97,000	12,000	5,000	5,000	7,000	68,000	22,000	46,000
Drafting occupations, including computer drafting	32,000	10,000	S	S	S	2,000	6,000	12,000	S
Surveying and mapping technicians	8,000	6,000	S	S	S	2,000	S	S	S
Other engineering technologists and technicians	118,000	72,000	16,000	10,000	5,000	7,000	35,000	12,000	34,000
Surveyors, cartographers, photogrammetrists	15,000	11,000	S	S	S	5,000	3,000	S	S

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E: All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering	S&E-related fields	Non-S&E fields
Technologists and technicians in the mathematical sciences	S	S	S	S	S	S	S	S	S
Technologists and technicians in the physical sciences	31,000	17,000	S	6,000	6,000	S	3,000	S	S
Other S&E-related occupations	199,000	33,000	21,000	S	S	3,000	7,000	148,000	S
Architects	158,000	15,000	4,000	S	S	S	7,000	126,000	S
Actuaries	41,000	18,000	17,000	S	S	S	S	S	S
Non-S&E occupations	9,549,000	5,802,000	568,000	775,000	237,000	3,473,000	749,000	1,112,000	2,635,000
Non-S&E managers	1,655,000	988,000	112,000	116,000	55,000	451,000	254,000	199,000	468,000
Top-level managers, executives, administrators (e.g., chief executive officer/chief operating officer/chief financial officer, president, district/general manager/provost)	1,014,000	608,000	79,000	58,000	34,000	252,000	185,000	132,000	274,000
Education administrators (e.g., registrar, dean, principal)	116,000	39,000	S	8,000	3,000	20,000	2,000	14,000	63,000
Other mid-level managers	524,000	340,000	26,000	51,000	18,000	179,000	67,000	53,000	131,000
Management-related occupations	1,665,000	1,109,000	148,000	123,000	45,000	651,000	142,000	161,000	394,000
Accountants, auditors, and other financial specialists	587,000	406,000	71,000	29,000	12,000	269,000	25,000	32,000	149,000
Personnel, training, and labor relations specialists	217,000	153,000	7,000	10,000	3,000	122,000	11,000	20,000	44,000
Other management-related occupations	860,000	550,000	70,000	85,000	30,000	260,000	106,000	109,000	201,000
Non-S&E precollege teachers	763,000	300,000	22,000	25,000	11,000	231,000	11,000	144,000	319,000
Prekindergarten and kindergarten	78,000	42,000	4,000	S	S	34,000	S	11,000	25,000
Elementary	310,000	123,000	10,000	9,000	S	91,000	5,000	42,000	145,000
Secondary—other subjects	138,000	57,000	2,000	7,000	S	43,000	3,000	26,000	54,000
Special education—primary and secondary	162,000	56,000	2,000	3,000	S	49,000	S	37,000	69,000
Other precollegiate area	75,000	22,000	4,000	S	S	14,000	1,000	28,000	26,000
Non-S&E postsecondary teachers	159,000	58,000	6,000	3,000	2,000	43,000	4,000	18,000	84,000
Art, drama, and music	7,000	2,000	S	S	S	1,000	S	S	4,000
Business, commerce, and marketing	30,000	9,000	2,000	S	S	6,000	1,000	S	20,000
Education	28,000	9,000	1,000	S	1,000	6,000	S	5,000	14,000
English	16,000	6,000	S	S	S	5,000	S	S	10,000
Foreign language	12,000	7,000	S	S	S	6,000	S	S	5,000
History	10,000	4,000	S	S	S	4,000	S	S	6,000
Physical education	5,000	2,000	S	S	S	S	S	S	3,000
Other postsecondary fields	52,000	20,000	2,000	2,000	1,000	14,000	1,000	9,000	23,000
Social services and related occupations	747,000	400,000	4,000	10,000	2,000	378,000	6,000	69,000	278,000
Clergy and other religious workers	101,000	26,000	S	3,000	S	19,000	3,000	4,000	72,000
Counselors (e.g., educational, vocational, mental health, and substance abuse)	339,000	203,000	S	6,000	S	192,000	2,000	45,000	91,000
Social workers	307,000	171,000	S	2,000	S	166,000	S	20,000	115,000
Sales and marketing occupations	1,351,000	995,000	87,000	163,000	38,000	599,000	109,000	160,000	196,000

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E: All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering	S&E-related fields	Non-S&E fields
Insurance, securities, real estate, and business services	393,000	290,000	33,000	30,000	10,000	195,000	21,000	34,000	69,000
Sales—commodities, except retail (industrial/medical/dental machinery, equipment, supplies)	216,000	160,000	11,000	37,000	10,000	76,000	26,000	36,000	20,000
Sales—retail (e.g., furnishings, clothing, motor vehicles, cosmetics)	295,000	230,000	16,000	46,000	6,000	140,000	22,000	43,000	21,000
Other marketing and sales occupations	448,000	315,000	25,000	50,000	12,000	187,000	40,000	47,000	85,000
Arts, humanities, and related occupations	296,000	194,000	26,000	23,000	7,000	130,000	9,000	53,000	49,000
Writers, editors, public relations specialists, artists, entertainers, broadcasters	291,000	193,000	26,000	23,000	7,000	128,000	9,000	51,000	47,000
Historians	6,000	1,000	S	S	S	1,000	S	S	3,000
Other non-S&E occupations	2,912,000	1,759,000	164,000	311,000	77,000	992,000	215,000	308,000	846,000
Accounting clerks and bookkeepers	113,000	88,000	16,000	14,000	3,000	50,000	5,000	19,000	6,000
Secretaries, receptionists, typists	171,000	116,000	9,000	22,000	1,000	84,000	1,000	33,000	22,000
Other administrative (e.g., record clerks, telephone operators)	373,000	282,000	34,000	29,000	17,000	181,000	21,000	45,000	46,000
Farmers, foresters, and fishermen	95,000	77,000	2,000	50,000	4,000	16,000	4,000	7,000	10,000
Lawyers, judges	614,000	40,000	S	4,000	1,000	33,000	S	S	571,000
Librarians, archivists, curators	62,000	31,000	S	4,000	S	18,000	S	4,000	28,000
Food preparation and service (e.g., cooks, waitresses, bartenders)	154,000	129,000	18,000	20,000	5,000	81,000	6,000	18,000	7,000
Protective services (e.g., firefighters, police, guards, wardens, park rangers)	148,000	129,000	9,000	19,000	3,000	79,000	20,000	5,000	14,000
Other service occupations, except health (e.g., probation officer, human services work)	366,000	275,000	19,000	37,000	11,000	188,000	20,000	48,000	43,000
Other teachers and instructors (e.g., private tutors, dance, flying, martial arts)	177,000	110,000	6,000	25,000	5,000	64,000	10,000	27,000	41,000
Construction and extraction occupations	106,000	78,000	6,000	17,000	S	18,000	34,000	16,000	11,000
Installation, maintenance, and repair occupations	107,000	79,000	12,000	17,000	S	22,000	27,000	23,000	5,000

Appendix table 3-3

Scientists and engineers, by occupation and degree field: 2010

Occupation	All employed scientists and engineers	Highest degree in S&E						S&E-related fields	Non-S&E fields
		All S&E highest degree	Computer and mathematical sciences	Biological, agricultural, and environmental life sciences	Physical and related sciences	Social and related sciences	Engineering		
Precision/production occupations (e.g., metal/wood workers, butchers, bakers, assemblers, tailors)	110,000	83,000	10,000	22,000	8,000	23,000	20,000	18,000	10,000
Transportation and material moving occupations	162,000	123,000	11,000	20,000	6,000	54,000	32,000	27,000	12,000
Other occupations	154,000	119,000	6,000	12,000	8,000	81,000	12,000	14,000	21,000

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-4

Employment sector of S&E highest degree holders, by level and field of highest degree: 2010

(Percent distribution)

		Education		Business/industry			Government	
	Total	4-year institutions	2-year and precollege institutions	For-profit businesses	Self-employed, unincorporated businesses	Nonprofit businesses	Federal government	State/local government
Highest degree field and level	Number	Percent	Percent	Percent	Percent	Percent	Percent	Percent
All S&E highest degree holders	11,385,000	8.6	6.9	58.6	6.2	7.0	5.4	7.3
Computer and mathematical sciences	1,886,000	6.3	6.6	69.6	4.5	4.8	4.8	3.4
Biological, agricultural, and environmental life sciences	1,764,000	15.8	7.1	48.4	6.3	7.8	6.9	7.5
Physical and related sciences	693,000	16.0	6.8	54.3	5.9	4.3	6.6	6.2
Social and related sciences	4,363,000	7.9	10.4	48.4	7.8	11.2	4.6	9.8
Engineering	2,679,000	4.6	1.5	75.4	4.7	1.9	5.8	6.0
Highest degree: bachelor's	8,160,000	5.0	6.2	62.8	6.3	6.9	4.9	8.0
Computer and mathematical sciences	1,281,000	3.6	5.9	72.4	4.4	5.3	4.4	3.7
Biological, agricultural, and environmental life sciences	1,260,000	9.4	7.1	54.7	7.5	7.3	5.8	8.1
Physical and related sciences	397,000	8.1	6.3	60.5	7.6	3.8	5.8	8.1
Social and related sciences	3,337,000	4.7	8.7	54.4	7.0	10.6	4.2	10.4
Engineering	1,885,000	2.7	1.4	77.0	5.0	1.7	5.5	6.7
Highest degree: master's	2,356,000	9.3	10.7	53.4	5.9	7.7	6.7	6.4
Computer and mathematical sciences	536,000	7.6	8.6	66.4	5.0	3.9	6.0	2.8
Biological, agricultural, and environmental life sciences	258,000	16.3	10.9	38.8	3.9	9.3	11.2	10.1
Physical and related sciences	135,000	13.3	12.6	52.6	4.4	4.4	7.4	5.9
Social and related sciences	789,000	10.6	19.0	32.2	8.7	14.6	5.7	9.0
Engineering	637,000	5.0	1.7	75.2	4.1	2.4	6.6	5.0
Highest degree: doctorate	847,000	41.4	3.4	34.4	5.3	6.5	6.7	2.2
Computer and mathematical sciences	69,000	44.9	2.9	42.0	1.4	2.9	2.9	S
Biological, agricultural, and environmental life sciences	246,000	48.0	3.3	26.4	2.8	8.9	8.1	2.0
Physical and related sciences	161,000	37.3	3.7	41.0	3.1	5.6	7.5	1.9
Social and related sciences	214,000	46.7	5.1	18.2	12.1	7.5	5.6	4.2
Engineering	157,000	26.1	1.3	58.6	3.2	3.2	6.4	1.9

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: All S&E highest degree holders include professional degree holders not reported separately. The 2-year and precollege institutions include 2-year colleges and community colleges or technical institutes and also preschool, elementary, middle, or secondary schools. The 4-year institutions include 4-year colleges or universities, medical schools, and university-affiliated research institutes. The education sector includes public and private institutes. Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-5

Scientists and engineers employed in the business sector, by employer size: 2010

(Percent)

Employer size (employees)	All scientists and engineers	Workers with S&E highest degree	Workers in S&E occupations
≤ 10	20.1	19.0	10.3
11–24	6.8	6.6	4.5
25–99	10.9	11.3	10.2
100–499	13.5	13.6	13.8
500–999	5.9	5.3	5.6
1,000–4,999	13.4	12.1	13.4
5,000–24,999	13.1	13.0	15.7
≥ 25,000	16.4	19.0	26.3

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-6

Scientists and engineers participating in work-related training, by labor force status, highest degree level, and sex: 2010

(Percent)

Labor force status and highest degree level	Total	Female	Male
All scientists and engineers	54.6	57.7	52.0
Employed	63.4	68.7	59.2
Bachelor's	59.0	64.1	55.0
Master's	68.2	75.9	60.9
Professional	81.0	76.4	83.6
Doctorate	53.8	62.2	49.6
Unemployed	29.9	33.1	27.1
Bachelor's	25.5	27.7	23.7
Master's	37.2	40.7	33.3
Professional	50.0	57.7	43.3
Doctorate	23.3	20.0	20.0
Not in labor force	12.5	15.0	9.3
Bachelor's	10.8	12.7	7.8
Master's	14.1	17.7	9.8
Professional	24.2	28.1	21.5
Doctorate	9.3	16.7	5.6

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-7

Most important reason for scientists and engineers to participate in work-related training, by labor force status: 2010

(Percent distribution)

Reason	Total	Labor force status		
		Employed	Unemployed	Not in labor force
All scientists and engineers engaged in work-related training (*n*)	14,688,000	13,894,000	297,000	497,000
All reasons (percent)	100.0	100.0	100.0	100.0
To improve skills or knowledge in current occupational field	51.6	52.6	37.7	30.6
To increase opportunities for promotion/advancement in current occupational field	5.7	5.7	8.8	3.2
For licensure/certification in current occupational field	23.5	23.1	18.9	36.8
To facilitate change to different occupational field	1.7	1.2	17.5	4.6
Required or expected by employer	15.3	15.5	12.8	11.1
For leisure or personal interest	1.8	1.4	3.7	11.9
Other reason	0.5	0.4	1.0	1.8

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Unemployed individuals are those not working but who have looked for a job in the preceding 4 weeks. The question was not asked of those who never worked. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-8

Unemployment rates of scientists and engineers, by level of highest degree and broad occupational category: 2003–10

(Percent)

Degree	2003	2006	2008	2010
All scientists and engineers	3.2	2.5	3.1	4.3
Highest degree level				
Bachelor's	3.4	2.9	3.5	4.9
Master's	3.4	2.3	2.9	4.1
Professional	1.9	1.1	1.8	2.7
Doctorate	2.3	1.6	2.0	2.6
Occupation				
Computer and mathematical scientists	3.7	2.5	3.0	3.7
Biological, agricultural, and environmental life scientists	2.4	2.2	2.4	3.7
Physical and related scientists	2.8	2.3	3.0	3.3
Social and related scientists	1.6	2.5	2.1	2.3
Engineers	3.8	2.4	2.8	4.6
S&E-related occupations	2.0	1.5	1.9	2.5
Non-S&E occupations	3.8	3.0	3.9	5.6

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. For data on unemployment rates by occupation, calculations assume that unemployed individuals are seeking further employment in their most recent occupation.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2003, 2006, 2008, 2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-9

Alternate rates of labor underutilization for S&E and all occupations: March 2008–April 2013

(Percent)

	All occupations (All education levels)						S&E occupations (All education levels)						S&E occupations (Workers with college degrees)					
Date	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6
March 2008	1.7	3.0	5.4	5.6	6.3	9.6	0.7	1.4	2.1	2.1	2.1	2.6	0.8	1.2	1.7	1.7	1.7	2.2
April 2008	1.8	2.8	5.2	5.4	6.0	9.3	0.9	1.3	2.3	2.3	2.3	2.7	0.9	1.2	1.9	1.9	1.9	2.2
May 2008	1.8	2.7	5.2	5.4	6.0	9.3	1.0	1.2	2.3	2.3	2.3	2.8	1.0	1.0	2.0	2.0	2.0	2.3
June 2008	1.9	2.6	5.4	5.6	6.2	9.6	1.1	1.2	2.4	2.4	2.4	2.8	1.0	1.1	2.1	2.1	2.1	2.4
July 2008	1.9	2.7	5.8	6.0	6.7	10.2	0.9	1.2	2.3	2.3	2.3	2.9	0.9	1.1	2.1	2.1	2.1	2.5
August 2008	2.0	2.9	6.1	6.3	7.0	10.7	0.9	1.3	2.3	2.3	2.3	3.1	0.7	1.2	2.0	2.0	2.1	2.7
September 2008	2.1	3.0	6.1	6.4	7.1	10.8	1.1	1.4	2.5	2.5	2.5	3.4	0.9	1.2	2.2	2.2	2.2	2.9
October 2008	2.3	3.2	6.2	6.4	7.1	10.9	1.3	1.8	2.8	2.8	2.8	3.7	1.1	1.6	2.5	2.5	2.5	3.1
November 2008	2.4	3.4	6.3	6.6	7.3	11.3	1.4	2.0	2.9	2.9	2.9	3.8	1.3	1.9	2.8	2.9	2.9	3.4
December 2008	2.6	3.9	6.7	7.0	7.7	12.3	1.4	2.1	2.8	2.8	2.8	3.7	1.3	2.0	2.8	2.8	2.8	3.3
January 2009	2.8	4.6	7.5	7.9	8.6	13.8	1.4	2.5	3.1	3.1	3.1	4.2	1.3	2.4	3.1	3.1	3.1	3.9
February 2009	3.3	5.4	8.3	8.7	9.5	15.1	1.6	3.1	3.7	3.7	3.7	4.8	1.3	2.9	3.6	3.6	3.6	4.5
March 2009	3.7	5.9	8.9	9.3	10.1	16.0	1.8	3.7	4.4	4.4	4.5	5.8	1.6	3.4	4.2	4.2	4.2	5.4
April 2009	4.1	5.9	9.0	9.4	10.1	15.9	2.1	3.9	4.7	4.7	4.7	6.3	1.9	3.6	4.3	4.3	4.3	5.7
May 2009	4.4	5.9	9.0	9.5	10.2	15.9	2.3	4.1	4.9	5.0	5.0	6.6	2.2	3.7	4.4	4.5	4.5	5.9
June 2009	4.7	5.8	9.3	9.7	10.5	16.1	2.6	4.2	5.1	5.2	5.2	6.9	2.5	3.7	4.7	4.7	4.7	6.3
July 2009	4.8	5.9	9.6	10.1	10.9	16.6	3.0	4.4	5.4	5.4	5.4	7.1	2.8	3.9	5.0	5.0	5.0	6.4
August 2009	4.9	6.0	9.8	10.2	11.0	16.8	3.3	4.5	5.5	5.5	5.5	7.2	3.0	4.1	5.1	5.1	5.2	6.8
September 2009	5.1	6.0	9.7	10.1	10.9	16.5	3.7	4.6	5.7	5.7	5.7	7.3	3.4	4.4	5.5	5.5	5.5	7.0
October 2009	5.3	6.0	9.6	10.0	10.9	16.3	3.7	4.5	5.6	5.6	5.6	7.1	3.6	4.5	5.5	5.6	5.6	7.0
November 2009	5.5	6.0	9.5	10.0	10.8	16.3	3.6	4.3	5.4	5.4	5.4	6.8	3.4	4.4	5.3	5.4	5.4	6.6
December 2009	5.6	6.2	9.6	10.1	11.0	16.7	3.2	4.0	4.9	4.9	4.9	6.3	3.0	3.9	4.7	4.7	4.7	5.8
January 2010	5.7	6.5	10.0	10.5	11.3	17.2	3.1	4.0	5.0	5.0	5.0	6.4	2.6	3.6	4.4	4.4	4.4	5.6
February 2010	5.9	6.8	10.3	10.9	11.7	17.7	3.3	4.1	5.1	5.1	5.1	6.7	2.7	3.4	4.3	4.3	4.3	5.7
March 2010	6.1	6.9	10.5	11.1	11.8	17.8	3.6	4.2	5.4	5.4	5.4	6.9	2.9	3.5	4.4	4.4	4.4	6.0
April 2010	6.3	6.6	10.1	10.8	11.5	17.3	3.7	4.0	5.2	5.2	5.2	6.7	3.0	3.4	4.2	4.2	4.2	6.0
May 2010	6.2	6.2	9.8	10.4	11.1	16.8	3.6	3.8	4.9	4.9	4.9	6.2	2.9	3.2	4.0	4.0	4.0	5.5
June 2010	6.0	5.8	9.6	10.2	10.9	16.5	3.4	3.6	4.6	4.6	4.6	6.0	2.9	3.2	4.0	4.0	4.1	5.5
July 2010	5.7	5.7	9.7	10.3	11.0	16.6	3.1	3.5	4.5	4.5	4.5	5.9	2.7	3.1	4.1	4.1	4.1	5.4
August 2010	5.5	5.7	9.7	10.4	11.1	16.7	3.1	3.3	4.4	4.4	4.4	5.9	2.8	2.9	4.0	4.0	4.0	5.3
September 2010	5.4	5.7	9.6	10.3	11.0	16.5	3.0	3.2	4.3	4.3	4.3	5.8	2.7	2.9	4.0	4.0	4.0	5.3
October 2010	5.4	5.6	9.3	10.0	10.8	16.2	3.1	3.4	4.5	4.5	4.5	6.0	2.8	3.0	4.1	4.1	4.1	5.4
November 2010	5.5	5.6	9.2	10.0	10.7	16.2	3.2	3.5	4.6	4.6	4.7	6.1	2.9	3.2	4.2	4.2	4.2	5.6
December 2010	5.5	5.7	9.2	10.0	10.7	16.3	3.3	3.5	4.7	4.7	4.8	6.1	2.9	3.1	4.1	4.1	4.2	5.4
January 2011	5.5	6.0	9.5	10.2	10.9	16.7	3.0	3.1	4.2	4.2	4.2	5.4	2.6	2.6	3.7	3.7	3.7	4.9
February 2011	5.5	6.1	9.5	10.2	11.1	16.9	2.6	2.7	3.7	3.7	3.7	4.8	2.2	2.3	3.3	3.3	3.3	4.4
March 2011	5.6	6.0	9.5	10.1	11.0	16.7	2.1	2.1	3.0	3.0	3.0	4.1	1.7	1.9	2.7	2.7	2.7	3.8
April 2011	5.6	5.7	9.2	9.7	10.6	16.1	1.8	2.0	2.8	2.8	2.8	3.9	1.4	1.8	2.5	2.5	2.5	3.5
May 2011	5.5	5.4	8.9	9.4	10.2	15.7	1.8	1.9	2.8	2.8	2.8	3.7	1.4	1.6	2.3	2.3	2.3	3.2

Appendix table 3-9

Alternate rates of labor underutilization for S&E and all occupations: March 2008–April 2013

(Percent)

	All occupations (All education levels)						S&E occupations (All education levels)						S&E occupations (Workers with college degrees)					
Date	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6
June 2011	5.4	5.2	9.0	9.5	10.3	15.8	1.9	2.1	3.0	3.0	3.0	3.7	1.6	1.8	2.5	2.5	2.5	3.3
July 2011	5.3	5.2	9.2	9.8	10.7	16.1	2.3	2.6	3.5	3.5	3.5	4.2	2.0	2.3	3.1	3.1	3.1	3.9
August 2011	5.2	5.2	9.4	10.0	10.8	16.3	2.6	2.7	3.9	3.9	3.9	4.9	2.5	2.5	3.6	3.7	3.7	4.6
September 2011	5.2	5.1	9.2	9.8	10.6	16.1	2.6	2.8	3.9	3.9	3.9	5.2	2.6	2.6	3.8	3.8	3.8	5.0
October 2011	5.2	5.0	8.9	9.5	10.3	15.7	2.6	2.7	4.0	4.0	4.0	5.3	2.5	2.6	3.7	3.8	3.8	4.9
November 2011	5.1	4.8	8.6	9.2	10.0	15.3	2.3	2.7	3.7	3.7	3.7	4.8	2.2	2.5	3.4	3.4	3.4	4.4
December 2011	4.9	4.9	8.4	9.0	9.8	15.2	2.5	2.9	3.9	3.9	4.0	5.0	2.2	2.7	3.4	3.4	3.4	4.4
January 2012	4.9	5.1	8.5	9.1	10.0	15.5	2.5	2.9	3.9	3.9	4.0	5.1	2.2	2.7	3.5	3.6	3.6	4.6
February 2012	4.9	5.2	8.7	9.3	10.2	15.7	2.8	3.0	4.0	4.0	4.1	5.4	2.3	2.6	3.6	3.6	3.6	4.8
March 2012	5.0	5.1	8.7	9.3	10.2	15.6	2.6	2.8	3.9	3.9	3.9	5.0	2.2	2.4	3.4	3.4	3.4	4.4
April 2012	4.9	4.7	8.3	8.9	9.7	14.8	2.3	2.5	3.3	3.4	3.4	4.5	1.7	1.9	2.8	2.8	2.8	3.9
May 2012	4.8	4.5	8.1	8.6	9.4	14.4	1.9	2.2	3.0	3.0	3.0	4.1	1.4	1.6	2.3	2.3	2.3	3.4
June 2012	4.7	4.3	8.1	8.6	9.5	14.5	1.7	2.0	2.7	2.7	2.7	3.9	1.3	1.6	2.2	2.2	2.2	3.4
July 2012	4.5	4.4	8.4	8.9	9.8	14.9	1.9	2.1	2.9	2.9	2.9	4.0	1.5	1.7	2.5	2.5	2.5	3.6
August 2012	4.4	4.5	8.5	9.0	9.9	15.1	2.1	2.5	3.5	3.5	3.5	4.6	1.9	2.3	3.3	3.3	3.3	4.4
September 2012	4.3	4.3	8.2	8.7	9.6	14.7	2.3	2.6	3.8	3.8	3.8	5.1	2.1	2.3	3.6	3.6	3.6	4.9
October 2012	4.3	4.1	7.8	8.3	9.2	14.3	2.2	2.5	3.6	3.6	3.7	5.0	2.0	2.2	3.4	3.4	3.4	4.6
November 2012	4.3	4.0	7.6	8.1	9.0	14.0	2.1	2.3	3.3	3.3	3.3	4.6	1.8	1.9	3.0	3.0	3.0	4.1
December 2012	4.2	4.1	7.6	8.2	9.0	14.1	2.0	2.1	3.0	3.0	3.0	4.2	1.7	1.8	2.6	2.6	2.6	3.6
January 2013	4.2	4.4	7.9	8.5	9.4	14.6	2.0	2.3	3.2	3.2	3.2	4.4	1.8	1.8	2.9	2.9	2.9	4.0
February 2013	4.3	4.6	8.2	8.7	9.6	14.9	1.9	2.3	3.3	3.3	3.3	4.4	1.7	1.9	3.1	3.1	3.1	4.1
March 2013	4.4	4.6	8.2	8.7	9.5	14.8	1.6	2.3	3.3	3.3	3.3	4.2	1.5	1.9	3.0	3.0	3.0	3.8
April 2013	4.3	4.3	7.7	8.2	9.1	14.1	1.4	2.2	3.0	3.0	3.1	3.8	1.2	1.9	2.7	2.7	2.8	3.4

NOTES: S&E occupations include computer and mathematical scientists; biological, agricultural, and environmental life scientists; physical and related scientists; social and related scientists; and engineers. Postsecondary teachers of S&E fields are not included in S&E occupations since the Current Population Survey (CPS) public use data do not allow for separate identification of S&E postsecondary teachers. Estimates are not seasonally adjusted. Estimates are made from pooled microrecords of the CPS and, while similar, are not the same as the 3-month moving average. See table 3-16 for definitions of rates U1–U6.

SOURCE: Bureau of Labor Statistics, CPS, Public Use Microdata Sample (PUMS), January 2008–April 2013.

Science and Engineering Indicators 2014

Appendix table 3-10

Labor market indicators for recent S&E degree recipients up to 5 years after receiving degree, by degree level: 2010

Indicator and degree level	All scientists and engineers	Recent S&E degree recipients: Received degree between 2005 and 2009[a]	Received degree between 2005 and 2007[b]	Received degree between 2008 and 2009[c]
Unemployment rate (%)				
All degree levels	4.3	6.6	6.0	7.4
Bachelor's	4.9	7.7	7.2	8.5
Master's	4.1	4.0	2.6	5.4
Doctorate	2.6	1.6	1.5	1.9
Involuntarily out-of-field rate (%)				
All degree levels	6.4	10.8	9.5	12.6
Bachelor's	8.8	13.5	11.5	15.8
Master's	4.0	4.7	4.2	5.1
Doctorate	2.9	1.7	1.5	1.9
Median annual salary ($)				
All degree levels	65,000	40,000	45,000	35,000
Bachelor's	57,000	35,000	41,000	30,000
Master's	68,000	55,000	59,000	50,000
Doctorate	85,000	60,000	65,000	56,000

[a] Includes degrees earned from October 2005 to October 2009.
[b] Includes degrees earned from October 2005 to December 2007.
[c] Includes degrees earned from January 2008 to October 2009.

NOTES: Median annual salaries are rounded to the nearest $1,000. All degree levels include professional degrees not broken out separately. Involuntarily out-of-field rate is the proportion of all employed individuals who report that their job is not related to their field of highest degree because a job in their highest degree field was not available.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-11

Postgraduation plans of doctorate recipients with definite commitments, by broad field of study: Selected years, 1991–2011

Definite commitment and plan	All fields	Life sciences[a]	Physical sciences[b]	Social sciences[c]	Engineering	Education	Humanities	Other[d]
	Number							
All definite commitments								
1991	24,217	4,798	4,034	4,041	2,871	4,462	2,306	1,705
1996	26,077	5,435	4,081	4,175	3,654	4,484	2,625	1,623
2001	27,052	5,630	4,133	4,631	3,642	4,215	3,231	1,570
2006	30,105	6,473	5,081	4,835	4,353	4,226	3,263	1,874
2011	29,332	6,635	5,556	5,042	4,667	2,901	2,733	1,798
Reported type of plan								
1991	24,114	4,788	4,029	4,032	2,861	4,419	2,289	1,696
1996	26,031	5,427	4,075	4,166	3,648	4,477	2,619	1,619
2001	26,906	5,612	4,122	4,607	3,628	4,183	3,197	1,557
2006	29,500	6,333	5,020	4,742	4,292	4,107	3,174	1,832
2011	27,750	6,315	5,351	4,763	4,411	2,724	2,527	1,659
	Percent[e]							
Employment								
1991	72.5	37.6	51.5	82.6	78.9	96.1	93.0	97.1
1996	70.5	35.2	50.1	77.8	77.5	97.2	92.7	96.4
2001	71.0	39.1	55.3	73.8	81.1	94.1	90.3	93.7
2006	66.1	35.5	48.1	71.0	70.4	95.1	89.1	94.2
2011	57.3	30.7	41.8	63.0	59.0	92.1	82.7	92.3
Postdoctoral study								
1991	27.5	62.4	48.5	17.4	21.1	3.9	7.0	2.9
1996	29.5	64.8	49.9	22.2	22.5	2.8	7.3	3.6
2001	29.0	60.9	44.7	26.2	18.9	5.9	9.7	6.3
2006	33.9	64.5	51.9	29.0	29.6	4.9	10.9	5.8
2011	42.7	69.3	58.2	37.0	41.0	7.9	17.3	7.7

[a] Includes agricultural sciences/natural resources, biological/biomedical sciences, and health sciences.
[b] Includes mathematics and computer and information sciences.
[c] Includes psychology.
[d] Non-S&E fields are not shown separately.
[e] Percentages are based on the number reporting definite postgraduation commitments with response to type of plan (employment or postdoctoral study).

SOURCE: National Science Foundation, National Institutes of Health, U.S. Department of Agriculture, National Endowment for the Humanities, National Aeronautics and Space Administration, Survey of Earned Doctorates (SED), *Doctorate Recipients from U.S. Universities: 2011*, http://www.nsf.gov/statistics/sed/2011/data_table.cfm.

Science and Engineering Indicators 2014

Appendix table 3-12

Age profile of employed scientists and engineers, by sex and field of highest degree: 2010

S&E highest degree field	Total				Female				Male			
	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)
Total	21,903,000	13.4	53.8	32.9	9,765,000	15.9	54.2	29.9	12,138,000	11.3	53.4	35.3
S&E fields	11,385,000	16.4	53.7	29.9	4,248,000	20.5	53.7	25.8	7,138,000	14.1	53.6	32.3
Computer and mathematical sciences	1,886,000	14.2	63.8	22.0	519,000	12.5	63.8	23.7	1,366,000	14.8	63.9	21.3
Computer and information sciences	1,393,000	14.9	69.2	16.0	343,000	11.7	70.6	17.8	1,050,000	15.9	68.7	15.4
Mathematics and statistics	492,000	12.4	49.0	38.8	176,000	14.2	50.6	35.2	316,000	11.1	48.1	40.8
Biological, agricultural, and environmental life sciences	1,764,000	17.3	48.9	33.8	838,000	22.1	49.9	28.0	926,000	13.0	48.1	39.0
Agricultural and food sciences	301,000	10.0	45.5	44.5	92,000	17.4	48.9	33.7	209,000	6.7	44.0	49.3
Biological sciences	1,299,000	19.6	48.6	31.9	696,000	22.8	49.4	27.7	603,000	15.8	47.6	36.8
Environmental life sciences	164,000	12.2	57.9	29.3	50,000	20.0	58.0	22.0	113,000	9.7	58.4	32.7
Physical and related sciences	693,000	11.8	51.5	36.7	190,000	19.5	57.9	22.1	503,000	8.9	49.1	41.9
Chemistry, except biochemistry	312,000	14.1	49.0	37.2	104,000	24.0	53.8	22.1	208,000	8.7	46.6	44.2
Earth, atmospheric, and ocean sciences	184,000	9.2	52.7	38.0	51,000	13.7	68.6	19.6	133,000	7.5	47.4	45.1
Physics and astronomy	166,000	12.0	54.8	33.7	23,000	17.4	60.9	21.7	143,000	11.2	53.8	35.7
Other physical sciences	30,000	3.3	53.3	43.3	11,000	9.1	54.5	45.5	19,000	5.3	52.6	42.1
Social and related sciences	4,363,000	19.3	50.0	30.7	2,333,000	21.9	50.7	27.3	2,030,000	16.3	49.3	34.5
Economics	729,000	14.4	53.1	32.4	186,000	19.4	55.9	24.7	543,000	12.9	52.1	35.0
Political and related sciences	729,000	23.7	49.1	27.2	282,000	29.1	50.4	20.6	446,000	20.4	48.4	31.4
Psychology	1,661,000	19.4	49.5	31.0	1,157,000	21.1	51.4	27.6	504,000	15.7	45.2	39.1
Sociology and anthropology	738,000	19.0	50.5	30.6	434,000	21.0	50.0	29.0	304,000	16.1	51.3	32.9
Other social sciences	507,000	19.9	47.7	32.1	274,000	21.9	45.3	32.8	233,000	18.0	50.6	31.8
Engineering	2,679,000	14.0	56.1	29.9	367,000	19.1	65.7	15.3	2,312,000	13.2	54.6	32.1
Aerospace, aeronautical, and astronautical engineering	106,000	14.2	61.3	24.5	9,000	22.2	66.7	S	98,000	13.3	60.2	26.5
Chemical engineering	178,000	11.2	55.1	33.7	43,000	16.3	65.1	18.6	135,000	9.6	51.9	38.5
Civil and architectural engineering	407,000	12.0	54.1	33.9	64,000	17.2	62.5	21.9	343,000	11.1	52.5	36.2
Electrical and computer engineering	914,000	15.0	60.3	24.7	109,000	19.3	69.7	11.0	804,000	14.4	59.0	26.6
Industrial engineering	159,000	11.3	61.0	28.3	34,000	14.7	76.5	11.8	125,000	10.4	56.8	32.8
Mechanical engineering	544,000	15.6	53.3	31.1	44,000	22.7	63.6	13.6	499,000	15.0	52.7	32.5
Other engineering	371,000	14.3	49.1	36.7	63,000	23.8	58.7	19.0	308,000	12.3	47.4	40.3
S&E-related fields	5,273,000	11.1	52.8	36.1	3,151,000	13.9	53.3	32.8	2,122,000	7.0	52.1	40.9
Health	4,147,000	11.0	52.8	36.2	2,777,000	13.8	53.2	33.0	1,370,000	5.3	52.1	42.6
Science and mathematics teacher education	352,000	11.6	47.4	40.9	203,000	12.3	49.3	38.4	149,000	10.7	45.6	44.3
Technology and technical fields	426,000	11.5	57.5	31.0	60,000	S	51.7	20.0	366,000	9.0	58.5	32.8
Other S&E-related fields	347,000	11.5	51.6	36.9	111,000	10.8	63.1	26.1	236,000	11.9	46.2	41.9
Non-S&E fields	5,245,000	8.9	54.9	36.1	2,367,000	10.5	56.1	33.4	2,878,000	7.7	53.9	38.4
Management and administration fields	1,745,000	6.2	58.2	35.6	567,000	8.8	57.5	33.7	1,178,000	5.0	58.6	36.5
Education, except science and math teacher education	1,129,000	8.1	51.4	40.4	670,000	9.1	53.7	37.2	459,000	6.8	47.9	45.1
Social service and related fields	383,000	9.4	44.9	45.7	213,000	6.6	46.0	47.4	170,000	12.9	43.5	43.5

Appendix table 3-12

Age profile of employed scientists and engineers, by sex and field of highest degree: 2010

	Total				Female				Male			
S&E highest degree field	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)	Number	Age < 30 (%)	Age 30–50 (%)	Age 51–75 (%)
Sales and marketing fields	152,000	21.7	51.3	27.0	66,000	S	51.5	21.2	86,000	S	51.2	31.4
Arts and humanities fields	554,000	9.6	59.9	30.5	260,000	7.7	52.7	39.6	293,000	11.3	66.2	22.5
Other non-S&E fields	1,283,000	11.5	54.8	33.7	591,000	14.6	63.3	22.2	692,000	8.8	47.5	43.6

S = suppressed for reasons of reliability and/or confidentiality.

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Percentages are based on rounded numbers. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-13

Employed scientists and engineers, by sex and occupation: 2010

Occupation	Total	Female		Male	
		Number	Percent	Number	Percent
All occupations	21,903,000	9,765,000	44.6	12,138,000	55.4
S&E occupations	5,398,000	1,487,000	27.5	3,911,000	72.5
Computer and mathematical scientists	2,394,000	602,000	25.1	1,791,000	74.8
Computer and information scientists	2,179,000	509,000	23.4	1,670,000	76.6
Computer and information scientists, research	35,000	12,000	34.3	23,000	65.7
Computer network architect	42,000	2,000	4.8	40,000	95.2
Computer support specialists	219,000	67,000	30.6	152,000	69.4
Computer system analysts	325,000	97,000	29.8	228,000	70.2
Database administrators	107,000	30,000	28.0	78,000	72.9
Information security analysts	37,000	6,000	16.2	31,000	83.8
Network and computer systems administrators	181,000	24,000	13.3	157,000	86.7
Software developers—applications and systems software	431,000	88,000	20.4	343,000	79.6
Web developers	130,000	47,000	36.2	83,000	63.8
Other computer information science occupations	236,000	75,000	31.8	161,000	68.2
Computer engineers—software	435,000	61,000	14.0	374,000	86.0
Mathematical scientists	121,000	55,000	45.5	66,000	54.5
Mathematicians	12,000	S	S	3,000	S
Operations research analysts, including modeling	53,000	21,000	39.6	32,000	60.4
Statisticians	41,000	22,000	53.7	19,000	46.3
Other mathematical scientists	S	3,000	S	S	S
Postsecondary teachers—computer and mathematical sciences	94,000	38,000	40.4	56,000	59.6
Computer science	25,000	8,000	32.0	17,000	68.0
Mathematics and statistics	69,000	30,000	43.5	39,000	56.5
Biological, agricultural, and environmental life scientists	597,000	288,000	48.2	309,000	51.8
Agricultural and food scientists	62,000	23,000	37.1	39,000	62.9
Biological and medical scientists	426,000	223,000	52.3	204,000	47.9
Biochemists and biophysicists	58,000	24,000	41.4	34,000	58.6
Biological scientists (e.g., botanists, ecologists, zoologists)	129,000	64,000	49.6	65,000	50.4
Medical scientists (excluding practitioners)	130,000	64,000	49.2	67,000	51.5
Other biological and life scientists	109,000	71,000	65.1	38,000	34.9
Forestry and conservation scientists	31,000	10,000	32.3	21,000	67.7
Postsecondary teachers—life and related sciences	77,000	32,000	41.6	45,000	58.4
Agriculture	6,000	2,000	33.3	4,000	66.7
Biological sciences	62,000	27,000	43.5	34,000	54.8
Other natural sciences	9,000	3,000	33.3	6,000	66.7
Physical and related scientists	320,000	96,000	30.0	225,000	70.3
Chemists, except biochemists	103,000	37,000	35.9	66,000	64.1
Earth scientists, geologists, and oceanographers	69,000	16,000	23.2	53,000	76.8
Atmospheric and space scientists	14,000	2,000	14.3	12,000	85.7
Geologists, including earth scientists	50,000	13,000	26.0	38,000	76.0
Oceanographers	5,000	1,000	20.0	3,000	60.0
Physicists and astronomers	34,000	6,000	17.6	28,000	82.4
Astronomers	4,000	1,000	25.0	3,000	75.0
Physicists, except biophysicists	31,000	5,000	16.1	25,000	80.6
Other physical and related scientists	46,000	16,000	34.8	30,000	65.2
Postsecondary teachers—physical and related sciences	67,000	20,000	29.9	47,000	70.1
Chemistry	29,000	9,000	31.0	20,000	69.0
Earth, environmental, and marine science	19,000	8,000	42.1	11,000	57.9
Physics	19,000	3,000	15.8	16,000	84.2
Social and related scientists	518,000	301,000	58.1	217,000	41.9
Economists	30,000	11,000	36.7	19,000	63.3
Political scientists	23,000	S	S	6,000	26.1
Psychologists, including clinical	171,000	119,000	69.6	52,000	30.4
Sociologists and anthropologists	18,000	9,000	50.0	9,000	50.0
Anthropologists	11,000	4,000	36.4	6,000	54.5

Appendix table 3-13

Employed scientists and engineers, by sex and occupation: 2010

Occupation	Total	Female		Male	
		Number	Percent	Number	Percent
Sociologists	8,000	5,000	62.5	3,000	37.5
Other social and related scientists	126,000	74,000	58.7	52,000	41.3
Postsecondary teachers—social and related sciences	150,000	72,000	48.0	78,000	52.0
Economics	19,000	5,000	26.3	14,000	73.7
Political science	18,000	5,000	27.8	13,000	72.2
Psychology	38,000	22,000	57.9	16,000	42.1
Sociology	19,000	10,000	52.6	8,000	42.1
Other social sciences	56,000	29,000	51.8	27,000	48.2
Engineers	1,569,000	200,000	12.7	1,369,000	87.3
Aerospace, aeronautical, or astronautical engineers	91,000	10,000	11.0	81,000	89.0
Chemical engineers	69,000	13,000	18.8	55,000	79.7
Civil, architectural, or sanitary engineers	228,000	34,000	14.9	193,000	84.6
Electrical or computer hardware engineers	385,000	46,000	11.9	340,000	88.3
Computer engineer—hardware	70,000	15,000	21.4	55,000	78.6
Electrical and electronics engineers	316,000	31,000	9.8	285,000	90.2
Industrial engineers	74,000	13,000	17.6	61,000	82.4
Mechanical engineers	299,000	22,000	7.4	277,000	92.6
Other engineers	380,000	56,000	14.7	324,000	85.3
Agricultural engineers	7,000	S	S	7,000	100.0
Bioengineers or biomedical engineers	22,000	4,000	18.2	17,000	77.3
Environmental engineers	64,000	17,000	26.6	47,000	73.4
Marine engineers and naval architects	10,000	1,000	10.0	10,000	100.0
Materials and metallurgical engineers	32,000	4,000	12.5	28,000	87.5
Mining and geological engineers	7,000	1,000	14.3	6,000	85.7
Nuclear engineers	21,000	4,000	19.0	17,000	81.0
Petroleum engineers	19,000	2,000	10.5	16,000	84.2
Sales engineers	63,000	6,000	9.5	56,000	88.9
Other engineers	136,000	17,000	12.5	119,000	87.5
Postsecondary teachers—engineering	43,000	5,000	11.6	38,000	88.4
S&E-related occupations	6,957,000	3,898,000	56.0	3,059,000	44.0
Health-related occupations	4,325,000	2,953,000	68.3	1,373,000	31.7
Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)	1,051,000	375,000	35.7	676,000	64.3
Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners	1,977,000	1,655,000	83.7	322,000	16.3
Health technologists and technicians (e.g., dental hygienists, health record technicians, licensed practical nurses, laboratory/radiology technicians)	504,000	368,000	73.0	136,000	27.0
Other health occupations	652,000	460,000	70.6	191,000	29.3
Postsecondary teachers—health and related sciences	141,000	94,000	66.7	47,000	33.3
S&E managers	861,000	260,000	30.2	601,000	69.8
Computer and information systems managers	237,000	65,000	27.4	172,000	72.6
Engineering managers	272,000	33,000	12.1	239,000	87.9
Medical and health services managers	309,000	153,000	49.5	156,000	50.5
Natural sciences managers	43,000	9,000	20.9	34,000	79.1
S&E precollege teachers	917,000	480,000	52.3	437,000	47.7
Secondary—computer, math, or sciences	618,000	382,000	61.8	236,000	38.2
Secondary—social sciences	299,000	98,000	32.8	202,000	67.6
S&E technicians and technologists	654,000	157,000	24.0	497,000	76.0
Technologists and technicians in the biological/life sciences	92,000	56,000	60.9	36,000	39.1
Computer programmers (business, scientific, process control)	189,000	59,000	31.2	130,000	68.8
Electrical, electronic, industrial, and mechanical technicians	165,000	8,000	4.8	157,000	95.2
Drafting occupations, including computer drafting	32,000	5,000	15.6	27,000	84.4
Surveying and mapping technicians	8,000	2,000	25.0	6,000	75.0
Other engineering technologists and technicians	118,000	20,000	16.9	99,000	83.9

Appendix table 3-13

Employed scientists and engineers, by sex and occupation: 2010

Occupation	Total	Female		Male	
		Number	Percent	Number	Percent
Surveyors, cartographers, photogrammetrists	15,000	S	S	13,000	86.7
Technologists and technicians in the mathematical sciences	S	S	S	S	S
Technologists and technicians in the physical sciences	31,000	4,000	12.9	27,000	87.1
Other S&E-related occupations	199,000	48,000	24.1	150,000	75.4
Architects	158,000	33,000	20.9	124,000	78.5
Actuaries	41,000	15,000	36.6	26,000	63.4
Non-S&E occupations	9,549,000	4,380,000	45.9	5,169,000	54.1
Non-S&E managers	1,655,000	405,000	24.5	1,250,000	75.5
Top-level managers, executives, administrators (e.g., chief executive officer/chief operating officer/chief financial officer, president, district/general manager/provost)	1,014,000	214,000	21.1	800,000	78.9
Education administrators (e.g., registrar, dean, principal)	116,000	48,000	41.4	69,000	59.5
Other mid-level managers	524,000	143,000	27.3	381,000	72.7
Management-related occupations	1,665,000	740,000	44.4	925,000	55.6
Accountants, auditors, and other financial specialists	587,000	234,000	39.9	353,000	60.1
Personnel, training, and labor relations specialists	217,000	148,000	68.2	69,000	31.8
Other management-related occupations	860,000	358,000	41.6	502,000	58.4
Non-S&E precollege teachers	763,000	599,000	78.5	164,000	21.5
Prekindergarten and kindergarten	78,000	73,000	93.6	5,000	6.4
Elementary	310,000	263,000	84.8	47,000	15.2
Secondary—other subjects	138,000	79,000	57.2	59,000	42.8
Special education—primary and secondary	162,000	134,000	82.7	28,000	17.3
Other precollegiate area	75,000	50,000	66.7	26,000	34.7
Non-S&E postsecondary teachers	159,000	77,000	48.4	82,000	51.6
Art, drama, and music	7,000	3,000	42.9	4,000	57.1
Business, commerce, and marketing	30,000	8,000	26.7	22,000	73.3
Education	28,000	18,000	64.3	10,000	35.7
English	16,000	13,000	81.3	3,000	18.8
Foreign language	12,000	7,000	58.3	6,000	50.0
History	10,000	3,000	30.0	7,000	70.0
Physical education	5,000	S	S	4,000	80.0
Other postsecondary fields	52,000	25,000	48.1	26,000	50.0
Social services and related occupations	747,000	533,000	71.4	214,000	28.6
Clergy and other religious workers	101,000	34,000	33.7	68,000	67.3
Counselors (e.g., educational, vocational, mental health, and substance abuse)	339,000	259,000	76.4	81,000	23.9
Social workers	307,000	241,000	78.5	66,000	21.5
Sales and marketing occupations	1,351,000	515,000	38.1	836,000	61.9
Insurance, securities, real estate, and business services	393,000	135,000	34.4	258,000	65.6
Sales—commodities, except retail (e.g., industrial/medical/dental machinery, equipment, supplies)	216,000	58,000	26.9	157,000	72.7
Sales—retail (e.g., furnishings, clothing, motor vehicles, cosmetics)	295,000	139,000	47.1	156,000	52.9
Other marketing and sales occupations	448,000	184,000	41.1	264,000	58.9
Arts, humanities, and related occupations	296,000	149,000	50.3	148,000	50.0
Writers, editors, public relations specialists, artists, entertainers, broadcasters	291,000	146,000	50.2	144,000	49.5
Historians	6,000	3,000	50.0	3,000	50.0
Other non-S&E occupations	2,912,000	1,362,000	46.8	1,550,000	53.2
Accounting clerks and bookkeepers	113,000	91,000	80.5	22,000	19.5
Secretaries, receptionists, typists	171,000	155,000	90.6	16,000	9.4
Other administrative (e.g., record clerks, telephone operators)	373,000	259,000	69.4	114,000	30.6
Farmers, foresters, and fishermen	95,000	21,000	22.1	73,000	76.8
Lawyers, judges	614,000	232,000	37.8	382,000	62.2
Librarians, archivists, curators	62,000	46,000	74.2	16,000	25.8
Food preparation and service (e.g., cooks, waitresses, bartenders)	154,000	78,000	50.6	76,000	49.4

Appendix table 3-13

Employed scientists and engineers, by sex and occupation: 2010

Occupation	Total	Female		Male	
		Number	Percent	Number	Percent
Protective services (e.g., firefighters, police, guards, wardens, park rangers)	148,000	22,000	14.9	126,000	85.1
Other service occupations, except health (e.g., probation officers, human services work)	366,000	201,000	54.9	165,000	45.1
Other teachers and instructors (e.g., private tutors, dance, flying, martial arts)	177,000	114,000	64.4	63,000	35.6
Construction and extraction occupations	106,000	5,000	4.7	101,000	95.3
Installation, maintenance, and repair occupations	107,000	7,000	6.5	100,000	93.5
Precision/production occupations (e.g., metal/wood workers, butchers, bakers, assemblers, tailors)	110,000	27,000	24.5	84,000	76.4
Transportation and material moving occupations	162,000	18,000	11.1	144,000	88.9
Other occupations	154,000	85,000	55.2	69,000	44.8

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-related occupation. Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-14

Employed S&E highest degree holders, by sex and field of degree: 2010

Field of S&E highest degree	Total	Female		Male	
		Number	Percent	Number	Percent
All S&E highest degree	11,385,000	4,248,000	37.3	7,138,000	62.7
Computer and mathematical sciences	1,886,000	519,000	27.5	1,366,000	72.4
Computer and information sciences	1,393,000	343,000	24.6	1,050,000	75.4
Computer and information sciences, general	277,000	62,000	22.4	215,000	77.6
Computer science	742,000	162,000	21.8	580,000	78.2
Computer systems analysis	31,000	9,000	29.0	22,000	71.0
Information services and systems	261,000	88,000	33.7	173,000	66.3
Other computer and information sciences	82,000	23,000	28.0	59,000	72.0
Mathematics and statistics	492,000	176,000	35.8	316,000	64.2
Applied mathematics	65,000	26,000	40.0	39,000	60.0
Mathematics, general	321,000	121,000	37.7	200,000	62.3
Operations research	34,000	5,000	14.7	29,000	85.3
Statistics	46,000	17,000	37.0	29,000	63.0
Other mathematics	25,000	6,000	24.0	20,000	80.0
Biological, agricultural, and environmental life sciences	1,764,000	838,000	47.5	926,000	52.5
Agricultural and food sciences	301,000	92,000	30.6	209,000	69.4
Animal sciences	102,000	35,000	34.3	67,000	65.7
Food sciences and technology	39,000	23,000	59.0	16,000	41.0
Plant sciences	99,000	26,000	26.3	72,000	72.7
Other agricultural sciences	62,000	7,000	11.3	54,000	87.1
Biological sciences	1,299,000	696,000	53.6	603,000	46.4
Biochemistry and biophysics	118,000	47,000	39.8	72,000	61.0
Biology, general	591,000	328,000	55.5	263,000	44.5
Botany	22,000	9,000	40.9	13,000	59.1
Cell and molecular biology	74,000	39,000	52.7	35,000	47.3
Ecology	66,000	26,000	39.4	40,000	60.6
Genetics, animal and plant	21,000	10,000	47.6	11,000	52.4
Microbiological sciences and immunology	96,000	60,000	62.5	37,000	38.5
Nutritional sciences	58,000	54,000	93.1	5,000	8.6
Pharmacology, human and animal	22,000	11,000	50.0	11,000	50.0
Physiology and pathology, human and animal	55,000	30,000	54.5	24,000	43.6
Zoology, general	68,000	28,000	41.2	41,000	60.3
Other biological sciences	107,000	54,000	50.5	53,000	49.5
Environmental life sciences	164,000	50,000	30.5	113,000	68.9
Environmental science or studies	106,000	41,000	38.7	65,000	61.3
Forestry sciences	57,000	9,000	15.8	49,000	86.0
Physical and related sciences	693,000	190,000	27.4	503,000	72.6
Chemistry, except biochemistry	312,000	104,000	33.3	208,000	66.7
Earth, atmospheric, and ocean sciences	184,000	51,000	27.7	133,000	72.3
Atmospheric sciences and meteorology	28,000	S	S	18,000	64.3
Earth sciences	32,000	11,000	34.4	21,000	65.6
Geology	92,000	22,000	23.9	70,000	76.1
Geological sciences, other	21,000	4,000	19.0	17,000	81.0
Oceanography	10,000	3,000	30.0	7,000	70.0
Physics and astronomy	166,000	23,000	13.9	143,000	86.1
Astronomy and astrophysics	14,000	2,000	14.3	12,000	85.7
Physics	152,000	21,000	13.8	131,000	86.2
Other physical sciences	30,000	11,000	36.7	19,000	63.3
Other physical sciences	27,000	10,000	37.0	17,000	63.0
Science, unclassified	3,000	S	S	S	S
Social and related sciences	4,363,000	2,333,000	53.5	2,030,000	46.5
Economics	729,000	186,000	25.5	543,000	74.5
Agricultural economics	72,000	14,000	19.4	57,000	79.2
Economics	657,000	171,000	26.0	486,000	74.0
Political and related sciences	729,000	282,000	38.7	446,000	61.2

Appendix table 3-14

Employed S&E highest degree holders, by sex and field of degree: 2010

Field of S&E highest degree	Total	Female		Male	
		Number	Percent	Number	Percent
Public policy studies	43,000	25,000	58.1	18,000	41.9
International relations	137,000	64,000	46.7	72,000	52.6
Political science and government	549,000	193,000	35.2	356,000	64.8
Psychology	1,661,000	1,157,000	69.7	504,000	30.3
Educational psychology	98,000	81,000	82.7	18,000	18.4
Clinical psychology	153,000	98,000	64.1	55,000	35.9
Counseling psychology	237,000	178,000	75.1	59,000	24.9
Experimental psychology	39,000	20,000	51.3	19,000	48.7
General psychology	883,000	617,000	69.9	266,000	30.1
Industrial/organizational psychology	44,000	23,000	52.3	21,000	47.7
Social psychology	72,000	48,000	66.7	24,000	33.3
Other psychology	135,000	94,000	69.6	41,000	30.4
Sociology and anthropology	738,000	434,000	58.8	304,000	41.2
Anthropology and archaeology	134,000	75,000	56.0	59,000	44.0
Criminology	68,000	23,000	33.8	45,000	66.2
Sociology	536,000	337,000	62.9	200,000	37.3
Other social sciences	507,000	274,000	54.0	233,000	46.0
Area and ethnic studies	91,000	57,000	62.6	34,000	37.4
Linguistics	57,000	38,000	66.7	19,000	33.3
Philosophy of science	17,000	S	S	11,000	64.7
Geography	113,000	38,000	33.6	75,000	66.4
History of science	12,000	4,000	33.3	8,000	66.7
Other social sciences	217,000	130,000	59.9	87,000	40.1
Engineering	2,679,000	367,000	13.7	2,312,000	86.3
Aerospace, aeronautical, and astronautical engineering	106,000	9,000	8.5	98,000	92.5
Chemical engineering	178,000	43,000	24.2	135,000	75.8
Civil and architectural engineering	407,000	64,000	15.7	343,000	84.3
Architectural engineering	33,000	8,000	24.2	26,000	78.8
Civil engineering	374,000	57,000	15.2	317,000	84.8
Electrical and computer engineering	914,000	109,000	11.9	804,000	88.0
Computer and systems engineering	212,000	26,000	12.3	186,000	87.7
Electrical, electronics, and communications engineering	702,000	84,000	12.0	618,000	88.0
Industrial and manufacturing engineering	159,000	34,000	21.4	125,000	78.6
Mechanical engineering	544,000	44,000	8.1	499,000	91.7
Other engineering	371,000	63,000	17.0	308,000	83.0
Agricultural engineering	29,000	3,000	10.3	26,000	89.7
Bioengineering and biomedical engineering	34,000	12,000	35.3	22,000	64.7
Engineering sciences, mechanics, and physics	33,000	3,000	9.1	30,000	90.9
Environmental engineering	43,000	13,000	30.2	30,000	69.8
Engineering, general	39,000	5,000	12.8	34,000	87.2
Geophysical and geological engineering	9,000	3,000	33.3	6,000	66.7
Materials engineering, including ceramics and textiles	40,000	8,000	20.0	32,000	80.0
Metallurgical engineering	14,000	1,000	7.1	13,000	92.9
Mining and minerals engineering	9,000	S	S	8,000	88.9
Naval architecture and marine engineering	15,000	S	S	15,000	100.0
Nuclear engineering	15,000	2,000	13.3	13,000	86.7
Petroleum engineering	17,000	2,000	11.8	14,000	82.4
Other engineering	75,000	11,000	14.7	64,000	85.3

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-15

Employed S&E highest degree holders, by sex, race, ethnicity, field of highest degree, and broad occupational category: 2010

(Percent)

Sex, race, ethnicity, and field of highest degree	S&E occupations			S&E-related occupations	Non-S&E occupations
	All S&E	In field	Out of field		
All employed S&E highest degree holders	35.1	26.9	8.2	13.9	51.0
Female					
All S&E fields	24.1	19.2	5.0	16.1	59.8
Computer and mathematical sciences	44.4	42.6	1.8	17.9	37.7
Biological, agricultural, and environmental life sciences	27.1	21.6	5.5	35.1	37.8
Physical and related sciences	42.6	27.7	15.0	22.2	35.2
Social and related sciences	11.9	8.8	3.1	8.6	79.5
Engineering	56.6	42.0	14.6	15.1	28.3
Male					
All S&E fields	41.7	31.6	10.1	12.6	45.7
Computer and mathematical sciences	57.2	54.1	3.1	15.5	27.3
Biological, agricultural, and environmental life sciences	32.6	23.2	9.5	18.0	49.4
Physical and related sciences	54.0	31.6	22.4	12.2	33.7
Social and related sciences	13.8	7.1	6.8	6.4	79.8
Engineering	57.9	43.1	14.7	14.2	27.9
Asian					
All S&E fields	51.0	37.0	14.0	16.0	33.0
Computer and mathematical sciences	61.7	59.7	2.0	15.6	22.7
Biological, agricultural, and environmental life sciences	40.8	32.8	8.0	33.2	25.9
Physical and related sciences	59.9	30.1	29.7	12.5	27.6
Social and related sciences	13.6	7.7	5.8	6.6	79.9
Engineering	64.3	37.4	26.9	15.2	20.4
American Indian or Alaska Native					
All S&E fields	24.2	21.7	S	23.9	52.0
Computer and mathematical sciences	S	S	S	S	65.2
Biological, agricultural, and environmental life sciences	S	S	S	50.1	S
Physical and related sciences	59.1	54.2	S	S	S
Social and related sciences	5.0	4.8	S	S	80.3
Engineering	57.8	52.9	S	S	17.0
Black					
All S&E fields	25.8	19.8	5.9	14.1	60.1
Computer and mathematical sciences	43.2	40.9	2.4	18.5	38.3
Biological, agricultural, and environmental life sciences	21.2	14.7	6.5	36.8	42.0
Physical and related sciences	46.2	32.6	13.6	19.4	34.4
Social and related sciences	9.9	5.1	4.8	8.1	82.0
Engineering	55.0	41.4	13.6	11.2	33.8
Hispanic, any race					
All S&E fields	28.7	23.2	5.5	13.5	57.8
Computer and mathematical sciences	45.9	43.1	2.8	14.1	40.0
Biological, agricultural, and environmental life sciences	23.8	20.2	3.7	28.3	47.9
Physical and related sciences	48.6	31.1	17.5	18.1	33.3
Social and related sciences	9.8	6.8	2.9	8.2	82.1
Engineering	51.3	40.9	10.3	13.3	35.4
White					
All S&E fields	33.5	26.0	7.5	13.5	53.0
Computer and mathematical sciences	52.8	49.7	3.0	16.3	31.0
Biological, agricultural, and environmental life sciences	29.3	21.4	7.9	24.3	46.4
Physical and related sciences	49.4	30.4	19.1	15.0	35.6
Social and related sciences	13.3	8.4	4.9	7.5	79.2
Engineering	56.4	45.0	11.4	14.2	29.4
Native Hawaiian or Other Pacific Islander					
All S&E fields	28.1	20.1	8.1	16.9	55.0
Computer and mathematical sciences	55.1	46.6	S	S	39.9
Biological, agricultural, and environmental life sciences	S	S	S	S	78.7

Appendix table 3-15

Employed S&E highest degree holders, by sex, race, ethnicity, field of highest degree, and broad occupational category: 2010

(Percent)

Sex, race, ethnicity, and field of highest degree	S&E occupations			S&E-related occupations	Non-S&E occupations
	All S&E	In field	Out of field		
Physical and related sciences	42.0	S	S	S	S
Social and related sciences	21.0	S	S	17.8	61.2
Engineering	52.3	42.3	10.1	20.5	27.2
More than one race					
All S&E fields	34.8	24.4	10.4	12.8	52.3
Computer and mathematical sciences	57.1	51.2	5.9	19.0	23.9
Biological, agricultural, and environmental life sciences	38.8	27.5	11.3	23.5	37.7
Physical and related sciences	52.1	34.3	17.8	16.6	31.3
Social and related sciences	13.9	8.2	5.7	6.0	80.1
Engineering	65.3	42.9	22.4	16.9	17.8

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers. Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin. For each broad S&E highest degree field, S&E occupations in field includes individuals who report being in an occupation in the same broad category as their highest degree and S&E occupations but out of field includes those who report being in an occupation not in the same broad category as their highest degree. For example, for highest degree holders in computer/mathematical sciences, S&E occupation (in field) includes those who report computer or mathematical sciences as their occupation, and S&E occupation (but out of field) includes those who report an S&E occupation other than computer or mathematical sciences occupations, that is, report biological/agricultural/environmental life sciences, physical sciences, social sciences, or engineering as their occupation.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-16

Employed scientists and engineers, by race, ethnicity, and occupation: 2010

Occupation	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All occupations	21,903,000	2,542,000	11.6	58,000	0.3	1,318,000	6.0	1,468,000	6.7	16,155,000	73.8	69,000	0.3	294,000	1.3
S&E occupations	5,398,000	997,000	18.5	10,000	0.2	246,000	4.6	282,000	5.2	3,772,000	69.9	12,000	0.2	78,000	1.4
Computer and mathematical scientists	2,394,000	541,000	22.6	2,000	0.1	139,000	5.8	109,000	4.6	1,563,000	65.3	3,000	0.1	36,000	1.5
Computer and information scientists	2,179,000	500,000	22.9	2,000	0.1	130,000	6.0	100,000	4.6	1,410,000	64.7	3,000	0.1	34,000	1.6
Computer and information scientists, research	35,000	9,000	25.7	S	S	2,000	5.7	S	S	22,000	62.9	S	S	S	S
Computer network architect	42,000	S	S	S	S	2,000	4.8	2,000	4.8	20,000	47.6	S	S	S	S
Computer support specialists	219,000	24,000	11.0	S	S	34,000	15.5	12,000	5.5	144,000	65.8	1,000	0.5	4,000	1.8
Computer system analysts	325,000	81,000	24.9	S	S	25,000	7.7	16,000	4.9	200,000	61.5	S	S	2,000	0.6
Database administrators	107,000	23,000	21.5	S	S	5,000	4.7	3,000	2.8	76,000	71.0	S	S	S	S
Information security analysts	37,000	5,000	13.5	S	S	5,000	13.5	1,000	2.7	24,000	64.9	S	S	S	S
Network and computer systems administrators	181,000	23,000	12.7	S	S	11,000	6.1	12,000	6.6	131,000	72.4	S	S	4,000	2.2
Software developers—applications and systems software	431,000	129,000	29.9	S	S	12,000	2.8	18,000	4.2	266,000	61.7	S	S	5,000	1.2
Web developers	130,000	19,000	14.6	S	S	3,000	2.3	5,000	3.8	101,000	77.7	S	S	1,000	0.8
Other computer information science occupations	236,000	28,000	11.9	S	S	19,000	8.1	9,000	3.8	174,000	73.7	S	S	7,000	3.0
Computer engineers—software	435,000	143,000	32.9	S	S	12,000	2.8	20,000	4.6	251,000	57.7	S	S	8,000	1.8
Mathematical scientists	121,000	27,000	22.3	S	S	4,000	3.3	5,000	4.1	83,000	68.6	S	S	1,000	0.8
Mathematicians	12,000	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Operations research analysts, including modeling	53,000	S	S	S	S	2,000	3.8	2,000	3.8	33,000	62.3	S	S	S	S
Statisticians	41,000	10,000	24.4	S	S	2,000	4.9	3,000	7.3	25,000	61.0	S	S	S	S
Other mathematical scientists	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Postsecondary teachers—computer and math sciences	94,000	14,000	14.9	S	S	6,000	6.4	3,000	3.2	70,000	74.5	S	S	S	S
Computer science	25,000	5,000	20.0	S	S	1,000	4.0	1,000	4.0	18,000	72.0	S	S	S	S
Mathematics and statistics	69,000	9,000	13.0	S	S	4,000	5.8	2,000	2.9	52,000	75.4	S	S	S	S
Biological, agricultural, and environmental life scientists	597,000	116,000	19.4	1,000	0.2	16,000	2.7	29,000	4.9	423,000	70.9	S	S	9,000	1.5
Agricultural and food scientists	62,000	11,000	17.7	S	S	1,000	1.6	3,000	4.8	45,000	72.6	S	S	S	S
Biological and medical scientists	426,000	97,000	22.8	S	S	12,000	2.8	22,000	5.2	288,000	67.6	1,000	0.2	6,000	1.4
Biochemists and biophysicists	58,000	20,000	34.5	S	S	S	S	4,000	6.9	32,000	55.2	S	S	1,000	1.7
Biological scientists (e.g., botanists, ecologists, zoologists)	129,000	27,000	20.9	S	S	3,000	2.3	7,000	5.4	90,000	69.8	S	S	2,000	1.6
Medical scientists (excluding practitioners)	130,000	34,000	26.2	S	S	4,000	3.1	6,000	4.6	83,000	63.8	S	S	1,000	0.8
Other biological and life scientists	109,000	15,000	13.8	S	S	3,000	2.8	5,000	4.6	84,000	77.1	S	S	2,000	1.8
Forestry and conservation scientists	31,000	S	S	S	S	S	S	1,000	3.2	28,000	90.3	S	S	S	S
Postsecondary teachers—life and related sciences	77,000	7,000	9.1	S	S	3,000	3.9	4,000	5.2	62,000	80.5	S	S	1,000	1.3
Agriculture	6,000	S	S	S	S	S	S	S	S	6,000	100.0	S	S	S	S
Biological sciences	62,000	6,000	9.7	S	S	3,000	4.8	4,000	6.5	48,000	77.4	S	S	1,000	1.6
Other natural sciences	9,000	S	S	S	S	S	S	S	S	8,000	88.9	S	S	S	S
Physical and related scientists	320,000	44,000	13.8	1,000	0.3	11,000	3.4	15,000	4.7	244,000	76.3	1,000	0.3	5,000	1.6
Chemists, except biochemists	103,000	21,000	20.4	S	S	5,000	4.9	6,000	5.8	69,000	67.0	S	S	2,000	1.9
Earth scientists, geologists, and oceanographers	69,000	5,000	7.2	S	S	1,000	1.4	3,000	4.3	60,000	87.0	S	S	1,000	1.4
Atmospheric and space scientists	14,000	2,000	14.3	S	S	S	S	S	S	12,000	85.7	S	S	S	S
Geologists, including earth scientists	50,000	2,000	4.0	S	S	1,000	2.0	2,000	4.0	44,000	88.0	S	S	1,000	2.0
Oceanographers	5,000	1,000	20.0	S	S	S	S	S	S	4,000	80.0	S	S	S	S

Appendix table 3-16

Employed scientists and engineers, by race, ethnicity, and occupation: 2010

Occupation	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Physicists and astronomers	34,000	7,000	20.6	S	S	S	S	2,000	5.9	25,000	73.5	S	S	S	S
Astronomers	4,000	1,000	25.0	S	S	S	S	S	S	3,000	75.0	S	S	S	S
Physicists, except biophysicists	31,000	6,000	19.4	S	S	S	S	1,000	3.2	22,000	71.0	S	S	S	S
Other physical and related scientists	46,000	3,000	6.5	S	S	1,000	2.2	2,000	4.3	39,000	84.8	S	S	S	S
Postsecondary teachers—physical and related sciences	67,000	9,000	13.4	S	S	4,000	6.0	3,000	4.5	51,000	76.1	S	S	1,000	1.5
Chemistry	29,000	4,000	13.8	S	S	3,000	10.3	1,000	3.4	20,000	69.0	S	S	S	S
Earth, environmental, and marine science	19,000	1,000	5.3	S	S	S	S	S	S	17,000	89.5	S	S	S	S
Physics	19,000	3,000	15.8	S	S	S	S	1,000	5.3	15,000	78.9	S	S	S	S
Social and related scientists	518,000	33,000	6.4	1,000	0.2	24,000	4.6	29,000	5.6	420,000	81.1	S	S	10,000	1.9
Economists	30,000	4,000	13.3	S	S	1,000	3.3	2,000	6.7	22,000	73.3	S	S	S	S
Political scientists	23,000	S	S	S	S	S	S	S	S	21,000	91.3	S	S	S	S
Psychologists, including clinical	171,000	6,000	3.5	S	S	8,000	4.7	12,000	7.0	142,000	83.0	S	S	3,000	1.8
Sociologists and anthropologists	18,000	1,000	5.6	S	S	1,000	5.6	2,000	11.1	13,000	72.2	S	S	1,000	5.6
Anthropologists	11,000	S	S	S	S	S	S	S	S	8,000	72.7	S	S	1,000	9.1
Sociologists	8,000	S	S	S	S	1,000	12.5	1,000	12.5	5,000	62.5	S	S	S	S
Other social and related scientists	126,000	10,000	7.9	S	S	6,000	4.8	4,000	3.2	104,000	82.5	S	S	2,000	1.6
Postsecondary teachers—social and related sciences	150,000	12,000	8.0	1,000	0.7	7,000	4.7	7,000	4.7	119,000	79.3	S	S	4,000	2.7
Economics	19,000	5,000	26.3	S	S	1,000	5.3	1,000	5.3	13,000	68.4	S	S	S	S
Political science	18,000	1,000	5.6	S	S	1,000	5.6	1,000	5.6	14,000	77.8	S	S	S	S
Psychology	38,000	1,000	2.6	S	S	2,000	5.3	2,000	5.3	32,000	84.2	S	S	1,000	2.6
Sociology	19,000	1,000	5.3	S	S	1,000	5.3	1,000	5.3	15,000	78.9	S	S	S	S
Other social sciences	56,000	4,000	7.1	S	S	3,000	5.4	3,000	5.4	45,000	80.4	S	S	1,000	1.8
Engineers	1,569,000	262,000	16.7	5,000	0.3	56,000	3.6	99,000	6.3	1,123,000	71.6	5,000	0.3	19,000	1.2
Aerospace, aeronautical, or astronautical engineers	91,000	9,000	9.9	S	S	3,000	3.3	8,000	8.8	68,000	74.7	S	S	3,000	3.3
Chemical engineers	69,000	14,000	20.3	S	S	2,000	2.9	4,000	5.8	48,000	69.6	S	S	1,000	1.4
Civil, architectural, or sanitary engineers	228,000	26,000	11.4	1,000	0.4	9,000	3.9	18,000	7.9	169,000	74.1	1,000	0.4	3,000	1.3
Electrical or computer hardware engineers	385,000	100,000	26.0	S	S	17,000	4.4	20,000	5.2	240,000	62.3	2,000	0.5	5,000	1.3
Computer engineer—hardware	70,000	28,000	40.0	S	S	S	S	2,000	2.9	32,000	45.7	S	S	S	S
Electrical and electronics engineers	316,000	72,000	22.8	S	S	11,000	3.5	19,000	6.0	208,000	65.8	1,000	0.3	4,000	1.3
Industrial engineers	74,000	11,000	14.9	S	S	3,000	4.1	6,000	8.1	53,000	71.6	S	S	S	S
Mechanical engineers	299,000	33,000	11.0	1,000	0.3	9,000	3.0	17,000	5.7	235,000	78.6	S	S	3,000	1.0
Other engineers	380,000	54,000	14.2	S	S	11,000	2.9	24,000	6.3	285,000	75.0	1,000	0.3	4,000	1.1
Agricultural engineers	7,000	S	S	S	S	S	S	S	S	5,000	71.4	S	S	S	S
Bioengineers or biomedical engineers	22,000	6,000	27.3	S	S	S	S	2,000	9.1	13,000	59.1	S	S	S	S
Environmental engineers	64,000	7,000	10.9	S	S	3,000	4.7	4,000	6.3	50,000	78.1	S	S	S	S
Marine engineers and naval architects	10,000	1,000	10.0	S	S	S	S	S	S	8,000	80.0	S	S	S	S
Materials and metallurgical engineers	32,000	9,000	28.1	S	S	1,000	3.1	2,000	6.3	20,000	62.5	S	S	1,000	3.1
Mining and geological engineers	7,000	S	S	S	S	S	S	S	S	5,000	71.4	S	S	S	S
Nuclear engineers	21,000	2,000	9.5	S	S	S	S	1,000	4.8	17,000	81.0	S	S	S	S
Petroleum engineers	19,000	1,000	5.3	S	S	S	S	2,000	10.5	15,000	78.9	S	S	S	S
Sales engineers	63,000	5,000	7.9	S	S	1,000	1.6	4,000	6.3	52,000	82.5	S	S	S	S

Appendix table 3-16

Employed scientists and engineers, by race, ethnicity, and occupation: 2010

Occupation	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Other engineers	136,000	23,000	16.9	S	S	5,000	3.7	7,000	5.1	99,000	72.8	1,000	0.7	1,000	0.7
Postsecondary teachers—engineering	43,000	15,000	34.9	S	S	1,000	2.3	1,000	2.3	25,000	58.1	S	S	S	S
S&E-related occupations	6,957,000	788,000	11.3	21,000	0.3	393,000	5.6	447,000	6.4	5,193,000	74.6	29,000	0.4	85,000	1.2
Health-related occupations	4,325,000	508,000	11.7	14,000	0.3	263,000	6.1	295,000	6.8	3,168,000	73.2	21,000	0.5	57,000	1.3
Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)	1,051,000	171,000	16.3	S	S	51,000	4.9	65,000	6.2	733,000	69.7	S	S	19,000	1.8
Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners	1,977,000	212,000	10.7	6,000	0.3	103,000	5.2	128,000	6.5	1,495,000	75.6	8,000	0.4	27,000	1.4
Health technologists and technicians (e.g., dental hygienists, health record technicians, licensed practical nurses, laboratory/radiology technicians)	504,000	61,000	12.1	S	S	31,000	6.2	40,000	7.9	364,000	72.2	S	S	3,000	0.6
Other health occupations	652,000	54,000	8.3	S	S	64,000	9.8	54,000	8.3	471,000	72.2	3,000	0.5	5,000	0.8
Postsecondary teachers—health and related sciences	141,000	9,000	6.4	S	S	13,000	9.2	7,000	5.0	106,000	75.2	1,000	0.7	3,000	2.1
S&E managers	861,000	84,000	9.8	S	S	37,000	4.3	43,000	5.0	679,000	78.9	3,000	0.3	10,000	1.2
Computer and information systems managers	237,000	35,000	14.8	S	S	14,000	5.9	9,000	3.8	176,000	74.3	S	S	S	S
Engineering managers	272,000	30,000	11.0	S	S	5,000	1.8	13,000	4.8	217,000	79.8	S	S	4,000	1.5
Medical and health services managers	309,000	16,000	5.2	S	S	17,000	5.5	18,000	5.8	251,000	81.2	S	S	4,000	1.3
Natural sciences managers	43,000	3,000	7.0	S	S	1,000	2.3	3,000	7.0	35,000	81.4	S	S	S	S
S&E precollege teachers	917,000	45,000	4.9	1,000	0.1	40,000	4.4	55,000	6.0	769,000	83.9	1,000	0.1	7,000	0.8
Secondary—computer, math, or sciences	618,000	31,000	5.0	S	S	29,000	4.7	40,000	6.5	513,000	83.0	1,000	0.2	4,000	0.6
Secondary—social sciences	299,000	S	S	S	S	12,000	4.0	15,000	5.0	255,000	85.3	S	S	S	S
S&E technicians and technologists	654,000	130,000	19.9	S	S	37,000	5.7	45,000	6.9	430,000	65.7	4,000	0.6	7,000	1.1
Technologists and technicians in the biological/life sciences	92,000	20,000	21.7	S	S	6,000	6.5	7,000	7.6	56,000	60.9	S	S	S	S
Computer programmers (business, scientific, process control)	189,000	52,000	27.5	S	S	14,000	7.4	S	S	106,000	56.1	S	S	1,000	0.5
Electrical, electronic, industrial, and mechanical technicians	165,000	34,000	20.6	S	S	4,000	2.4	14,000	8.5	112,000	67.9	1,000	0.6	S	S
Drafting occupations, including computer drafting	32,000	3,000	9.4	S	S	S	S	3,000	9.4	25,000	78.1	S	S	S	S
Surveying and mapping technicians	8,000	S	S	S	S	S	S	S	S	8,000	100.0	S	S	S	S
Other engineering technologists and technicians	118,000	19,000	16.1	S	S	9,000	7.6	5,000	4.2	81,000	68.6	S	S	4,000	3.4
Surveyors, cartographers, photogrammetrists	15,000	S	S	S	S	S	S	S	S	14,000	93.3	S	S	S	S
Technologists and technicians in the mathematical sciences	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Technologists and technicians in the physical sciences	31,000	S	S	S	S	2,000	6.5	S	S	26,000	83.9	S	S	S	S
Other S&E-related occupations	199,000	21,000	10.6	S	S	S	S	10,000	5.0	147,000	73.9	S	S	S	S
Architects	158,000	17,000	10.8	S	S	5,000	3.2	10,000	6.3	123,000	77.8	S	S	S	S
Actuaries	41,000	4,000	9.8	S	S	S	S	S	S	24,000	58.5	S	S	S	S
Non-S&E occupations	9,549,000	756,000	7.9	27,000	0.3	678,000	7.1	739,000	7.7	7,190,000	75.3	28,000	0.3	130,000	1.4
Non-S&E managers	1,655,000	125,000	7.6	S	S	100,000	6.0	101,000	6.1	1,300,000	78.5	4,000	0.2	19,000	1.1
Top-level managers, executives, administrators (e.g., chief executive officer/chief operating officer/chief financial officer, president, district/general manager/provost)	1,014,000	87,000	8.6	S	S	51,000	5.0	55,000	5.4	802,000	79.1	2,000	0.2	11,000	1.1
Education administrators (e.g., registrar, dean, principal)	116,000	4,000	3.4	S	S	10,000	8.6	10,000	8.6	92,000	79.3	S	S	S	S
Other mid-level managers	524,000	33,000	6.3	S	S	39,000	7.4	37,000	7.1	406,000	77.5	2,000	0.4	7,000	1.3

Appendix table 3-16

Employed scientists and engineers, by race, ethnicity, and occupation: 2010

Occupation	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Management-related occupations	1,665,000	194,000	11.7	4,000	0.2	121,000	7.3	133,000	8.0	1,184,000	71.1	6,000	0.4	23,000	1.4
Accountants, auditors, and other financial specialists	587,000	98,000	16.7	S	S	37,000	6.3	37,000	6.3	407,000	69.3	2,000	0.3	5,000	0.9
Personnel, training, and labor relations specialists	217,000	12,000	5.5	S	S	20,000	9.2	18,000	8.3	161,000	74.2	S	S	6,000	2.8
Other management related occupations	860,000	84,000	9.8	3,000	0.3	64,000	7.4	77,000	9.0	616,000	71.6	3,000	0.3	12,000	1.4
Non-S&E precollege teachers	763,000	24,000	3.1	3,000	0.4	84,000	11.0	68,000	8.9	574,000	75.2	1,000	0.1	9,000	1.2
Prekindergarten and kindergarten	78,000	5,000	6.4	S	S	5,000	6.4	8,000	10.3	58,000	74.4	S	S	S	S
Elementary	310,000	9,000	2.9	S	S	33,000	10.6	33,000	10.6	231,000	74.5	S	S	3,000	1.0
Secondary—other subjects	138,000	3,000	2.2	S	S	S	S	15,000	10.9	96,000	69.6	S	S	2,000	1.4
Special education—primary and secondary	162,000	5,000	3.1	S	S	16,000	9.9	7,000	4.3	130,000	80.2	S	S	S	S
Other precollegiate area	75,000	1,000	1.3	S	S	S	S	5,000	6.7	59,000	78.7	S	S	S	S
Non-S&E postsecondary teachers	159,000	15,000	9.4	S	S	11,000	6.9	11,000	6.9	117,000	73.6	S	S	4,000	2.5
Arts, drama, and music	7,000	S	S	S	S	S	S	S	S	6,000	85.7	S	S	S	S
Business, commerce, and marketing	30,000	6,000	20.0	S	S	1,000	3.3	1,000	3.3	22,000	73.3	S	S	S	S
Education	28,000	3,000	10.7	S	S	3,000	10.7	3,000	10.7	18,000	64.3	S	S	1,000	3.6
English	16,000	S	S	S	S	1,000	6.3	1,000	6.3	12,000	75.0	S	S	S	S
Foreign language	12,000	2,000	16.7	S	S	S	S	2,000	16.7	7,000	58.3	S	S	S	S
History	10,000	S	S	S	S	S	S	S	S	7,000	70.0	S	S	S	S
Physical education	5,000	S	S	S	S	S	S	S	S	5,000	100.0	S	S	S	S
Other postsecondary fields	52,000	3,000	5.8	S	S	5,000	9.6	4,000	7.7	40,000	76.9	S	S	1,000	1.9
Social services and related occupations	747,000	30,000	4.0	1,000	0.1	102,000	13.7	72,000	9.6	533,000	71.4	1,000	0.1	10,000	1.3
Clergy and other religious workers	101,000	4,000	4.0	S	S	6,000	5.9	3,000	3.0	87,000	86.1	S	S	S	S
Counselors (e.g., educational, vocational, mental health, and substance abuse)	339,000	16,000	4.7	S	S	38,000	11.2	41,000	12.1	238,000	70.2	1,000	0.3	6,000	1.8
Social workers	307,000	9,000	2.9	S	S	57,000	18.6	28,000	9.1	208,000	67.8	S	S	4,000	1.3
Sales and marketing occupations	1,351,000	105,000	7.8	3,000	0.2	48,000	3.6	86,000	6.4	1,093,000	80.9	2,000	0.1	14,000	1.0
Insurance, securities, real estate, and business services	393,000	37,000	9.4	S	S	15,000	3.8	29,000	7.4	309,000	78.6	S	S	3,000	0.8
Sales—commodities except retail (e.g., industrial/medical/ dental machinery, equipment, supplies)	216,000	11,000	5.1	S	S	3,000	1.4	10,000	4.6	186,000	86.1	S	S	4,000	1.9
Sales—retail (e.g., furnishings, clothing, motor vehicles, cosmetics)	295,000	21,000	7.1	S	S	13,000	4.4	22,000	7.5	234,000	79.3	S	S	4,000	1.4
Other marketing and sales occupations	448,000	36,000	8.0	S	S	17,000	3.8	25,000	5.6	364,000	81.3	2,000	0.4	4,000	0.9
Arts, humanities, and related occupations	296,000	17,000	5.7	S	S	14,000	4.7	26,000	8.8	235,000	79.4	S	S	4,000	1.4
Writers, editors, public relations specialists, artists, entertainers, broadcasters	291,000	17,000	5.8	S	S	14,000	4.8	25,000	8.6	230,000	79.0	S	S	4,000	1.4
Historians	6,000	S	S	S	S	S	S	S	S	5,000	83.3	S	S	S	S
Other non-S&E occupations	2,912,000	247,000	8.5	7,000	0.2	199,000	6.8	244,000	8.4	2,154,000	74.0	14,000	0.5	47,000	1.6
Accounting clerks and bookkeepers	113,000	21,000	18.6	S	S	5,000	4.4	3,000	2.7	82,000	72.6	S	S	1,000	0.9
Secretaries, receptionists, typists	171,000	11,000	6.4	S	S	11,000	6.4	32,000	18.7	114,000	66.7	S	S	3,000	1.8
Other administrative (e.g., record clerks, telephone operators)	373,000	48,000	12.9	S	S	39,000	10.5	42,000	11.3	234,000	62.7	2,000	0.5	6,000	1.6
Farmers, foresters, and fishermen	95,000	1,000	1.1	S	S	S	S	1,000	1.1	89,000	93.7	S	S	1,000	1.1
Lawyers, judges	614,000	25,000	4.1	2,000	0.3	25,000	4.1	36,000	5.9	516,000	84.0	S	S	10,000	1.6

Appendix table 3-16

Employed scientists and engineers, by race, ethnicity, and occupation: 2010

Occupation	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Librarians, archivists, curators	62,000	5,000	8.1	S	S	3,000	4.8	2,000	3.2	49,000	79.0	S	S	S	S
Food preparation and service (e.g., cooks, waitresses, bartenders)	154,000	36,000	23.4	S	S	5,000	3.2	13,000	8.4	92,000	59.7	1,000	0.6	7,000	4.5
Protective services (e.g., firefighters, police, guards, wardens, park rangers)	148,000	7,000	4.7	S	S	16,000	10.8	12,000	8.1	110,000	74.3	S	S	3,000	2.0
Other service occupations, except health (e.g., probation officer, human services work)	366,000	29,000	7.9	S	S	46,000	12.6	37,000	10.1	246,000	67.2	1,000	0.3	4,000	1.1
Other teachers and instructors (e.g., private tutors, dance, flying, martial arts)	177,000	8,000	4.5	S	S	14,000	7.9	10,000	5.6	135,000	76.3	S	S	3,000	1.7
Construction and extraction occupations	106,000	8,000	7.5	S	S	3,000	2.8	5,000	4.7	90,000	84.9	S	S	S	S
Installation, maintenance, and repair occupations	107,000	5,000	4.7	S	S	3,000	2.8	19,000	17.8	79,000	73.8	S	S	S	S
Precision/production occupations (e.g., metal/wood workers, butchers, bakers, assemblers, tailors)	110,000	8,000	7.3	S	S	5,000	4.5	9,000	8.2	86,000	78.2	S	S	2,000	1.8
Transportation and material moving occupations	162,000	18,000	11.1	S	S	15,000	9.3	7,000	4.3	119,000	73.5	S	S	2,000	1.2
Other occupations	154,000	14,000	9.1	S	S	10,000	6.5	15,000	9.7	112,000	72.7	S	S	3,000	1.9

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Scientists and engineers include those with one or more S&E or S&E-related degrees at the bachelor's level or higher or those who have only a non-S&E degree at the bachelor's level or higher and are employed in an S&E or S&E-r occupation. Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin. Detail ma add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-17

Employed S&E highest degree holders, by race, ethnicity, and field of degree: 2010

Highest degree field	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All S&E degrees	11,385,000	1,583,000	13.9	28,000	0.2	650,000	5.7	776,000	6.8	8,135,000	71.5	39,000	0.3	174,000	1.5
Computer and mathematical sciences	1,886,000	428,000	22.7	3,000	0.2	145,000	7.7	104,000	5.5	1,180,000	62.6	4,000	0.2	21,000	1.1
Computer and information sciences	1,393,000	347,000	24.9	3,000	0.2	121,000	8.7	85,000	6.1	818,000	58.7	3,000	0.2	17,000	1.2
Computer and information sciences, general	277,000	69,000	24.9	S	S	27,000	9.7	16,000	5.8	162,000	58.5	S	S	3,000	1.1
Computer science	742,000	229,000	30.9	S	S	38,000	5.1	46,000	6.2	419,000	56.5	1,000	0.1	9,000	1.2
Computer systems analysis	31,000	6,000	19.4	S	S	2,000	6.5	3,000	9.7	20,000	64.5	S	S	S	S
Information services and systems	261,000	31,000	11.9	S	S	41,000	15.7	16,000	6.1	167,000	64.0	S	S	3,000	1.1
Other computer and information sciences	82,000	13,000	15.9	S	S	14,000	17.1	4,000	4.9	51,000	62.2	S	S	1,000	1.2
Mathematics and statistics	492,000	81,000	16.5	S	S	24,000	4.9	19,000	3.9	362,000	73.6	1,000	0.2	5,000	1.0
Applied mathematics	65,000	13,000	20.0	S	S	4,000	6.2	2,000	3.1	45,000	69.2	S	S	S	S
Mathematics, general	321,000	41,000	12.8	S	S	17,000	5.3	14,000	4.4	245,000	76.3	S	S	3,000	0.9
Operations research	34,000	6,000	17.6	S	S	1,000	2.9	1,000	2.9	25,000	73.5	S	S	S	S
Statistics	46,000	18,000	39.1	S	S	1,000	2.2	1,000	2.2	25,000	54.3	S	S	1,000	2.2
Other mathematics	25,000	3,000	12.0	S	S	S	S	1,000	4.0	21,000	84.0	S	S	S	S
Biological, agricultural, and environmental life sciences	1,764,000	211,000	12.0	6,000	0.3	64,000	3.6	110,000	6.2	1,336,000	75.7	S	S	25,000	1.4
Agricultural and food sciences	301,000	22,000	7.3	S	S	6,000	2.0	20,000	6.6	247,000	82.1	S	S	4,000	1.3
Animal sciences	102,000	3,000	2.9	S	S	2,000	2.0	5,000	4.9	90,000	88.2	S	S	S	S
Food sciences and technology	39,000	7,000	17.9	S	S	1,000	2.6	S	S	21,000	53.8	S	S	S	S
Plant sciences	99,000	6,000	6.1	S	S	2,000	2.0	5,000	5.1	84,000	84.8	S	S	2,000	2.0
Other agricultural sciences	62,000	6,000	9.7	S	S	S	S	S	S	53,000	85.5	S	S	S	S
Biological sciences	1,299,000	181,000	13.9	S	S	56,000	4.3	83,000	6.4	946,000	72.8	S	S	19,000	1.5
Biochemistry and biophysics	118,000	31,000	26.3	S	S	2,000	1.7	5,000	4.2	78,000	66.1	S	S	2,000	1.7
Biology, general	591,000	57,000	9.6	S	S	38,000	6.4	43,000	7.3	432,000	73.1	S	S	10,000	1.7
Botany	22,000	4,000	18.2	S	S	S	S	S	S	17,000	77.3	S	S	S	S
Cell and molecular biology	74,000	16,000	21.6	S	S	S	S	4,000	5.4	50,000	67.6	S	S	1,000	1.4
Ecology	66,000	2,000	3.0	S	S	S	S	5,000	7.6	57,000	86.4	S	S	S	S
Genetics, animal and plant	21,000	3,000	14.3	S	S	S	S	1,000	4.8	16,000	76.2	S	S	S	S
Microbiological sciences and immunology	96,000	22,000	22.9	S	S	4,000	4.2	7,000	7.3	62,000	64.6	S	S	S	S
Nutritional sciences	58,000	4,000	6.9	S	S	1,000	1.7	5,000	8.6	47,000	81.0	S	S	S	S
Pharmacology, human and animal	22,000	7,000	31.8	S	S	1,000	4.5	S	S	14,000	63.6	S	S	S	S
Physiology and pathology, human and animal	55,000	6,000	10.9	S	S	1,000	1.8	5,000	9.1	42,000	76.4	S	S	1,000	1.8
Zoology, general	68,000	5,000	7.4	S	S	1,000	1.5	1,000	1.5	57,000	83.8	S	S	S	S
Other biological sciences	107,000	23,000	21.5	S	S	3,000	2.8	5,000	4.7	74,000	69.2	S	S	2,000	1.9
Environmental life sciences	164,000	8,000	4.9	S	S	2,000	1.2	7,000	4.3	142,000	86.6	S	S	3,000	1.8
Environmental science or studies	106,000	6,000	5.7	S	S	2,000	1.9	6,000	5.7	90,000	84.9	S	S	2,000	1.9
Forestry sciences	57,000	2,000	3.5	S	S	1,000	1.8	S	S	52,000	91.2	S	S	S	S
Physical and related sciences	693,000	105,000	15.2	2,000	0.3	25,000	3.6	31,000	4.5	522,000	75.3	1,000	0.1	8,000	1.2
Chemistry, except biochemistry	312,000	63,000	20.2	S	S	15,000	4.8	14,000	4.5	215,000	68.9	S	S	3,000	1.0
Earth, atmospheric, and ocean sciences	184,000	8,000	4.3	S	S	2,000	1.1	6,000	3.3	165,000	89.7	S	S	2,000	1.1
Atmospheric sciences and meteorology	28,000	2,000	7.1	S	S	S	S	S	S	25,000	89.3	S	S	S	S

Appendix table 3-17

Employed S&E highest degree holders, by race, ethnicity, and field of degree: 2010

Highest degree field	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Earth sciences	32,000	1,000	S	S	S	S	S	1,000	3.1	29,000	90.6	S	S	S	S
Geology	92,000	3,000	3.3	S	S	1,000	1.1	4,000	4.3	84,000	91.3	S	S	1,000	1.1
Geological sciences, other	21,000	2,000	9.5	S	S	S	S	1,000	4.8	18,000	85.7	S	S	S	S
Oceanography	10,000	S	S	S	S	S	S	1,000	10.0	9,000	90.0	S	S	S	S
Physics and astronomy	166,000	31,000	18.7	S	S	5,000	3.0	8,000	4.8	120,000	72.3	S	S	2,000	1.2
Astronomy and astrophysics	14,000	1,000	7.1	S	S	S	S	S	S	12,000	85.7	S	S	S	S
Physics	152,000	30,000	19.7	S	S	5,000	3.3	8,000	5.3	108,000	71.1	S	S	2,000	1.3
Other physical sciences	30,000	3,000	10.0	S	S	S	S	2,000	6.7	21,000	70.0	S	S	1,000	3.3
Other physical sciences	27,000	3,000	11.1	S	S	S	S	S	S	19,000	70.4	S	S	1,000	3.7
Science, unclassified	3,000	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Social and related sciences	4,363,000	285,000	6.5	12,000	0.3	330,000	7.6	334,000	7.7	3,305,000	75.8	13,000	0.3	85,000	1.9
Economics	729,000	120,000	16.5	S	S	27,000	3.7	46,000	6.3	520,000	71.3	3,000	0.4	11,000	1.5
Agricultural economics	72,000	2,000	2.8	S	S	1,000	1.4	2,000	2.8	65,000	90.3	S	S	S	S
Economics	657,000	118,000	18.0	S	S	26,000	4.0	44,000	6.7	455,000	69.3	3,000	0.5	11,000	1.7
Political and related sciences	729,000	38,000	5.2	1,000	0.1	50,000	6.9	44,000	6.0	584,000	80.1	S	S	12,000	1.6
Public policy studies	43,000	3,000	7.0	S	S	4,000	9.3	3,000	7.0	32,000	74.4	S	S	S	S
International relations	137,000	7,000	5.1	S	S	4,000	2.9	10,000	7.3	113,000	82.5	S	S	3,000	2.2
Political science and government	549,000	28,000	5.1	1,000	0.2	42,000	7.7	30,000	5.5	438,000	79.8	S	S	9,000	1.6
Psychology	1,661,000	64,000	3.9	5,000	0.3	138,000	8.3	143,000	8.6	1,274,000	76.7	6,000	0.4	31,000	1.9
Educational psychology	98,000	3,000	3.1	S	S	10,000	10.2	7,000	7.1	77,000	78.6	S	S	2,000	2.0
Clinical psychology	153,000	6,000	3.9	S	S	8,000	5.2	19,000	12.4	115,000	75.2	S	S	4,000	2.6
Counseling psychology	237,000	5,000	2.1	S	S	25,000	10.5	16,000	6.8	186,000	78.5	S	S	4,000	1.7
Experimental psychology	39,000	S	S	S	S	S	S	1,000	2.6	34,000	87.2	S	S	S	S
General psychology	883,000	38,000	4.3	3,000	0.3	69,000	7.8	81,000	9.2	676,000	76.6	4,000	0.5	13,000	1.5
Industrial/organizational psychology	44,000	2,000	4.5	S	S	4,000	9.1	4,000	9.1	33,000	75.0	S	S	S	S
Social psychology	72,000	2,000	2.8	S	S	4,000	5.6	7,000	9.7	53,000	73.6	S	S	S	S
Other psychology	135,000	5,000	3.7	S	S	17,000	12.6	9,000	6.7	101,000	74.8	S	S	2,000	1.5
Sociology and anthropology	738,000	37,000	5.0	2,000	0.3	74,000	10.0	69,000	9.3	532,000	72.1	1,000	0.1	22,000	3.0
Anthropology and archaeology	134,000	5,000	3.7	S	S	2,000	1.5	8,000	6.0	107,000	79.9	S	S	10,000	7.5
Criminology	68,000	S	S	S	S	7,000	10.3	10,000	14.7	43,000	63.2	S	S	1,000	1.5
Sociology	536,000	26,000	4.9	S	S	65,000	12.1	51,000	9.5	381,000	71.1	1,000	0.2	11,000	2.1
Other social sciences	507,000	27,000	5.3	2,000	0.4	41,000	8.1	32,000	6.3	395,000	77.9	1,000	0.2	9,000	1.8
Area and ethnic studies	91,000	9,000	9.9	S	S	9,000	9.9	9,000	9.9	57,000	62.6	S	S	5,000	5.5
Linguistics	57,000	4,000	7.0	S	S	S	S	5,000	8.8	45,000	78.9	S	S	1,000	S
Philosophy of science	17,000	S	S	S	S	1,000	S	S	S	12,000	70.6	S	S	S	S
Geography	113,000	3,000	2.7	S	S	1,000	0.9	5,000	4.4	102,000	90.3	S	S	1,000	0.9
History of science	12,000	S	S	S	S	S	S	S	S	10,000	83.3	S	S	S	S
Other social sciences	217,000	7,000	3.2	S	S	26,000	12.0	11,000	5.1	169,000	77.9	1,000	0.5	2,000	0.9
Engineering	2,679,000	553,000	20.6	6,000	0.2	85,000	3.2	197,000	7.4	1,792,000	66.9	10,000	0.4	35,000	1.3
Aerospace, aeronautical, and astronautical engineering	106,000	9,000	8.5	S	S	2,000	1.9	5,000	4.7	87,000	82.1	S	S	2,000	1.9

Appendix table 3-17

Employed S&E highest degree holders, by race, ethnicity, and field of degree: 2010

Highest degree field	Total	Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Chemical engineering	178,000	33,000	18.5	S	S	7,000	3.9	16,000	9.0	120,000	67.4	S	S	2,000	1.1
Civil and architectural engineering	407,000	54,000	13.3	S	S	12,000	2.9	31,000	7.6	301,000	74.0	3,000	0.7	5,000	1.2
Architectural engineering	33,000	2,000	6.1	S	S	S	S	2,000	6.1	28,000	84.8	S	S	S	S
Civil engineering	374,000	52,000	13.9	S	S	11,000	2.9	29,000	7.8	273,000	73.0	3,000	0.8	5,000	1.3
Electrical and computer engineering	914,000	274,000	30.0	1,000	0.1	34,000	3.7	67,000	7.3	520,000	56.9	4,000	0.4	15,000	1.6
Computer and systems engineering	212,000	64,000	30.2	S	S	6,000	2.8	20,000	9.4	115,000	54.2	S	S	5,000	2.4
Electrical, electronics, and communications engineering	702,000	210,000	29.9	S	S	27,000	3.8	47,000	6.7	405,000	57.7	3,000	0.4	10,000	1.4
Industrial and manufacturing engineering	159,000	27,000	17.0	S	S	7,000	4.4	17,000	10.7	107,000	67.3	S	S	S	S
Mechanical engineering	544,000	93,000	17.1	2,000	0.4	15,000	2.8	36,000	6.6	391,000	71.9	1,000	0.2	6,000	1.1
Other engineering	371,000	64,000	17.3	S	S	8,000	2.2	26,000	7.0	266,000	71.7	1,000	0.3	4,000	1.1
Agricultural engineering	29,000	3,000	10.3	S	S	S	S	4,000	13.8	22,000	75.9	S	S	S	S
Bioengineering and biomedical engineering	34,000	11,000	32.4	S	S	1,000	2.9	2,000	5.9	19,000	55.9	S	S	1,000	2.9
Engineering sciences, mechanics, and physics	33,000	9,000	27.3	S	S	1,000	3.0	1,000	3.0	22,000	66.7	S	S	S	S
Environmental engineering	43,000	4,000	9.3	S	S	2,000	4.7	3,000	7.0	33,000	76.7	S	S	1,000	2.3
Engineering, general	39,000	4,000	10.3	S	S	1,000	2.6	3,000	7.7	30,000	76.9	S	S	S	S
Geophysical and geological engineering	9,000	2,000	22.2	S	S	S	S	S	S	6,000	66.7	S	S	S	S
Materials engineering, including ceramics and textiles	40,000	15,000	37.5	S	S	S	S	2,000	5.0	22,000	55.0	S	S	S	S
Metallurgical engineering	14,000	2,000	14.3	S	S	S	S	S	S	11,000	78.6	S	S	S	S
Mining and minerals engineering	9,000	S	S	S	S	S	S	S	S	8,000	88.9	S	S	S	S
Naval architecture and marine engineering	15,000	1,000	6.7	S	S	S	S	S	S	14,000	93.3	S	S	S	S
Nuclear engineering	15,000	2,000	13.3	S	S	S	S	S	S	12,000	80.0	S	S	S	S
Petroleum engineering	17,000	1,000	5.9	S	S	S	S	3,000	17.6	12,000	70.6	S	S	S	S
Other engineering	75,000	10,000	13.3	S	S	2,000	2.7	6,000	8.0	56,000	74.7	S	S	1,000	1.3

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers. Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-18

Estimate and median salary of full-time workers with highest degree in S&E field, by sex and occupation: 2010

Occupation	Total		Female		Male	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
All occupations	9,728,000	70,000	3,249,000	53,000	6,479,000	80,000
S&E occupations	3,610,000	80,000	840,000	69,000	2,770,000	85,000
Computer and mathematical scientists	1,485,000	85,000	309,000	77,000	1,176,000	87,000
Computer and information scientists	1,366,000	85,000	271,000	80,000	1,095,000	88,000
Computer and information scientists, research	25,000	92,000	7,000	88,000	18,000	95,000
Computer network architect	22,000	97,000	1,000	94,000	21,000	98,000
Computer support specialists	120,000	60,000	30,000	74,000	90,000	60,000
Computer system analysts	197,000	80,000	56,000	72,000	141,000	84,000
Database administrators	61,000	88,000	15,000	76,000	46,000	90,000
Information security analysts	27,000	92,000	4,000	77,000	23,000	93,000
Network and computer systems administrators	101,000	70,000	12,000	70,000	89,000	70,000
Software developers—applications and systems software	312,000	90,000	59,000	79,000	253,000	92,000
Web developers	58,000	63,000	11,000	63,000	47,000	63,000
Other computer information science occupations	110,000	90,000	33,000	84,000	77,000	91,000
Computer engineers—software	334,000	96,000	43,000	85,000	290,000	98,000
Mathematical scientists	72,000	80,000	23,000	72,000	49,000	80,000
Mathematicians	5,000	60,000	2,000	61,000	3,000	60,000
Operations research analysts, including modeling	31,000	79,000	10,000	68,000	21,000	80,000
Statisticians	23,000	95,000	9,000	85,000	14,000	100,000
Other mathematical scientists	S	S	2,000	59,000	S	S
Postsecondary teachers—computer and math sciences	47,000	68,000	15,000	50,000	31,000	74,000
Computer science	14,000	82,000	2,000	70,000	11,000	85,000
Mathematics and statistics	33,000	59,000	13,000	44,000	20,000	65,000
Biological, agricultural, and environmental life scientists	416,000	60,000	178,000	52,000	237,000	65,000
Agricultural and food scientists	51,000	63,000	17,000	56,000	34,000	64,000
Biological and medical scientists	287,000	55,000	134,000	50,000	153,000	61,000
Biochemists and biophysicists	54,000	52,000	22,000	44,000	33,000	59,000
Biological scientists (e.g., botanists, ecologists, zoologists)	100,000	50,000	44,000	47,000	55,000	56,000
Medical scientists (excluding practitioners)	81,000	66,000	37,000	51,000	44,000	79,000
Other biological and life scientists	53,000	57,000	31,000	56,000	22,000	63,000
Forestry and conservation scientists	26,000	62,000	8,000	51,000	18,000	77,000
Postsecondary teachers—life and related sciences	51,000	74,000	18,000	62,000	33,000	80,000
Agriculture	5,000	74,000	S	S	3,000	82,000
Biological sciences	41,000	70,000	16,000	61,000	25,000	79,000
Other natural sciences	6,000	87,000	1,000	88,000	4,000	85,000
Physical and related scientists	263,000	70,000	69,000	57,000	194,000	73,000
Chemists, except biochemists	90,000	70,000	30,000	62,000	60,000	75,000
Earth scientists, geologists, and oceanographers	59,000	72,000	12,000	56,000	46,000	75,000
Atmospheric and space scientists	12,000	72,000	2,000	47,000	10,000	80,000
Geologists, including earth scientists	43,000	72,000	10,000	57,000	33,000	75,000
Oceanographers	3,000	69,000	S	S	3,000	61,000
Physicists and astronomers	30,000	72,000	5,000	43,000	25,000	86,000
Astronomers	3,000	62,000	1,000	53,000	3,000	65,000
Physicists, except biophysicists	27,000	74,000	4,000	43,000	23,000	88,000
Other physical and related scientists	36,000	65,000	11,000	52,000	25,000	70,000
Postsecondary teachers—physical and related sciences	48,000	65,000	11,000	58,000	36,000	70,000
Chemistry	23,000	59,000	6,000	55,000	17,000	60,000
Earth, environmental, and marine science	11,000	72,000	4,000	59,000	7,000	80,000
Physics	13,000	74,000	2,000	59,000	12,000	75,000
Social and related scientists	247,000	66,000	132,000	63,000	116,000	74,000
Economists	21,000	92,000	7,000	69,000	14,000	97,000
Political scientists	8,000	73,000	5,000	78,000	3,000	71,000
Psychologists, including clinical	100,000	65,000	68,000	63,000	32,000	79,000
Sociologists and anthropologists	12,000	52,000	6,000	50,000	6,000	53,000

Appendix table 3-18

Estimate and median salary of full-time workers with highest degree in S&E field, by sex and occupation: 2010

Occupation	Total		Female		Male	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Anthropologists	8,000	53,000	3,000	52,000	4,000	59,000
Sociologists	5,000	46,000	3,000	46,000	2,000	43,000
Other social and related scientists	39,000	62,000	19,000	59,000	20,000	62,000
Postsecondary teachers—social and related sciences	67,000	70,000	27,000	65,000	40,000	72,000
Economics	11,000	86,000	2,000	78,000	9,000	90,000
Political science	11,000	70,000	4,000	65,000	8,000	70,000
Psychology	22,000	65,000	11,000	61,000	10,000	70,000
Sociology	9,000	63,000	4,000	60,000	5,000	68,000
Other social sciences	14,000	67,000	6,000	69,000	8,000	65,000
Engineers	1,199,000	87,000	152,000	75,000	1,047,000	89,000
Aerospace, aeronautical, or astronautical engineers	77,000	102,000	8,000	99,000	69,000	102,000
Chemical engineers	60,000	91,000	12,000	80,000	48,000	95,000
Civil, architectural, or sanitary engineers	190,000	75,000	29,000	63,000	161,000	77,000
Electrical or computer hardware engineers	300,000	97,000	31,000	83,000	269,000	98,000
Computer engineer—hardware	48,000	103,000	5,000	84,000	43,000	103,000
Electrical and electronics engineers	252,000	96,000	25,000	82,000	226,000	97,000
Industrial engineers	45,000	75,000	7,000	73,000	38,000	74,000
Mechanical engineers	238,000	83,000	20,000	75,000	218,000	83,000
Other engineers	265,000	86,000	42,000	75,000	224,000	87,000
Agricultural engineers	6,000	74,000	S	S	6,000	76,000
Bioengineers or biomedical engineers	17,000	85,000	3,000	65,000	14,000	85,000
Environmental engineers	47,000	78,000	11,000	69,000	36,000	84,000
Marine engineers and naval architects	7,000	85,000	1,000	102,000	6,000	84,000
Materials and metallurgical engineers	26,000	88,000	4,000	75,000	23,000	90,000
Mining and geological engineers	6,000	84,000	S	S	6,000	85,000
Nuclear engineers	15,000	98,000	2,000	74,000	12,000	104,000
Petroleum engineers	15,000	117,000	2,000	115,000	13,000	117,000
Sales engineers	38,000	93,000	4,000	94,000	34,000	92,000
Other engineers	87,000	82,000	13,000	81,000	74,000	84,000
Postsecondary teachers—engineering	25,000	93,000	4,000	80,000	21,000	99,000
S&E-related occupations	1,377,000	70,000	537,000	52,000	840,000	85,000
Health-related occupations	381,000	49,000	254,000	46,000	126,000	56,000
Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)	40,000	89,000	18,000	49,000	22,000	123,000
Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners	85,000	60,000	69,000	59,000	15,000	67,000
Health technologists and technicians (e.g., dental hygienists, health record technicians, licensed practical nurses, laboratory/radiology technicians)	118,000	40,000	75,000	43,000	43,000	36,000
Other health occupations	123,000	41,000	86,000	40,000	37,000	52,000
Postsecondary teachers—health and related sciences	16,000	94,000	7,000	74,000	9,000	120,000
S&E managers	412,000	115,000	73,000	110,000	339,000	115,000
Computer and information systems managers	132,000	120,000	24,000	128,000	108,000	115,000
Engineering managers	204,000	119,000	19,000	116,000	185,000	119,000
Medical and health services managers	41,000	90,000	22,000	72,000	19,000	94,000
Natural sciences managers	36,000	100,000	8,000	99,000	28,000	99,000
S&E precollege teachers	178,000	48,000	105,000	46,000	74,000	48,000
Secondary—computer, math, or sciences	152,000	47,000	93,000	47,000	60,000	48,000
Secondary—social sciences	26,000	50,000	12,000	45,000	14,000	51,000
S&E technicians and technologists	375,000	69,000	97,000	56,000	277,000	70,000
Technologists and technicians in the biological/life sciences	65,000	46,000	42,000	42,000	23,000	51,000
Computer programmers (business, scientific, process control)	109,000	78,000	28,000	73,000	81,000	79,000
Electrical, electronic, industrial, and mechanical technicians	92,000	70,000	5,000	93,000	88,000	70,000
Drafting occupations, including computer drafting	7,000	53,000	S	S	6,000	55,000

Appendix table 3-18

Estimate and median salary of full-time workers with highest degree in S&E field, by sex and occupation: 2010

Occupation	Total		Female		Male	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Surveying and mapping technicians	6,000	51,000	2,000	53,000	4,000	51,000
Other engineering technologists and technicians	68,000	69,000	14,000	59,000	54,000	70,000
Surveyors, cartographers, photogrammetrists	10,000	62,000	S	S	9,000	61,000
Technologists and technicians in the mathematical sciences	S	S	S	S	S	S
Technologists and technicians in the physical sciences	16,000	52,000	4,000	53,000	13,000	50,000
Other S&E-related occupations	30,000	94,000	7,000	81,000	23,000	99,000
Architects	14,000	99,000	1,000	82,000	13,000	99,000
Actuaries	16,000	90,000	6,000	79,000	10,000	93,000
Non-S&E occupations	4,742,000	60,000	1,873,000	49,000	2,869,000	70,000
Non-S&E managers	924,000	101,000	175,000	85,000	749,000	106,000
Top-level managers, executives, administrators (e.g., chief executive officer/chief operating officer/chief financial officer, president, district/general manager/provost)	554,000	120,000	92,000	95,000	462,000	125,000
Education administrators (e.g., registrar, dean, principal)	39,000	90,000	14,000	72,000	25,000	95,000
Other mid-level managers	332,000	94,000	70,000	79,000	262,000	95,000
Management-related occupations	1,014,000	73,000	437,000	62,000	577,000	80,000
Accountants, auditors, and other financial specialists	377,000	72,000	147,000	60,000	230,000	80,000
Personnel, training, and labor relations specialists	139,000	65,000	97,000	57,000	42,000	84,000
Other management-related occupations	498,000	75,000	194,000	70,000	304,000	80,000
Non-S&E precollege teachers	221,000	46,000	174,000	46,000	47,000	44,000
Prekindergarten and kindergarten	28,000	38,000	26,000	35,000	3,000	53,000
Elementary	104,000	50,000	83,000	50,000	21,000	49,000
Secondary—other subjects	37,000	42,000	24,000	44,000	13,000	34,000
Special education—primary and secondary	37,000	40,000	32,000	37,000	5,000	42,000
Other precollegiate area	14,000	40,000	10,000	37,000	4,000	46,000
Non-S&E postsecondary teachers	31,000	67,000	12,000	61,000	19,000	70,000
Arts, drama, and music	1,000	49,000	S	S	S	S
Business, commerce, and marketing	6,000	86,000	2,000	66,000	4,000	99,000
Education	3,000	59,000	2,000	64,000	2,000	44,000
English	2,000	48,000	1,000	51,000	S	S
Foreign language	3,000	67,000	1,000	72,000	2,000	66,000
History	2,000	43,000	S	S	1,000	S
Physical education	S	S	S	S	S	S
Other postsecondary fields	14,000	69,000	5,000	48,000	9,000	74,000
Social services and related occupations	322,000	39,000	232,000	38,000	89,000	42,000
Clergy and other religious workers	17,000	32,000	S	S	10,000	29,000
Counselors (e.g., educational, vocational, mental health, and substance abuse)	153,000	44,000	109,000	43,000	44,000	44,000
Social workers	151,000	35,000	117,000	35,000	35,000	39,000
Sales and marketing occupations	807,000	58,000	255,000	50,000	552,000	65,000
Insurance, securities, real estate, and business services	239,000	67,000	69,000	49,000	170,000	70,000
Sales—commodities except retail (e.g., industrial/medical/dental machinery, equipment, supplies)	145,000	76,000	34,000	53,000	111,000	80,000
Sales—retail (e.g., furnishings, clothing, motor vehicles, cosmetics)	158,000	35,000	57,000	32,000	101,000	36,000
Other marketing and sales occupations	264,000	55,000	95,000	50,000	169,000	59,000
Art, humanities, and related occupations	131,000	50,000	62,000	48,000	69,000	59,000
Writers, editors, public relations specialists, artists, entertainers, broadcasters	130,000	50,000	61,000	48,000	68,000	58,000
Historians	1,000	56,000	S	S	S	S
Other non-S&E occupations	1,292,000	42,000	525,000	38,000	767,000	47,000
Accounting clerks and bookkeepers	56,000	36,000	39,000	39,000	17,000	33,000
Secretaries, receptionists, typists	77,000	33,000	66,000	36,000	S	S
Other administrative (e.g., record clerks, telephone operators)	227,000	38,000	150,000	37,000	77,000	45,000

Appendix table 3-18

Estimate and median salary of full-time workers with highest degree in S&E field, by sex and occupation: 2010

Occupation	Total		Female		Male	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Farmers, foresters, and fishermen	69,000	40,000	13,000	S	56,000	40,000
Lawyers, judges	36,000	99,000	13,000	90,000	23,000	135,000
Librarians, archivists, curators	21,000	31,000	14,000	32,000	7,000	27,000
Food preparation and service (e.g., cooks, waitresses, bartenders)	51,000	29,000	17,000	29,000	33,000	29,000
Protective services (e.g., firefighters, police, guards, wardens, park rangers)	121,000	63,000	16,000	54,000	104,000	64,000
Other service occupations, except health (e.g., probation officer, human services work)	201,000	40,000	96,000	36,000	105,000	41,000
Other teachers and instructors (e.g., private tutors, dance, flying, martial arts)	47,000	30,000	26,000	25,000	21,000	36,000
Construction and extraction occupations	70,000	59,000	4,000	85,000	66,000	58,000
Installation, maintenance, and repair occupations	64,000	45,000	5,000	60,000	59,000	45,000
Precision/production occupations (e.g., metal/wood workers, butchers, bakers, assemblers, tailors)	68,000	44,000	12,000	39,000	57,000	49,000
Transportation and material moving occupations	95,000	45,000	12,000	68,000	83,000	39,000
Other occupations	91,000	54,000	42,000	51,000	49,000	56,000

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-19

Estimate and median salary of full-time workers with highest degree in S&E field, by race, ethnicity, and occupation: 2010

Occupation	Total		Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
All occupations	9,728,000	70,000	1,399,000	75,000	26,000	59,000	577,000	56,000	672,000	60,000	6,877,000	72,000	35,000	56,000	142,000	60,000
S&E occupations	3,610,000	80,000	741,000	85,000	7,000	79,000	154,000	69,000	200,000	70,000	2,443,000	82,000	11,000	70,000	55,000	73,000
Computer and mathematical scientists	1,485,000	85,000	407,000	90,000	1,000	78,000	84,000	66,000	65,000	70,000	903,000	86,000	3,000	45,000	22,000	79,000
Computer and information scientists	1,366,000	85,000	385,000	90,000	S	S	80,000	65,000	61,000	68,000	816,000	88,000	3,000	45,000	21,000	79,000
Computer and information scientists, research	25,000	92,000	7,000	96,000	S	S	1,000	61,000	S	S	16,000	92,000	S	S	S	S
Computer network architect	22,000	97,000	4,000	109,000	S	S	1,000	88,000	2,000	81,000	15,000	96,000	S	S	S	S
Computer support specialists	120,000	60,000	18,000	74,000	S	S	15,000	62,000	9,000	44,000	74,000	61,000	S	S	2,000	59,000
Computer system analysts	197,000	80,000	60,000	78,000	S	S	19,000	56,000	10,000	69,000	105,000	86,000	S	S	2,000	89,000
Database administrators	61,000	88,000	21,000	96,000	S	S	3,000	81,000	2,000	54,000	35,000	85,000	S	S	S	S
Information security analysts	27,000	92,000	5,000	96,000	S	S	2,000	91,000	1,000	70,000	18,000	93,000	S	S	S	S
Network and computer systems administrators	101,000	70,000	16,000	81,000	S	S	8,000	57,000	7,000	60,000	67,000	74,000	S	S	3,000	56,000
Software developers—applications and systems software	312,000	90,000	107,000	82,000	S	S	11,000	60,000	10,000	79,000	180,000	93,000	S	S	4,000	84,000
Web developers	58,000	63,000	13,000	76,000	S	S	2,000	80,000	3,000	54,000	40,000	56,000	S	S	1,000	58,000
Other computer information science occupations	110,000	90,000	19,000	84,000	S	S	8,000	93,000	5,000	50,000	77,000	94,000	S	S	S	S
Computer engineers—software	334,000	96,000	116,000	99,000	S	S	S	S	11,000	85,000	189,000	96,000	S	S	6,000	78,000
Mathematical scientists	72,000	80,000	14,000	89,000	S	S	2,000	93,000	3,000	75,000	52,000	80,000	S	S	S	S
Mathematicians	5,000	60,000	S	S	S	S	S	S	S	S	4,000	62,000	S	S	S	S
Operations research analysts, including modeling	31,000	79,000	6,000	92,000	S	S	1,000	86,000	1,000	74,000	22,000	79,000	S	S	S	S
Statisticians	23,000	95,000	7,000	92,000	S	S	1,000	77,000	1,000	117,000	13,000	99,000	S	S	S	S
Other mathematical scientists	S	S	1,000	52,000	S	S	S	S	S	S	S	S	S	S	S	S
Postsecondary teachers—computer and math sciences	47,000	68,000	8,000	79,000	S	S	2,000	58,000	1,000	63,000	35,000	67,000	S	S	S	S
Computer science	14,000	82,000	4,000	90,000	S	S	S	S	S	S	9,000	79,000	S	S	S	S
Mathematics and statistics	33,000	59,000	4,000	68,000	S	S	1,000	54,000	1,000	62,000	26,000	59,000	S	S	S	S
Biological, agricultural, and environmental life scientists	416,000	60,000	76,000	51,000	1,000	51,000	10,000	74,000	23,000	50,000	296,000	62,000	S	S	8,000	40,000
Agricultural and food scientists	51,000	63,000	6,000	54,000	S	S	1,000	85,000	2,000	71,000	39,000	64,000	S	S	S	S
Biological and medical scientists	287,000	55,000	65,000	50,000	S	S	8,000	79,000	18,000	44,000	190,000	58,000	S	S	5,000	35,000
Biochemists and biophysicists	54,000	52,000	19,000	41,000	S	S	S	S	4,000	75,000	30,000	59,000	S	S	1,000	33,000
Biological scientists (e.g., botanists, ecologists, zoologists)	100,000	50,000	16,000	47,000	S	S	2,000	S	6,000	37,000	72,000	53,000	S	S	2,000	36,000
Medical scientists (excluding practitioners)	81,000	66,000	21,000	60,000	S	S	2,000	68,000	4,000	41,000	52,000	74,000	S	S	1,000	34,000
Other biological and life scientists	53,000	57,000	9,000	51,000	S	S	2,000	75,000	5,000	50,000	36,000	60,000	S	S	2,000	30,000
Forestry and conservation scientists	26,000	62,000	S	S	S	S	S	S	1,000	63,000	24,000	62,000	S	S	S	S
Postsecondary teachers—life and related sciences	51,000	74,000	4,000	75,000	S	S	1,000	62,000	3,000	67,000	43,000	75,000	S	S	1,000	71,000
Agriculture	5,000	74,000	S	S	S	S	S	S	S	S	4,000	75,000	S	S	S	S
Biological sciences	41,000	70,000	4,000	74,000	S	S	1,000	61,000	2,000	64,000	34,000	70,000	S	S	S	S
Other natural sciences	6,000	87,000	S	S	S	S	S	S	S	S	5,000	88,000	S	S	S	S
Physical and related scientists	263,000	70,000	38,000	65,000	1,000	77,000	9,000	55,000	13,000	56,000	198,000	70,000	S	S	4,000	55,000
Chemists, except biochemists	90,000	70,000	19,000	67,000	S	S	4,000	59,000	5,000	53,000	60,000	73,000	S	S	2,000	S
Earth scientists, geologists, and oceanographers	59,000	72,000	4,000	82,000	S	S	1,000	74,000	2,000	71,000	50,000	70,000	S	S	1,000	S
Atmospheric and space scientists	12,000	72,000	2,000	72,000	S	S	S	S	S	S	10,000	70,000	S	S	S	S
Geologists, including earth scientists	43,000	72,000	2,000	89,000	S	S	1,000	S	2,000	70,000	38,000	70,000	S	S	S	S
Oceanographers	3,000	69,000	S	S	S	S	S	S	S	S	3,000	S	S	S	S	S
Physicists and astronomers	30,000	72,000	6,000	59,000	S	S	S	S	1,000	S	22,000	80,000	S	S	S	S

Appendix table 3-19

Estimate and median salary of full-time workers with highest degree in S&E field, by race, ethnicity, and occupation: 2010

Occupation	Total		Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Astronomers	3,000	62,000	S	S	S	S	S	S	S	S	2,000	73,000	S	S	S	S
Physicists, except biophysicists	27,000	74,000	6,000	55,000	S	S	S	S	1,000	22,000	19,000	81,000	S	S	S	S
Other physical and related scientists	36,000	65,000	3,000	58,000	S	S	1,000	65,000	2,000	53,000	30,000	66,000	S	S	S	S
Postsecondary teachers—physical and related sciences	48,000	65,000	6,000	55,000	S	S	S	S	2,000	70,000	36,000	70,000	S	S	1,000	51,000
Chemistry	23,000	59,000	3,000	55,000	S	S	S	S	1,000	81,000	16,000	63,000	S	S	S	S
Earth, environmental, and marine science	11,000	72,000	1,000	88,000	S	S	S	S	S	S	10,000	72,000	S	S	S	S
Physics	13,000	74,000	2,000	68,000	S	S	S	S	1,000	54,000	10,000	75,000	S	S	S	S
Social and related scientists	247,000	66,000	16,000	70,000	1,000	70,000	13,000	63,000	15,000	60,000	198,000	67,000	S	S	5,000	65,000
Economists	21,000	92,000	3,000	90,000	S	S	1,000	61,000	1,000	74,000	16,000	96,000	S	S	S	S
Political scientists	8,000	73,000	S	S	S	S	S	S	1,000	33,000	7,000	78,000	S	S	S	S
Psychologists, including clinical	100,000	65,000	3,000	65,000	S	S	5,000	65,000	7,000	62,000	83,000	65,000	S	S	1,000	63,000
Sociologists and anthropologists	12,000	52,000	S	S	S	S	1,000	37,000	S	S	9,000	59,000	S	S	1,000	S
Anthropologists	8,000	53,000	S	S	S	S	S	S	S	S	6,000	59,000	S	S	1,000	S
Sociologists	5,000	46,000	S	S	S	S	1,000	37,000	S	S	3,000	49,000	S	S	S	S
Other social and related scientists	39,000	62,000	4,000	60,000	S	S	2,000	50,000	2,000	62,000	30,000	62,000	S	S	S	S
Postsecondary teachers—social and related sciences	67,000	70,000	5,000	71,000	S	S	4,000	69,000	3,000	69,000	54,000	70,000	S	S	2,000	65,000
Economics	11,000	86,000	2,000	81,000	S	S	S	S	S	S	8,000	89,000	S	S	S	S
Political science	11,000	70,000	1,000	71,000	S	S	S	S	1,000	74,000	9,000	69,000	S	S	S	S
Psychology	22,000	65,000	1,000	69,000	S	S	1,000	60,000	1,000	60,000	18,000	65,000	S	S	1,000	65,000
Sociology	9,000	63,000	1,000	66,000	S	S	1,000	69,000	S	S	7,000	62,000	S	S	S	S
Other social sciences	14,000	67,000	1,000	65,000	S	S	1,000	66,000	1,000	69,000	11,000	68,000	S	S	1,000	39,000
Engineers	1,199,000	87,000	205,000	88,000	3,000	91,000	39,000	78,000	84,000	73,000	848,000	89,000	5,000	86,000	16,000	81,000
Aerospace, aeronautical, or astronautical engineers	77,000	102,000	8,000	93,000	S	S	2,000	79,000	6,000	82,000	57,000	105,000	S	S	2,000	89,000
Chemical engineers	60,000	91,000	12,000	88,000	S	S	1,000	83,000	3,000	85,000	41,000	93,000	S	S	1,000	99,000
Civil, architectural, or sanitary engineers	190,000	75,000	22,000	79,000	1,000	80,000	7,000	70,000	15,000	71,000	141,000	75,000	1,000	76,000	3,000	69,000
Electrical or computer hardware engineers	300,000	97,000	80,000	97,000	S	S	10,000	84,000	17,000	80,000	188,000	100,000	2,000	85,000	4,000	92,000
Computer engineer—hardware	48,000	103,000	20,000	99,000	S	S	1,000	103,000	1,000	S	24,000	104,000	S	S	S	S
Electrical and electronics engineers	252,000	96,000	60,000	95,000	S	S	9,000	84,000	16,000	81,000	163,000	98,000	1,000	76,000	3,000	92,000
Industrial engineers	45,000	75,000	8,000	71,000	S	S	3,000	78,000	6,000	61,000	29,000	75,000	S	S	S	S
Mechanical engineers	238,000	83,000	28,000	86,000	S	S	8,000	68,000	15,000	80,000	183,000	83,000	S	S	3,000	74,000
Other engineers	265,000	86,000	40,000	85,000	S	S	7,000	79,000	20,000	68,000	192,000	87,000	1,000	S	3,000	79,000
Agricultural engineers	6,000	74,000	S	S	S	S	S	S	S	S	5,000	88,000	S	S	S	S
Bioengineers or biomedical engineers	17,000	85,000	5,000	81,000	S	S	S	S	1,000	50,000	10,000	86,000	S	S	S	S
Environmental engineers	47,000	78,000	5,000	71,000	S	S	2,000	76,000	4,000	66,000	36,000	83,000	S	S	S	S
Marine engineers and naval architects	7,000	85,000	1,000	100,000	S	S	S	S	S	S	5,000	84,000	S	S	S	S
Materials and metallurgical engineers	26,000	88,000	8,000	82,000	S	S	1,000	82,000	2,000	63,000	15,000	95,000	S	S	1,000	88,000
Mining and geological engineers	6,000	84,000	S	S	S	S	S	S	S	S	4,000	84,000	S	S	S	S
Nuclear engineers	15,000	98,000	1,000	89,000	S	S	S	S	S	S	12,000	101,000	S	S	S	S
Petroleum engineers	15,000	117,000	1,000	119,000	S	S	S	S	2,000	S	11,000	118,000	S	S	S	S
Sales engineers	38,000	93,000	3,000	97,000	S	S	1,000	96,000	3,000	96,000	31,000	92,000	S	S	S	S
Other engineers	87,000	82,000	13,000	87,000	S	S	3,000	76,000	6,000	65,000	63,000	83,000	1,000	94,000	1,000	79,000
Postsecondary teachers—engineering	25,000	93,000	6,000	89,000	S	S	1,000	83,000	1,000	96,000	17,000	97,000	S	S	S	S

Appendix table 3-19

Estimate and median salary of full-time workers with highest degree in S&E field, by race, ethnicity, and occupation: 2010

Occupation	Total		Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
S&E-related occupations	1,377,000	70,000	231,000	73,000	6,000	S	85,000	61,000	95,000	56,000	934,000	73,000	5,000	70,000	21,000	63,000
Health-related occupations	381,000	49,000	54,000	49,000	S	S	31,000	44,000	36,000	46,000	248,000	50,000	1,000	44,000	7,000	40,000
Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)	40,000	89,000	6,000	141,000	S	S	S	S	1,000	43,000	27,000	86,000	S	S	S	S
Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practictioners	85,000	60,000	8,000	74,000	S	S	6,000	69,000	11,000	65,000	57,000	57,000	S	S	S	S
Health technologists and technicians (e.g., dental hygienists, health record technicians, licensed practical nurses, laboratory/radiology technicians)	118,000	40,000	26,000	36,000	S	S	9,000	46,000	13,000	32,000	67,000	43,000	S	S	2,000	40,000
Other health occupations	123,000	41,000	11,000	49,000	S	S	11,000	34,000	11,000	41,000	85,000	41,000	S	S	3,000	46,000
Postsecondary teachers—health and related sciences	16,000	94,000	3,000	100,000	S	S	S	S	S	S	12,000	92,000	S	S	S	S
S&E managers	412,000	115,000	61,000	119,000	S	S	16,000	120,000	21,000	92,000	305,000	115,000	3,000	85,000	5,000	94,000
Computer and information systems managers	132,000	120,000	29,000	100,000	S	S	S	S	7,000	103,000	86,000	124,000	S	S	S	S
Engineering managers	204,000	119,000	25,000	119,000	S	S	3,000	99,000	10,000	95,000	158,000	119,000	S	S	4,000	95,000
Medical and health services managers	41,000	90,000	S	S	S	S	3,000	76,000	1,000	68,000	32,000	90,000	S	S	S	S
Natural sciences managers	36,000	100,000	3,000	114,000	S	S	1,000	96,000	2,000	70,000	29,000	100,000	S	S	S	S
S&E precollege teachers	178,000	48,000	20,000	46,000	S	S	13,000	44,000	13,000	47,000	130,000	48,000	S	S	2,000	51,000
Secondary—computer, math, or sciences	152,000	47,000	20,000	46,000	S	S	9,000	47,000	10,000	48,000	112,000	48,000	S	S	2,000	55,000
Secondary—social sciences	26,000	50,000	S	S	S	S	5,000	41,000	3,000	44,000	18,000	52,000	S	S	1,000	39,000
S&E technicians and technologists	375,000	69,000	90,000	72,000	S	S	24,000	68,000	25,000	58,000	229,000	69,000	2,000	44,000	5,000	69,000
Technologists and technicians in the biological/life sciences	65,000	46,000	15,000	60,000	S	S	4,000	S	7,000	26,000	38,000	48,000	S	S	S	S
Computer programmers (business, scientific, process control)	109,000	78,000	35,000	82,000	S	S	S	S	5,000	85,000	57,000	79,000	S	S	1,000	62,000
Electrical, electronic, industrial, and mechanical technicians	92,000	70,000	23,000	69,000	S	S	2,000	64,000	7,000	58,000	59,000	75,000	1,000	57,000	S	S
Drafting occupations, including computer drafting	7,000	53,000	2,000	61,000	S	S	S	S	1,000	48,000	5,000	50,000	S	S	S	S
Surveying and mapping technicians	6,000	51,000	S	S	S	S	S	S	S	S	5,000	51,000	S	S	S	S
Other engineering technologists and technicians	68,000	69,000	13,000	61,000	S	S	6,000	55,000	4,000	60,000	42,000	74,000	S	S	3,000	69,000
Surveyors, cartographers, photogrammetrists	10,000	62,000	S	S	S	S	S	S	S	S	9,000	62,000	S	S	S	S
Technologists and technicians in the mathematical sciences	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Technologists and technicians in the physical sciences	16,000	52,000	S	S	S	S	1,000	50,000	S	S	12,000	55,000	S	S	S	S
Other S&E-related occupations	30,000	94,000	6,000	89,000	S	S	S	S	S	S	22,000	98,000	S	S	S	S
Architects	14,000	99,000	S	S	S	S	S	S	S	S	10,000	99,000	S	S	S	S
Actuaries	16,000	90,000	3,000	80,000	S	S	S	S	S	S	12,000	93,000	S	S	S	S
Non-S&E occupations	4,742,000	60,000	427,000	58,000	13,000	44,000	338,000	48,000	377,000	52,000	3,501,000	61,000	19,000	S	66,000	48,000
Non-S&E managers	924,000	101,000	76,000	105,000	S	S	40,000	90,000	54,000	95,000	741,000	103,000	2,000	121,000	11,000	77,000
Top-level managers, executives, administrators (e.g., chief executive officer/chief operating officer/chief financial officer, president, district/general manager/provost)	554,000	120,000	58,000	103,000	S	S	16,000	100,000	31,000	100,000	443,000	125,000	1,000	189,000	5,000	90,000
Education administrators (e.g., registrar, dean, principal)	39,000	90,000	2,000	113,000	S	S	2,000	78,000	2,000	68,000	32,000	90,000	S	S	S	S
Other mid-level managers	332,000	94,000	15,000	112,000	S	S	22,000	86,000	21,000	80,000	266,000	95,000	1,000	92,000	5,000	62,000
Management-related occupations	1,014,000	73,000	126,000	70,000	3,000	63,000	73,000	70,000	88,000	75,000	703,000	75,000	4,000	58,000	17,000	46,000
Accountants, auditors, and other financial specialists	377,000	72,000	70,000	62,000	S	S	22,000	61,000	29,000	75,000	251,000	78,000	1,000	55,000	4,000	50,000

Appendix table 3-19

Estimate and median salary of full-time workers with highest degree in S&E field, by race, ethnicity, and occupation: 2010

Occupation	Total		Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Personnel, training, and labor relations specialists	139,000	65,000	6,000	68,000	S	S	12,000	70,000	11,000	52,000	104,000	65,000	S	S	S	S
Other management-related occupations	498,000	75,000	51,000	79,000	3,000	60,000	39,000	74,000	48,000	75,000	348,000	74,000	2,000	S	8,000	53,000
Non-S&E precollege teachers	221,000	46,000	10,000	46,000	1,000	39,000	25,000	38,000	21,000	45,000	162,000	47,000	S	S	2,000	37,000
Prekindergarten and kindergarten	28,000	38,000	2,000	33,000	S	S	4,000	17,000	3,000	32,000	19,000	39,000	S	S	S	S
Elementary	104,000	50,000	S	S	S	S	S	S	10,000	54,000	75,000	50,000	S	S	S	S
Secondary—other subjects	37,000	42,000	1,000	42,000	S	S	2,000	44,000	4,000	38,000	29,000	42,000	S	S	S	S
Special education—primary and secondary	37,000	40,000	S	S	S	S	6,000	35,000	2,000	43,000	27,000	41,000	S	S	S	S
Other precollegiate area	14,000	40,000	S	S	S	S	S	S	2,000	35,000	11,000	41,000	S	S	S	S
Non-S&E postsecondary teachers	31,000	67,000	3,000	70,000	S	S	2,000	57,000	3,000	45,000	23,000	70,000	S	S	S	S
Art, drama, and music	1,000	49,000	S	S	S	S	S	S	S	S	1,000	49,000	S	S	S	S
Business, commerce, and marketing	6,000	86,000	1,000	101,000	S	S	S	S	S	S	5,000	74,000	S	S	S	S
Education	3,000	59,000	S	S	S	S	S	S	1,000	S	2,000	60,000	S	S	S	S
English	2,000	48,000	S	S	S	S	S	S	S	S	1,000	41,000	S	S	S	S
Foreign language	3,000	67,000	1,000	55,000	S	S	S	S	S	S	2,000	67,000	S	S	S	S
History	2,000	43,000	S	S	S	S	S	S	S	S	1,000	42,000	S	S	S	S
Physical education	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Other postsecondary fields	14,000	69,000	1,000	64,000	S	S	1,000	54,000	1,000	37,000	10,000	75,000	S	S	S	S
Social services and related occupations	322,000	39,000	9,000	43,000	S	S	55,000	42,000	37,000	38,000	215,000	39,000	S	S	3,000	31,000
Clergy and other religious workers	17,000	32,000	1,000	S	S	S	1,000	S	S	S	14,000	32,000	S	S	S	S
Counselors (e.g., educational, vocational, mental health, and substance abuse)	153,000	44,000	4,000	43,000	S	S	23,000	43,000	18,000	42,000	105,000	44,000	S	S	3,000	31,000
Social workers	151,000	35,000	4,000	44,000	S	S	31,000	37,000	19,000	35,000	96,000	35,000	S	S	S	S
Sales and marketing occupations	807,000	58,000	61,000	59,000	3,000	44,000	26,000	40,000	58,000	44,000	650,000	60,000	1,000	90,000	9,000	58,000
Insurance, securities, real estate, and business services	239,000	67,000	20,000	46,000	S	S	10,000	43,000	22,000	40,000	186,000	71,000	S	S	2,000	65,000
Sales—commodities except retail (e.g., industrial/ medical/dental machinery, equipment, supplies)	145,000	76,000	7,000	89,000	S	S	2,000	57,000	6,000	78,000	127,000	76,000	S	S	3,000	93,000
Sales—retail (e.g., furnishings, clothing, motor vehicles, cosmetics)	158,000	35,000	11,000	36,000	S	S	6,000	24,000	14,000	34,000	124,000	36,000	S	S	2,000	33,000
Other marketing and sales occupations	264,000	55,000	23,000	78,000	S	S	8,000	47,000	16,000	67,000	214,000	54,000	1,000	90,000	2,000	44,000
Arts, humanities, and related occupations	131,000	50,000	9,000	48,000	S	S	7,000	74,000	5,000	49,000	107,000	50,000	S	S	3,000	29,000
Writers, editors, public relations specialists, artists, entertainers, broadcasters	130,000	50,000	9,000	48,000	S	S	7,000	74,000	5,000	49,000	105,000	50,000	S	S	3,000	29,000
Historians	1,000	56,000	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Other non-S&E occupations	1,292,000	42,000	133,000	36,000	4,000	20,000	111,000	40,000	112,000	38,000	900,000	45,000	S	S	21,000	45,000
Accounting clerks and bookkeepers	56,000	36,000	15,000	33,000	S	S	3,000	38,000	2,000	38,000	34,000	37,000	S	S	1,000	43,000
Secretaries, receptionists, typists	77,000	33,000	7,000	40,000	S	S	7,000	31,000	9,000	30,000	53,000	34,000	S	S	2,000	31,000
Other administrative (e.g., record clerks, telephone operators)	227,000	38,000	29,000	36,000	S	S	25,000	39,000	23,000	34,000	142,000	38,000	2,000	37,000	5,000	42,000
Farmers, foresters, and fishermen	69,000	40,000	S	S	S	S	S	S	S	S	65,000	39,000	S	S	S	S
Lawyers, judges	36,000	99,000	3,000	92,000	S	S	2,000	132,000	4,000	79,000	26,000	96,000	S	S	S	S
Librarians, archivists, curators	21,000	31,000	1,000	41,000	S	S	S	S	1,000	22,000	18,000	31,000	S	S	S	S
Food preparation and service (e.g., cooks, waitresses, bartenders)	51,000	29,000	10,000	24,000	S	S	2,000	27,000	3,000	20,000	35,000	32,000	S	S	1,000	16,000

Appendix table 3-19

Estimate and median salary of full-time workers with highest degree in S&E field, by race, ethnicity, and occupation: 2010

Occupation	Total		Asian		American Indian or Alaska Native		Black		Hispanic		White		Native Hawaiian or Other Pacific Islander		More than one race	
	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)	Number	Median salary ($)
Protective services (e.g., firefighters, police, guards, wardens, park rangers)	121,000	63,000	6,000	45,000	S	S	12,000	50,000	10,000	65,000	89,000	66,000	S	S	3,000	61,000
Other service occupations, except health (e.g., probation officer, human services work)	201,000	40,000	17,000	30,000	S	S	31,000	41,000	20,000	34,000	129,000	40,000	S	S	3,000	30,000
Other teachers and instructors (e.g., private tutors, dance, flying, martial arts)	47,000	30,000	2,000	26,000	S	S	S	S	3,000	25,000	28,000	41,000	S	S	S	S
Construction and extraction occupations	70,000	59,000	S	S	S	S	1,000	61,000	3,000	S	57,000	59,000	S	S	S	S
Installation, maintenance, and repair occupations	64,000	45,000	3,000	46,000	S	S	2,000	51,000	12,000	S	46,000	49,000	S	S	S	S
Precision/production occupations (metal/wood workers, butchers, bakers, assemblers, tailors)	68,000	44,000	6,000	45,000	S	S	4,000	30,000	5,000	25,000	52,000	51,000	S	S	S	S
Transportation and material moving occupations	95,000	45,000	16,000	27,000	S	S	10,000	29,000	5,000	51,000	62,000	56,000	S	S	1,000	S
Other occupations	91,000	54,000	10,000	57,000	S	S	4,000	48,000	11,000	66,000	63,000	51,000	S	S	2,000	S

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers. Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

Science and Engineering Indicators 2014

Appendix table 3-20

Race and ethnic distribution of workers in S&E occupations, by nativity: 2010

(Percent distribution)

Race and ethnicity	All	Foreign born	U.S. native born
Total (*n*)	5,398,000	1,479,000	3,919,000
American Indian or Alaska Native	0.2	S	0.3
Asian	18.5	59.5	3.0
Black	4.6	4.0	4.8
Hispanic	5.2	8.2	4.1
Native Hawaiian or Other Pacific Islander	0.2	0.3	0.2
White	69.9	27.0	86.0
More than one race	1.4	0.9	1.7

S = suppressed for reasons of confidentiality and/or reliability.

NOTES: Detail may not add to total because of rounding. Numbers are rounded to the nearest 1,000. Percentages are based on rounded numbers. Hispanic may be any race. American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, white, and more than one race refer to individuals who are not of Hispanic origin.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2010), http://sestat.nsf.gov/.

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Appendix table 3-21

Occupations of new H-1B visa recipients: FY 2011

Occupation	Number	Percent
Computer-related occupations	51,570	48.4
Administrative specializations, managers, officials	12,740	12.0
Education	9,081	8.5
Architecture, engineering, and surveying	11,950	11.2
Medicine and health	6,037	5.7
Other, including occupations unknown	4,964	4.7
Life sciences	2,992	2.8
Mathematics and physical sciences	2,450	2.3
Social sciences	2,346	2.2
Other professional, technical, and managerial	2,315	2.2

SOURCE: Department of Homeland Security (DHS), *U.S. Citizenship and Immigration Services; Characteristics of H-1B Specialty Occupation Workers, Fiscal Year 2011 Annual Report to Congress,* http://www.uscis.gov/USCIS/Resources/Reports%20and%20Studies/ H-1B/h1b-fy-11-characteristics.pdf, accessed 20 December, 2012.

Science and Engineering Indicators 2014

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
Field and place of origin	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
All S&E fields	38,219	50,111	55,723	73.0	76.4	75.4	50.7	50.8	49.5
Europe	6,460	7,103	6,455	73.8	73.7	70.7	54.7	53.1	50.4
France	357	464	501	68.3	71.3	66.5	47.1	50.9	47.1
Germany	856	726	808	65.0	69.3	66.8	50.4	52.8	51.7
Greece	352	421	379	66.2	67.5	64.1	50.9	46.1	49.3
Italy	441	542	519	60.1	69.6	63.4	45.1	50.6	48.2
Spain	277	282	302	63.2	57.8	63.6	46.9	40.8	45.0
United Kingdom	449	408	434	79.3	75.5	74.0	57.5	53.4	55.8
Russian Federation (former USSR)	888	876	615	86.5	81.8	79.5	62.6	56.6	52.0
Other	2,840	3,384	2,897	76.3	75.4	73.1	56.7	54.8	50.6
Asia	25,338	35,369	40,845	76.7	79.9	78.3	52.5	52.2	50.9
China*	10,106	15,558	16,110	92.5	90.9	85.6	63.6	58.9	54.9
India	3,260	5,778	8,932	89.1	89.0	86.6	66.5	61.8	57.8
Japan	751	898	905	56.7	58.4	57.6	39.3	40.4	39.1
South Korea	3,541	4,767	4,868	68.6	69.3	67.9	45.7	43.5	44.6
Taiwan	2,293	1,929	2,283	66.4	64.8	69.7	40.3	38.1	41.6
Thailand	1,134	1,067	958	17.1	26.4	31.5	9.6	14.6	14.1
Iran	311	514	773	88.1	92.0	90.3	55.6	62.3	59.1
Israel	180	268	321	72.2	61.9	66.0	48.3	47.8	52.6
Turkey	1,318	1,494	1,935	58.3	67.7	66.6	40.3	46.7	45.9
Other	2,444	3,096	3,760	58.7	63.2	67.8	39.8	40.1	44.0
North/South America	4,392	5,131	5,684	56.6	61.5	63.3	41.0	43.5	43.7
Canada	1,349	1,617	1,767	68.9	66.8	66.0	53.2	50.0	46.9
Mexico	830	774	746	43.7	50.0	55.9	29.4	37.2	39.7
Argentina	290	396	430	65.9	67.4	64.9	51.0	51.3	50.0
Brazil	544	599	581	38.2	46.9	52.2	27.9	33.4	37.2
Chile	181	206	254	41.4	39.3	42.9	32.6	24.8	32.3
Colombia	264	385	606	60.2	61.8	64.2	42.8	40.0	42.2
Peru	123	158	234	72.4	72.8	70.1	46.3	48.7	50.4
Venezuela	250	238	201	48.4	64.7	78.6	31.6	42.9	52.2
Other	561	758	865	62.7	72.7	70.9	41.0	46.2	42.3
Africa	1,431	1,823	1,977	67.4	70.6	71.8	41.3	42.3	40.5
Egypt	380	527	383	63.4	65.3	67.9	44.2	43.3	42.0
Nigeria	79	143	242	88.6	88.1	85.5	45.6	44.1	45.5
South Africa	147	129	103	59.9	53.5	47.6	42.9	35.7	36.9
Other	825	1,024	1,249	68.5	73.0	72.4	39.3	42.5	39.4
Australia/Oceania	263	325	263	65.0	67.1	69.2	46.4	53.5	48.3
Australia	160	225	160	68.1	67.6	69.4	46.9	53.3	48.1
New Zealand	91	97	94	64.8	64.9	69.1	48.4	55.7	50.0
Other	12	3	9	25.0	100.0	66.7	25.0	0.0	33.3
Country unknown	335	360	499	29.9	41.4	51.5	13.1	18.3	29.5
Physical and earth sciences	6,323	8,055	8,719	80.0	81.0	78.2	58.7	55.7	53.9
Europe	1,626	1,715	1,297	75.3	75.3	70.8	56.6	54.3	50.8
France	94	102	108	68.1	70.6	63.9	47.9	52.0	50.0
Germany	220	142	145	64.1	66.9	57.9	51.4	48.6	46.2
Greece	51	67	52	60.8	61.2	59.6	47.1	43.3	48.1
Italy	99	144	80	55.6	63.2	55.0	40.4	45.1	42.5
Spain	41	50	35	58.5	58.0	54.3	39.0	48.0	31.4
United Kingdom	103	88	108	73.8	76.1	71.3	59.2	55.7	55.6
Russian Federation (former USSR)	335	328	207	88.1	81.7	82.1	63.3	57.6	58.9
Other	683	794	562	78.8	79.1	75.4	59.9	57.1	50.9
Asia	3,940	5,250	6,251	83.8	85.1	81.3	61.0	57.5	55.8
China*	2,069	2,832	3,078	92.6	90.9	85.9	66.4	59.9	57.6

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
Field and place of origin	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
India	446	645	1,113	86.3	86.7	83.3	67.7	61.4	58.8
Iran	37	62	48	81.1	85.5	83.3	64.9	59.7	50.0
Israel	16	32	21	62.5	68.8	71.4	37.5	56.3	57.1
Japan	95	127	134	71.6	57.5	64.9	49.5	36.2	47.0
South Korea	467	578	549	79.2	80.8	74.9	62.5	56.9	57.7
Taiwan	231	207	243	77.1	77.8	73.7	52.8	57.5	51.4
Thailand	89	84	89	16.9	35.7	33.7	13.5	22.6	18.0
Turkey	127	169	251	59.1	78.7	77.7	39.4	53.3	52.6
Other	363	514	725	70.8	77.0	76.8	48.5	52.1	51.7
North/South America	528	700	733	69.1	69.0	66.2	52.8	51.7	48.2
Canada	197	282	248	77.7	66.3	63.7	65.5	50.4	48.8
Mexico	88	95	106	59.1	56.8	58.5	43.2	42.1	46.2
Argentina	38	43	62	78.9	76.7	69.4	57.9	55.8	53.2
Brazil	41	43	47	34.1	62.8	57.4	19.5	51.2	42.6
Chile	12	15	29	66.7	40.0	62.1	41.7	33.3	51.7
Colombia	46	54	72	71.7	70.4	58.3	58.7	57.4	33.3
Peru	14	25	26	78.6	88.0	80.8	35.7	64.0	57.7
Venezuela	24	41	36	70.8	80.5	88.9	54.2	65.9	72.2
Other	68	102	107	69.1	81.4	76.6	47.1	53.9	46.7
Africa	156	275	332	84.6	81.8	79.5	56.4	48.4	47.9
Egypt	33	45	44	81.8	64.4	68.2	63.6	33.3	47.7
Nigeria	5	26	40	60.0	92.3	77.5	60.0	38.5	47.5
South Africa	16	13	13	62.5	61.5	30.8	43.8	53.8	15.4
Other	102	191	235	90.2	85.9	84.7	55.9	52.9	49.8
Australia/Oceania	22	59	40	63.6	69.5	67.5	54.5	55.9	42.5
Australia	13	42	26	61.5	66.7	65.4	61.5	52.4	34.6
New Zealand	9	15	12	66.7	73.3	75.0	44.4	73.3	58.3
Other	0	2	2	0.0	100.0	50.0	0.0	0.0	50.0
Country unknown	51	56	66	37.3	33.9	56.1	19.6	16.1	34.8
Biological sciences	6,607	8,141	10,082	83.9	84.6	82.7	59.0	58.5	54.9
Europe	951	1,141	1,138	81.6	80.2	77.6	59.4	58.3	53.5
France	45	74	88	77.8	82.4	73.9	44.4	60.8	50.0
Germany	142	125	151	74.6	81.6	72.8	57.7	64.8	52.3
Greece	38	53	51	68.4	83.0	74.5	47.4	64.2	58.8
Italy	35	64	49	71.4	78.1	73.5	54.3	46.9	53.1
Spain	42	40	53	71.4	72.5	69.8	52.4	42.5	52.8
United Kingdom	88	78	95	89.8	80.8	78.9	61.4	53.8	52.6
Russian Federation (former USSR)	131	110	99	92.4	88.2	82.8	71.8	60.9	55.6
Other	430	597	552	82.3	78.6	79.7	59.5	58.5	53.8
Asia	4,575	5,644	7,264	88.3	88.6	86.0	61.3	60.6	56.3
China*	2,480	2,857	3,269	95.3	93.9	88.6	65.3	62.3	56.7
India	604	1,072	1,807	92.5	92.3	90.4	63.6	65.7	58.7
Iran	42	30	42	83.3	100.0	100.0	50.0	63.3	61.9
Israel	23	25	45	91.3	52.0	66.7	56.5	36.0	48.9
Japan	89	112	153	79.8	78.6	77.1	55.1	59.8	54.9
South Korea	420	581	647	90.2	90.2	85.8	69.8	67.8	61.4
Taiwan	372	344	508	83.6	82.3	80.9	57.0	53.8	53.7
Thailand	123	106	106	13.0	17.9	33.0	8.1	15.1	20.8
Turkey	106	135	163	57.5	79.3	79.8	40.6	60.0	60.1
Other	316	382	524	70.6	69.6	75.6	50.3	44.2	48.5
North/South America	819	966	1,243	66.8	70.0	71.5	50.8	51.2	51.1
Canada	299	339	426	74.9	74.9	73.7	60.2	57.2	53.3
Mexico	121	104	108	54.5	61.5	64.8	39.7	51.9	45.4
Argentina	52	70	109	80.8	72.9	72.5	63.5	61.4	56.9

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
Field and place of origin	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
Brazil	77	116	135	41.6	53.4	58.5	33.8	39.7	43.0
Chile	45	32	42	60.0	65.6	61.9	46.7	43.8	45.2
Colombia	54	74	128	72.2	54.1	70.3	46.3	32.4	49.2
Peru	19	41	57	84.2	75.6	64.9	57.9	58.5	56.1
Venezuela	41	29	34	61.0	69.0	82.4	43.9	41.4	58.8
Other	111	161	204	68.5	82.6	81.4	48.6	52.2	51.5
Africa	175	291	316	73.7	79.0	77.5	49.1	49.1	46.5
Egypt	42	92	47	64.3	77.2	74.5	47.6	53.3	44.7
Nigeria	9	17	37	100.0	94.1	91.9	33.3	47.1	54.1
South Africa	19	19	19	89.5	78.9	68.4	63.2	36.8	52.6
Other	105	163	213	72.4	78.5	76.5	48.6	48.5	45.1
Australia/Oceania	48	57	44	68.8	73.7	81.8	50.0	54.4	65.9
Australia	26	34	24	80.8	76.5	91.7	53.8	55.9	75.0
New Zealand	19	22	19	63.2	68.2	68.4	52.6	54.5	57.9
Other	3	1	1	0.0	100.0	100.0	0.0	0.0	0.0
Country unknown	39	42	77	41.0	61.9	55.8	15.4	16.7	35.1
Health sciences	1,548	1,949	2,062	59.3	65.5	71.2	39.8	41.1	43.5
Europe	154	160	161	68.2	66.3	75.2	49.4	42.5	51.6
France	10	5	2	80.0	80.0	100.0	50.0	80.0	100.0
Germany	18	19	28	55.6	63.2	82.1	44.4	31.6	46.4
Greece	13	8	9	69.2	87.5	66.7	69.2	62.5	66.7
Italy	6	14	4	33.3	85.7	100.0	0.0	57.1	100.0
Spain	8	7	11	62.5	71.4	63.6	25.0	28.6	27.3
United Kingdom	24	24	23	91.7	62.5	82.6	66.7	45.8	69.6
Russian Federation (former USSR)	1	6	7	0.0	100.0	85.7	0.0	50.0	71.4
Other	74	77	77	66.2	58.4	70.1	48.6	37.7	44.2
Asia	1,045	1,375	1,491	59.1	67.1	72.0	38.8	41.3	43.8
China*	248	337	360	91.9	88.7	82.5	63.7	60.2	51.9
India	153	308	421	87.6	91.6	88.4	60.8	58.4	53.9
Iran	4	13	14	100.0	100.0	92.9	0.0	61.5	35.7
Israel	6	10	16	83.3	50.0	50.0	33.3	30.0	37.5
Japan	43	45	51	44.2	64.4	47.1	34.9	44.4	29.4
South Korea	108	159	184	73.1	73.0	79.3	46.3	37.7	49.5
Taiwan	169	197	184	44.4	44.2	57.6	25.4	21.8	37.5
Thailand	166	120	88	7.8	11.7	17.0	5.4	5.8	3.4
Turkey	17	15	7	64.7	73.3	85.7	41.2	60.0	14.3
Other	131	171	166	38.2	39.2	52.4	21.4	20.5	29.5
North/South America	224	238	241	54.5	63.9	64.7	40.6	45.8	41.1
Canada	109	110	111	67.9	68.2	68.5	54.1	54.5	45.0
Mexico	15	20	18	46.7	55.0	55.6	20.0	45.0	55.6
Argentina	4	7	11	75.0	57.1	90.9	50.0	57.1	54.5
Brazil	37	46	35	32.4	47.8	45.7	24.3	26.1	31.4
Chile	7	5	4	28.6	40.0	50.0	28.6	40.0	25.0
Colombia	13	12	21	30.8	83.3	81.0	30.8	50.0	47.6
Peru	8	3	8	62.5	66.7	50.0	25.0	0.0	37.5
Venezuela	6	12	5	16.7	75.0	40.0	0.0	50.0	20.0
Other	25	23	28	56.0	73.9	67.9	40.0	43.5	25.0
Africa	90	130	133	61.1	57.7	69.9	32.2	33.1	36.1
Egypt	18	39	28	55.6	53.8	78.6	33.3	33.3	42.9
Nigeria	9	18	25	100.0	77.8	92.0	44.4	61.1	32.0
South Africa	6	10	2	33.3	60.0	50.0	33.3	30.0	50.0
Other	57	63	78	59.6	54.0	60.3	29.8	25.4	34.6
Australia/Oceania	18	15	16	83.3	73.3	68.8	72.2	60.0	43.8
Australia	13	11	9	92.3	81.8	88.9	76.9	72.7	55.6

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
Field and place of origin	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
New Zealand	4	4	5	75.0	50.0	40.0	75.0	25.0	20.0
Other	1	0	2	0.0	0.0	50.0	0.0	0.0	50.0
Country unknown	17	31	20	17.6	32.3	70.0	11.8	12.9	40.0
Mathematics and computer	3,643	5,814	6,719	76.4	78.3	76.8	56.7	56.2	53.3
Europe	965	1,111	996	76.1	71.1	71.4	59.2	54.1	54.0
France	27	44	33	63.0	65.9	57.6	44.4	50.0	48.5
Germany	112	100	110	63.4	62.0	58.2	53.6	48.0	47.3
Greece	54	82	71	72.2	58.5	64.8	48.1	50.0	49.3
Italy	45	50	64	68.9	64.0	62.5	51.1	60.0	45.3
Spain	15	34	27	53.3	50.0	66.7	40.0	29.4	51.9
United Kingdom	50	37	47	72.0	54.1	70.2	64.0	40.5	57.4
Russian Federation (former USSR)	167	143	101	84.4	81.1	76.2	64.7	58.7	48.5
Other	495	621	543	79.0	75.0	76.2	61.4	56.5	58.2
Asia	2,192	4,043	5,002	80.1	83.0	79.5	58.4	58.6	54.2
China*	876	2,098	2,443	90.8	91.3	86.0	67.5	65.0	58.6
India	314	638	973	92.0	86.4	84.7	72.0	64.7	60.7
Iran	31	60	57	90.3	83.3	77.2	64.5	60.0	47.4
Israel	29	34	45	65.5	61.8	86.7	48.3	47.1	68.9
Japan	43	61	40	74.4	65.6	67.5	51.2	45.9	42.5
South Korea	327	445	479	76.5	75.1	71.0	51.7	47.2	43.0
Taiwan	194	171	179	65.5	63.7	69.3	36.1	40.4	41.9
Thailand	57	68	104	21.1	17.6	27.9	14.0	10.3	12.5
Turkey	118	169	237	68.6	69.2	62.4	55.1	53.8	46.4
Other	203	299	445	60.6	68.2	68.3	47.3	45.5	46.7
North/South America	323	413	463	57.6	58.4	64.8	43.3	43.1	48.4
Canada	98	130	141	66.3	65.4	60.3	51.0	53.8	49.6
Mexico	64	64	78	39.1	51.6	67.9	28.1	35.9	47.4
Argentina	19	34	20	78.9	79.4	55.0	73.7	64.7	30.0
Brazil	57	74	70	54.4	44.6	58.6	40.4	31.1	50.0
Chile	13	12	19	53.8	50.0	57.9	38.5	16.7	42.1
Colombia	20	26	52	55.0	53.8	63.5	35.0	30.8	51.9
Peru	6	8	14	83.3	50.0	64.3	83.3	37.5	57.1
Venezuela	25	16	15	48.0	43.8	66.7	28.0	25.0	46.7
Other	21	49	54	71.4	65.3	87.0	52.4	46.9	48.1
Africa	92	169	148	77.2	71.6	77.0	52.2	50.3	50.7
Egypt	23	61	43	78.3	60.7	58.1	56.5	39.3	44.2
Nigeria	2	3	16	100.0	100.0	87.5	50.0	66.7	62.5
South Africa	16	8	7	75.0	75.0	71.4	50.0	75.0	71.4
Other	51	97	82	76.5	77.3	85.4	51.0	54.6	50.0
Australia/Oceania	46	37	41	65.2	73.0	70.7	52.2	70.3	53.7
Australia	26	28	28	53.8	67.9	57.1	50.0	64.3	39.3
New Zealand	19	9	13	78.9	88.9	100.0	52.6	88.9	84.6
Other	1	0	0	100.0	0.0	0.0	100.0	0.0	0.0
Country unknown	25	41	69	32.0	46.3	43.5	8.0	24.4	20.3
Social science	6,223	7,265	8,125	56.2	59.1	57.3	39.4	41.8	38.9
Europe	1,337	1,540	1,513	65.1	67.9	63.7	50.1	52.5	46.8
France	77	84	68	67.5	65.5	55.9	50.6	53.6	38.2
Germany	179	209	248	65.4	66.5	66.1	51.4	53.6	54.4
Greece	58	49	55	53.4	67.3	56.4	39.7	44.9	45.5
Italy	150	155	138	59.3	65.2	53.6	50.0	53.5	42.0
Spain	110	87	92	59.1	49.4	57.6	47.3	42.5	44.6
United Kingdom	126	117	112	77.8	78.6	68.8	54.8	57.3	53.6

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
Russian Federation (former USSR)	94	157	110	79.8	75.2	69.1	59.6	50.3	40.9
Other	543	682	690	63.2	68.0	65.4	48.6	53.2	46.1
Asia	3,155	3,875	4,639	54.6	57.7	56.8	37.4	39.4	37.9
China*	573	887	1,177	81.8	78.1	68.9	60.9	57.0	47.0
India	364	393	567	81.3	77.4	75.1	58.5	54.7	52.7
Iran	21	27	34	85.7	92.6	94.1	28.6	51.9	58.8
Israel	80	119	147	66.3	58.8	59.9	50.0	43.7	48.3
Japan	349	394	387	47.6	47.2	49.4	31.8	34.8	32.8
South Korea	678	802	850	39.7	46.8	46.4	24.9	29.1	29.2
Taiwan	295	294	300	39.3	41.5	43.3	22.4	24.1	22.7
Thailand	124	141	145	12.1	28.4	24.8	5.6	14.9	11.0
Turkey	222	319	484	50.5	49.5	45.0	35.6	35.7	31.2
Other	449	499	548	46.5	52.5	56.2	31.0	33.1	37.2
North/South America	1,226	1,335	1,410	49.9	54.7	52.1	35.7	39.5	36.8
Canada	438	468	485	60.0	58.8	55.1	45.4	43.6	39.2
Mexico	188	182	176	35.1	41.2	50.0	20.7	33.0	35.8
Argentina	98	136	132	49.0	66.9	56.8	39.8	55.1	46.2
Brazil	131	143	138	38.2	42.7	41.3	29.0	33.6	29.7
Chile	53	58	75	24.5	32.8	32.0	20.8	17.2	24.0
Colombia	41	78	103	46.3	43.6	46.6	36.6	26.9	34.0
Peru	43	37	45	65.1	54.1	60.0	48.8	27.0	46.7
Venezuela	45	33	29	31.1	63.6	48.3	17.8	51.5	37.9
Other	189	200	227	58.7	67.0	59.0	36.0	41.0	34.8
Africa	343	352	385	61.5	59.7	59.2	33.8	34.1	30.4
Egypt	29	43	28	37.9	39.5	42.9	27.6	32.6	32.1
Nigeria	29	26	27	86.2	80.8	81.5	48.3	34.6	40.7
South Africa	41	30	34	53.7	30.0	35.3	34.1	16.7	35.3
Other	244	253	296	62.7	64.4	61.5	32.8	36.4	28.7
Australia/Oceania	82	84	77	64.6	53.6	59.7	42.7	42.9	48.1
Australia	56	65	48	66.1	55.4	58.3	39.3	44.6	50.0
New Zealand	22	19	27	63.6	47.4	63.0	50.0	36.8	44.4
Other	4	0	2	50.0	0.0	50.0	50.0	0.0	50.0
Country unknown	80	79	101	33.8	35.4	46.5	17.5	22.8	24.8
Engineering	11,996	17,093	18,228	75.8	80.0	79.1	50.2	49.4	49.5
Europe	1,262	1,293	1,226	75.8	76.9	72.8	53.2	49.3	49.3
France	95	145	190	68.4	73.1	70.0	49.5	45.5	46.8
Germany	163	115	106	58.9	70.4	74.5	41.7	52.2	58.5
Greece	126	146	132	75.4	69.9	65.2	61.1	39.0	47.0
Italy	92	102	169	63.0	78.4	72.8	42.4	50.0	54.4
Spain	52	60	78	69.2	61.7	69.2	51.9	40.0	44.9
United Kingdom	46	53	39	78.3	81.1	87.2	45.7	54.7	64.1
Russian Federation (former USSR)	153	127	82	85.6	85.0	87.8	54.9	55.1	48.8
Other	535	545	430	82.2	80.2	72.3	57.6	51.4	46.3
Asia	9,344	14,170	15,141	78.2	81.6	80.6	51.5	50.2	50.4
China*	3,524	6,192	5,458	93.1	91.7	87.4	61.1	55.5	52.9
India	1,302	2,586	3,796	90.2	90.4	87.8	69.6	61.4	58.3
Iran	173	320	575	90.2	93.8	91.1	58.4	64.1	61.4
Israel	23	42	44	87.0	78.6	70.5	47.8	69.0	59.1
Japan	112	138	120	50.9	68.1	51.7	37.5	39.1	34.2
South Korea	1,373	2,051	2,008	68.9	66.6	66.9	40.3	37.8	41.7
Taiwan	936	659	814	70.5	69.0	74.1	40.6	34.1	38.6
Thailand	479	465	360	24.0	33.5	40.3	12.7	17.2	16.1
Turkey	598	647	768	66.9	71.7	75.3	45.2	46.4	50.5

Appendix table 3-22

Plans of foreign recipients of U.S. doctorates to stay in the United States, by field of doctorate and place of origin: 2000–11

	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
Field and place of origin	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11	2000–03	2004–07	2008–11
Other	824	1,070	1,198	60.7	63.7	67.7	40.2	39.4	42.7
North/South America	823	1,036	1,179	59.5	66.4	69.4	40.8	43.1	43.5
Canada	166	234	301	77.7	74.8	77.4	51.8	49.6	49.5
Mexico	216	208	176	51.9	56.7	59.1	36.1	38.9	40.9
Argentina	41	61	52	73.2	72.1	71.2	61.0	41.0	55.8
Brazil	123	114	101	39.8	50.0	55.4	26.8	31.6	34.7
Chile	36	52	67	30.6	32.7	34.3	27.8	25.0	23.9
Colombia	63	114	195	63.5	77.2	70.8	42.9	50.0	41.0
Peru	22	38	64	77.3	81.6	76.6	54.5	55.3	48.4
Venezuela	74	87	71	59.5	66.7	88.7	37.8	36.8	49.3
Other	82	128	152	70.7	78.1	75.7	45.1	50.8	43.4
Africa	418	449	490	68.9	75.7	79.4	45.2	44.3	43.7
Egypt	226	232	178	63.3	70.7	74.7	42.9	46.6	43.3
Nigeria	17	44	80	94.1	90.9	86.3	47.1	45.5	45.0
South Africa	32	28	20	68.8	67.9	65.0	59.4	46.4	35.0
Other	143	145	212	74.8	80.7	82.1	45.5	40.0	44.3
Australia/Oceania	35	55	41	62.9	80.0	73.2	34.3	61.8	31.7
Australia	21	35	22	61.9	80.0	77.3	28.6	60.0	36.4
New Zealand	13	20	17	69.2	80.0	64.7	46.2	65.0	29.4
Other	1	0	2	0.0	0.0	100.0	0.0	0.0	0.0
Country unknown	114	90	151	21.9	48.9	53.6	7.9	18.9	31.8

* Includes Hong Kong.

NOTES: Data include foreign doctorate recipients who are permanent or temporary residents. The information on plan to stay or definite plan to stay reflects intentions within the year after graduation as reported by the doctoral recipient around the graduation date. Recipients who plan to stay think they will locate in the United States; those with definite plans have a postdoctoral research appointment or a definite employment plan in the United States. Percentages are based on the total number of foreign S&E doctorate recipients, including those who did not report their postgraduate location plans or employment plans. The percentage of foreign S&E doctorate recipients who did not report postgraduate location plans ranged from 2.3% to 4.8% over the 2000–11 period, and the percentage who either did not report postgraduate location plans or did not report employment plans ranged from 3.9% to 7.4% over that period.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of Survey of Earned Doctorates (2000–11).

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Appendix table 3-23

R&D personnel in selected regions/countries: 1995–2011

(Thousands)

Year	EU	Japan	South Korea	China	Russia
1995	1,851	948	152	752	1,211
1996	1,867	892	136	804	1,113
1997	1,859	894	137	831	1,053
1998	1,910	926	129	755	967
1999	1,947	919	138	822	989
2000	2,000	897	138	922	1,007
2001	2,033	869	166	956	1,008
2002	2,082	834	172	1,035	987
2003	2,101	859	186	1,095	973
2004	2,144	873	194	1,153	952
2005	2,202	897	215	1,365	920
2006	2,294	910	238	1,502	917
2007	2,369	912	269	1,736	912
2008	2,462	883	294	1,965	870
2009	2,489	878	309	2,291	846
2010	2,535	878	335	2,554	840
2011	2,587	870	361	2,883	839

EU = European Union.

NOTES: Personnel are full-time equivalents. Total R&D personnel includes researchers, technicians, and other support staff. Data between 1995 and 2008 for China are not comparable to data for the Organisation for Economic Co-operation and Development (OECD) countries or to China data for subsequent years. China data between 1995 and 1999 are based on underestimated data and are not comparable to data from 2000 to 2008. EU data for 2011 is provisional. Data for Japan for 1995 are based on overestimated data and are not comparable to subsequent years. Counts for South Korea prior to 2007 excludes social science and humanities researchers.

SOURCE: OECD, Main Science and Technology Indicators (2013/1 and earlier years), http://www.oecd.org/sti/msti.htm.

Science and Engineering Indicators 2014

Appendix table 3-24

Researchers as a share of total employment in selected regions/countries/economies: 1995, 2003, 2011

(Per thousand)

Region/country/economy	1995	2003	2011
Argentina	NA	2.0	2.9
Austria	NA	NA	9.0
Belgium	6.0	7.4	8.9
Canada	6.4	7.7	8.6 *
China	0.8	1.2	1.7
Chinese Taipei	NA	7.8	12.5
Czech Republic	2.3	3.3	6.0
Denmark	6.1	9.0	13.4
EU	4.8	5.8	7.0 *
Finland	8.2	17.8	15.9
France	6.4	7.4	9.0 *
Germany	6.1	6.9	8.1 *
Italy	3.5	2.9	4.3
Japan	10.0	10.1	10.2
South Korea	4.9	6.8	11.9
Netherlands	4.8	5.3	6.2 *
Norway	7.5	8.9	10.3
Poland	3.5	4.3	4.0
Portugal	2.6	4.0	9.9
Russian Federation	9.9	7.3	6.3
Singapore	4.3	9.4	10.4
Spain	3.5	5.2	7.0
Sweden	8.2	11.0	10.6
Turkey	0.9	1.7	3.0
United Kingdom	5.2	7.1	8.4
United States	8.1	10.2	9.5 **

NA = not available.

EU = European Union.

* 2011 data are not available; 2010 data are shown.
** 2011 data for the United States are not available; 2007 data are shown.

NOTES: Researchers are full-time equivalents. Quality of data and methods of collecting data can vary between and within regions/countries/economies across years. Data are presented for regions/countries/economies with 25,000 or more researchers according to the most recent estimates.

SOURCE: Organisation for Economic Co-operation and Development, Main Science and Technology Indicators (2013/1 and earlier years), http://www.oecd.org/sti/msti.htm.

Science and Engineering Indicators 2014

Appendix table 4-1

Gross domestic product, R&D, and ratio of R&D and gross domestic product: 1953–2011

	GDP			R&D				R&D/GDP (%)		
Year	Current $billions	Implicit price deflator (2005 = 1.00000)	2005 constant $billions	Current $millions	2005 constant $millions	Federally funded 2005 constant $millions	Nonfederally funded 2005 constant $millions	Total	Federally funded	Nonfederally funded
1953	379.3	0.16160	2,347.2	5,160	31,931	17,219	14,713	1.36	0.73	0.63
1954	380.4	0.16309	2,332.4	5,617	34,437	18,995	15,442	1.48	0.81	0.66
1955	414.7	0.16586	2,500.3	6,281	37,871	21,725	16,146	1.51	0.87	0.65
1956	437.4	0.17155	2,549.7	8,500	49,548	29,018	20,531	1.94	1.14	0.81
1957	461.1	0.17727	2,601.1	9,908	55,893	35,159	20,734	2.15	1.35	0.80
1958	467.2	0.18125	2,577.6	10,915	60,220	38,477	21,743	2.34	1.49	0.84
1959	506.6	0.18338	2,762.5	12,490	68,106	44,535	23,571	2.47	1.61	0.85
1960	526.4	0.18595	2,830.9	13,711	73,737	47,944	25,792	2.60	1.69	0.91
1961	544.8	0.18806	2,896.9	14,564	77,444	50,431	27,012	2.67	1.74	0.93
1962	585.7	0.19063	3,072.4	15,636	82,022	53,182	28,841	2.67	1.73	0.94
1963	617.8	0.19266	3,206.7	17,519	90,932	60,446	30,486	2.84	1.88	0.95
1964	663.6	0.19562	3,392.3	19,103	97,653	65,251	32,402	2.88	1.92	0.96
1965	719.1	0.19919	3,610.1	20,252	101,672	66,236	35,436	2.82	1.83	0.98
1966	787.7	0.20485	3,845.3	22,072	107,747	69,147	38,599	2.80	1.80	1.00
1967	832.4	0.21114	3,942.5	23,346	110,576	68,974	41,601	2.80	1.75	1.06
1968	909.8	0.22011	4,133.4	24,666	112,063	67,985	44,078	2.71	1.64	1.07
1969	984.4	0.23098	4,261.8	25,996	112,544	65,928	46,616	2.64	1.55	1.09
1970	1,038.3	0.24317	4,269.9	26,271	108,038	61,621	46,417	2.53	1.44	1.09
1971	1,126.8	0.25532	4,413.3	26,952	105,561	59,573	45,988	2.39	1.35	1.04
1972	1,237.9	0.26635	4,647.7	28,740	107,905	60,219	47,686	2.32	1.30	1.03
1973	1,382.3	0.28113	4,917.0	30,952	110,098	59,002	51,096	2.24	1.20	1.04
1974	1,499.5	0.30665	4,889.9	33,359	108,784	56,373	52,411	2.22	1.15	1.07
1975	1,637.7	0.33563	4,879.5	35,671	106,282	55,220	51,063	2.18	1.13	1.05
1976	1,824.6	0.35489	5,141.3	39,435	111,118	57,177	53,941	2.16	1.11	1.05
1977	2,030.1	0.37750	5,377.7	43,338	114,802	58,467	56,335	2.13	1.09	1.05
1978	2,293.8	0.40401	5,677.6	48,719	120,589	60,429	60,161	2.12	1.06	1.06
1979	2,562.2	0.43761	5,855.0	55,379	126,549	62,213	64,336	2.16	1.06	1.10
1980	2,788.1	0.47750	5,839.0	63,224	132,407	62,799	69,608	2.27	1.08	1.19
1981	3,126.8	0.52225	5,987.2	72,292	138,425	64,603	73,822	2.31	1.08	1.23
1982	3,253.2	0.55412	5,870.9	80,748	145,722	67,013	78,710	2.48	1.14	1.34
1983	3,534.6	0.57602	6,136.2	89,950	156,156	71,960	84,196	2.54	1.17	1.37
1984	3,930.9	0.59766	6,577.1	102,244	171,072	77,753	93,319	2.60	1.18	1.42
1985	4,217.5	0.61576	6,849.3	114,671	186,227	85,490	100,737	2.72	1.25	1.47
1986	4,460.1	0.62938	7,086.5	120,249	191,059	86,788	104,271	2.70	1.22	1.47
1987	4,736.4	0.64764	7,313.3	126,360	195,108	90,497	104,612	2.67	1.24	1.43
1988	5,100.4	0.66988	7,613.9	133,881	199,858	89,764	110,095	2.62	1.18	1.45
1989	5,482.1	0.69518	7,885.9	141,891	204,107	86,979	117,129	2.59	1.10	1.49
1990	5,800.5	0.72200	8,033.9	151,993	210,515	85,332	125,183	2.62	1.06	1.56
1991	5,992.1	0.74760	8,015.1	160,876	215,189	81,304	133,885	2.68	1.01	1.67
1992	6,342.3	0.76532	8,287.1	165,350	216,053	79,593	136,459	2.61	0.96	1.65

Appendix table 4-1

Gross domestic product, R&D, and ratio of R&D and gross domestic product: 1953–2011

	GDP			R&D				R&D/GDP (%)		
Year	Current $billions	Implicit price deflator (2005 = 1.00000)	2005 constant $billions	Current $millions	2005 constant $millions	Federally funded 2005 constant $millions	Nonfederally funded 2005 constant $millions	Total	Federally funded	Nonfederally funded
1993	6,667.4	0.78225	8,523.4	165,730	211,865	77,377	134,488	2.49	0.91	1.58
1994	7,085.2	0.79872	8,870.7	169,207	211,847	76,093	135,754	2.39	0.86	1.53
1995	7,414.7	0.81537	9,093.7	183,625	225,206	77,228	147,978	2.48	0.85	1.63
1996	7,838.5	0.83089	9,433.9	197,346	237,513	76,297	161,216	2.52	0.81	1.71
1997	8,332.4	0.84556	9,854.3	212,152	250,901	76,368	174,533	2.55	0.77	1.77
1998	8,793.5	0.85511	10,283.5	226,457	264,829	77,632	187,197	2.58	0.75	1.82
1999	9,353.5	0.86769	10,779.8	245,318	282,726	77,639	205,087	2.62	0.72	1.90
2000	9,951.5	0.88723	11,216.4	268,905	303,084	76,487	226,597	2.70	0.68	2.02
2001	10,286.2	0.90727	11,337.5	279,716	308,304	82,628	225,676	2.72	0.73	1.99
2002	10,642.3	0.92196	11,543.1	279,387	303,036	87,113	215,923	2.63	0.75	1.87
2003	11,142.2	0.94135	11,836.4	293,060	311,319	92,107	219,212	2.63	0.78	1.85
2004	11,853.3	0.96786	12,246.9	304,547	314,660	95,427	219,233	2.57	0.78	1.79
2005	12,623.0	1.00000	12,623.0	327,185	327,185	97,041	230,144	2.59	0.77	1.82
2006	13,377.2	1.03231	12,958.5	352,567	341,532	98,379	243,153	2.64	0.76	1.88
2007	14,028.7	1.06227	13,206.4	379,454	357,212	100,381	256,832	2.70	0.76	1.94
2008	14,291.5	1.08582	13,161.9	406,610	374,472	109,984	264,488	2.85	0.84	2.01
2009	13,939.0	1.09729	12,703.1	404,697	368,815	116,165	252,650	2.90	0.91	1.99
2010	14,526.5	1.10991	13,088.0	406,708	366,434	114,390	252,044	2.80	0.87	1.93
2011	15,094.0	1.13360	13,315.1	424,413	374,394	110,873	263,521	2.81	0.83	1.98

GDP = gross domestic product.

SOURCES: GDP data are from the Bureau of Economic Analysis, Survey of Current Business (31 May 2012); R&D data are from the National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

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Appendix table 4-2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry			Industry FFRDCs[a]	U&C[b]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[c]
Year	Funding source:	All sources	Federal	Total	Federal[a]	Industry[d]	Total	Total	Federal	Other government[e]	Industry	U&C	Other nonprofit	Total	Total	Federal[c]	Industry	Other nonprofit	Total
		Current $millions																	
1953		5,160	1,015	3,630	1,430	2,200	NA	273	149	40	21	37	27	131	112	58	26	28	NA
1954		5,617	963	4,070	1,750	2,320	NA	301	165	45	24	40	29	161	123	61	31	31	NA
1955		6,281	973	4,517	2,057	2,460	123	342	191	50	27	42	32	187	131	64	35	32	9
1956		8,500	1,130	6,272	2,995	3,277	333	391	221	57	32	46	36	217	146	71	37	38	11
1957		9,908	1,297	7,324	3,928	3,396	407	433	242	64	37	51	40	267	167	79	37	51	14
1958		10,915	1,507	8,066	4,436	3,630	323	491	280	72	39	56	45	316	195	95	38	62	18
1959		12,490	1,681	9,200	5,217	3,983	418	586	356	81	40	61	50	349	234	125	42	67	22
1960		13,711	1,801	10,032	5,604	4,428	477	705	453	90	40	67	55	385	264	148	48	68	48
1961		14,564	1,987	10,353	5,685	4,668	555	834	557	101	40	75	62	440	304	169	49	86	92
1962		15,636	2,188	11,037	6,008	5,029	426	993	687	112	41	84	70	500	363	200	54	109	130
1963		17,519	2,558	12,216	6,856	5,360	414	1,178	839	125	41	96	78	580	408	234	55	119	165
1964		19,103	2,965	13,049	7,257	5,792	463	1,375	995	138	41	114	88	629	417	250	55	112	205
1965		20,252	3,156	13,812	7,367	6,445	373	1,595	1,167	150	42	136	101	630	472	286	62	124	215
1966		22,072	3,308	15,193	7,977	7,216	355	1,818	1,335	160	45	165	114	652	537	329	70	138	210
1967		23,346	3,444	15,966	7,946	8,020	419	2,035	1,491	168	52	200	126	696	561	342	74	145	225
1968		24,666	3,497	17,014	8,145	8,869	415	2,187	1,586	185	58	221	139	722	596	364	81	151	235
1969		25,996	3,790	17,844	7,987	9,857	464	2,280	1,624	208	61	233	155	731	642	388	93	161	245
1970		26,271	4,154	17,594	7,306	10,288	473	2,418	1,686	237	66	259	171	727	677	410	95	172	230
1971		26,952	4,409	17,829	7,175	10,654	491	2,565	1,760	262	72	290	182	735	709	427	98	184	215
1972		28,740	4,676	19,004	7,469	11,535	548	2,757	1,890	282	79	312	195	785	771	472	101	198	200
1973		30,952	4,837	20,704	7,600	13,104	545	2,953	2,009	302	90	343	211	841	882	566	105	211	190
1974		33,359	5,132	22,239	7,572	14,667	648	3,216	2,160	320	104	393	239	926	988	639	114	235	210
1975		35,671	5,561	23,460	7,878	15,582	727	3,570	2,400	348	118	432	272	1,067	1,062	675	124	262	225
1976		39,435	5,890	26,107	8,671	17,436	890	3,899	2,619	369	131	480	300	1,266	1,139	711	135	292	245
1977		43,338	6,211	28,863	9,523	19,340	962	4,346	2,893	394	155	569	337	1,467	1,213	740	147	326	275
1978		48,719	6,962	32,222	10,107	22,115	1,082	4,996	3,329	443	182	679	364	1,772	1,353	830	160	363	333
1979		55,379	7,471	37,062	11,354	25,708	1,164	5,715	3,848	482	215	785	386	2,013	1,564	985	174	405	390
1980		63,224	7,831	43,228	12,752	30,476	1,277	6,455	4,335	519	264	920	419	2,306	1,658	1,017	189	452	469
1981		72,292	8,605	50,425	14,997	35,428	1,385	7,085	4,670	581	314	1,058	463	2,484	1,784	1,075	206	504	524
1982		80,748	9,501	57,166	17,061	40,105	1,484	7,603	4,879	621	363	1,207	534	2,544	1,915	1,129	224	561	536
1983		89,950	10,830	63,683	19,095	44,588	1,585	8,251	5,210	658	432	1,357	595	2,840	2,176	1,306	244	626	585
1984		102,244	11,916	73,061	21,657	51,404	1,739	9,154	5,748	721	518	1,514	654	3,243	2,511	1,548	265	698	620
1985		114,671	13,093	82,376	25,333	57,043	1,863	10,308	6,388	834	630	1,743	713	3,616	2,761	1,694	289	778	655
1986		120,249	13,504	85,932	26,000	59,932	1,891	11,540	7,028	969	745	2,019	780	3,973	2,867	1,686	314	867	541

Appendix table 4-2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry			Industry FFRDCs[a]	U&C[b]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[c]
Year	Funding source:	All sources	Federal	Total	Federal[a]	Industry[d]	Total	Total	Federal	Other government[e]	Industry	U&C	Other nonprofit	Total	Total	Federal[c]	Industry	Other nonprofit	Total
1987		126,360	13,588	90,160	28,757	61,403	1,995	12,807	7,768	1,065	831	2,262	882	4,287	3,013	1,704	342	967	509
1988		133,881	14,342	94,893	28,221	66,672	2,122	14,221	8,593	1,165	933	2,527	1,003	4,581	3,213	1,762	372	1,078	510
1989		141,891	15,231	99,860	26,359	73,501	2,195	15,634	9,317	1,274	1,061	2,852	1,131	4,756	3,669	2,062	405	1,202	547
1990		151,993	15,671	107,404	25,802	81,602	2,323	16,939	9,939	1,399	1,166	3,187	1,249	4,894	4,126	2,346	440	1,340	636
1991		160,876	15,249	114,675	24,095	90,580	2,277	18,206	10,667	1,483	1,242	3,458	1,358	5,120	4,652	2,679	479	1,494	696
1992		165,350	15,853	116,757	22,369	94,388	2,353	19,388	11,528	1,525	1,320	3,569	1,448	5,259	4,993	2,806	521	1,666	748
1993		165,730	16,531	115,435	20,844	94,591	1,965	20,495	12,307	1,557	1,392	3,709	1,531	5,289	5,267	2,843	567	1,857	749
1994		169,207	16,355	117,392	20,261	97,131	2,202	21,607	12,996	1,623	1,456	3,938	1,595	5,294	5,599	2,911	617	2,071	758
1995		183,625	16,904	129,830	21,178	108,652	2,273	22,617	13,592	1,751	1,548	4,110	1,617	5,367	5,827	2,847	671	2,308	808
1996		197,346	16,585	142,371	21,356	121,015	2,297	23,718	14,084	1,861	1,672	4,436	1,666	5,395	6,209	2,906	730	2,574	772
1997		212,152	16,819	155,409	21,798	133,611	2,130	24,884	14,530	1,922	1,808	4,838	1,786	5,463	6,626	3,014	809	2,804	821
1998		226,457	17,362	167,102	22,086	145,016	2,078	26,181	15,174	1,972	1,950	5,163	1,922	5,559	7,332	3,281	859	3,192	843
1999		245,318	18,142	182,090	20,496	161,594	2,039	28,176	16,264	2,098	2,082	5,619	2,112	5,652	8,207	3,761	931	3,516	1,013
2000		268,905	19,247	199,961	17,117	182,844	2,001	30,693	17,719	2,246	2,174	6,231	2,324	5,742	9,734	4,510	1,020	4,204	1,526
2001		279,716	22,374	202,017	16,899	185,118	2,020	33,720	19,767	2,395	2,189	6,826	2,542	6,225	11,167	5,488	1,029	4,650	2,192
2002		279,387	23,798	193,868	16,401	177,467	2,263	37,888	22,654	2,610	2,178	7,617	2,828	7,102	12,150	5,778	998	5,374	2,319
2003		293,060	24,982	200,724	17,798	182,926	2,458	41,959	25,727	2,856	2,166	8,226	2,984	7,301	13,141	5,945	1,020	6,176	2,494
2004		304,547	24,898	208,301	20,266	188,035	2,485	44,782	27,872	3,008	2,231	8,562	3,109	7,659	13,779	6,537	1,041	6,201	2,644
2005		327,185	26,322	226,159	21,909	204,250	2,601	47,006	29,019	3,060	2,368	9,265	3,294	7,817	14,452	6,545	1,107	6,800	2,828
2006		352,567	28,240	247,669	24,304	223,365	3,122	48,951	29,600	3,182	2,563	10,076	3,530	7,306	14,336	6,044	1,182	7,111	2,943
2007		379,454	29,859	269,267	26,585	242,682	5,165	51,149	30,160	3,438	2,803	10,833	3,915	5,567	15,132	5,980	1,257	7,896	3,316
2008		406,610	29,839	290,681	36,360	254,321	6,346	53,917	31,178	3,706	3,069	11,640	4,324	4,766	16,363	6,236	1,301	8,827	4,698
2009		404,697	30,560	282,393	39,573	242,820	6,646	56,939	33,433	3,808	3,196	11,884	4,617	5,052	18,002	7,097	1,258	9,647	5,106
2010		406,708	31,217	278,977	34,199	244,778	7,214	60,235	36,561	3,782	3,139	11,990	4,764	5,315	18,294	7,000	1,265	10,029	5,457
2011		424,413	31,505	294,093	31,309	262,784	7,037	63,102	38,710	3,832	3,173	12,488	4,899	5,294	17,825	6,274	1,333	10,218	5,558
		2005 constant $millions																	
1953		31,931	6,281	22,463	8,849	13,614	NA	1,686	922	244	127	226	167	811	690	356	161	173	NA
1954		34,437	5,902	24,955	10,730	14,225	NA	1,846	1,009	273	144	242	178	984	751	371	190	190	NA
1955		37,871	5,865	27,234	12,402	14,832	742	2,062	1,152	301	163	253	193	1,127	790	386	211	193	51
1956		49,548	6,590	36,561	17,459	19,102	1,941	2,279	1,288	329	184	268	210	1,265	848	411	216	222	64
1957		55,893	7,318	41,315	22,158	19,157	2,296	2,443	1,362	361	206	288	226	1,503	939	443	209	288	79
1958		60,220	8,312	44,501	24,474	20,027	1,782	2,709	1,545	397	215	306	246	1,741	1,076	524	210	342	99
1959		68,106	9,167	50,168	28,448	21,719	2,279	3,195	1,939	439	215	333	270	1,903	1,273	679	229	365	120
1960		73,737	9,684	53,951	30,137	23,813	2,565	3,789	2,433	484	215	360	296	2,070	1,420	796	258	366	258
1961		77,444	10,567	55,051	30,229	24,821	2,951	4,432	2,959	534	213	396	330	2,340	1,616	899	261	457	487
1962		82,022	11,476	57,897	31,516	26,381	2,235	5,206	3,601	588	212	441	365	2,623	1,904	1,049	283	572	682

Appendix table 4-2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry			Industry FFRDCs[a]	U&C[b]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[c]
Year	Funding source:	All sources	Federal	Total	Federal[a]	Industry[d]	Total	Total	Federal	Other government[e]	Industry	U&C	Other nonprofit	Total	Total	Federal[c]	Industry	Other nonprofit	Total
1963		90,932	13,280	63,407	35,586	27,821	2,149	6,114	4,352	649	210	498	405	3,008	2,118	1,215	285	618	856
1964		97,653	15,158	66,706	37,098	29,609	2,367	7,026	5,086	703	207	580	450	3,215	2,132	1,278	281	573	1,048
1965		101,672	15,845	69,340	36,985	32,356	1,873	8,005	5,859	751	208	683	505	3,160	2,370	1,436	311	623	1,079
1966		107,747	16,147	74,167	38,941	35,226	1,733	8,875	6,517	781	220	803	554	3,180	2,619	1,604	342	674	1,025
1967		110,576	16,314	75,620	37,635	37,985	1,985	9,638	7,059	796	244	945	594	3,296	2,657	1,620	350	687	1,066
1968		112,063	15,888	77,298	37,004	40,294	1,885	9,936	7,206	838	261	1,002	629	3,280	2,708	1,654	368	686	1,068
1969		112,544	16,409	77,253	34,578	42,674	2,009	9,871	7,029	901	262	1,009	671	3,165	2,777	1,678	403	697	1,061
1970		108,038	17,082	72,353	30,045	42,308	1,945	9,942	6,931	975	269	1,063	703	2,988	2,782	1,684	391	707	946
1971		105,561	17,268	69,830	28,102	41,728	1,923	10,046	6,891	1,026	282	1,134	713	2,877	2,775	1,670	384	721	842
1972		107,905	17,555	71,351	28,042	43,308	2,057	10,351	7,096	1,059	297	1,170	730	2,947	2,893	1,770	379	743	751
1973		110,098	17,204	73,647	27,034	46,612	1,939	10,504	7,144	1,072	318	1,220	749	2,992	3,137	2,013	373	751	676
1974		108,784	16,737	72,522	24,692	47,829	2,113	10,486	7,044	1,044	339	1,280	779	3,020	3,222	2,082	373	767	685
1975		106,282	16,570	69,899	23,472	46,426	2,166	10,635	7,151	1,037	352	1,286	810	3,179	3,163	2,011	370	781	670
1976		111,118	16,597	73,563	24,433	49,131	2,508	10,985	7,380	1,040	369	1,353	844	3,566	3,208	2,003	381	824	690
1977		114,802	16,454	76,458	25,226	51,231	2,548	11,512	7,662	1,044	409	1,506	891	3,887	3,214	1,961	390	864	728
1978		120,589	17,233	79,756	25,017	54,739	2,678	12,365	8,239	1,097	449	1,681	900	4,385	3,350	2,054	396	900	823
1979		126,549	17,073	84,692	25,946	58,747	2,660	13,058	8,793	1,100	490	1,794	881	4,599	3,575	2,251	398	926	891
1980		132,407	16,399	90,531	26,706	63,825	2,674	13,518	9,078	1,086	552	1,926	877	4,829	3,473	2,130	397	946	982
1981		138,425	16,476	96,554	28,716	67,838	2,652	13,566	8,941	1,112	601	2,025	887	4,757	3,417	2,058	395	964	1,003
1982		145,722	17,146	103,165	30,789	72,376	2,678	13,720	8,804	1,121	655	2,177	963	4,590	3,456	2,038	405	1,013	967
1983		156,156	18,800	110,556	33,150	77,406	2,752	14,324	9,045	1,142	750	2,355	1,032	4,931	3,777	2,266	424	1,087	1,016
1984		171,072	19,937	122,244	36,236	86,008	2,910	15,315	9,617	1,206	866	2,533	1,093	5,427	4,202	2,590	444	1,168	1,038
1985		186,227	21,263	133,780	41,141	92,639	3,026	16,740	10,374	1,354	1,023	2,831	1,158	5,872	4,483	2,751	469	1,264	1,063
1986		191,059	21,457	136,534	41,311	95,224	3,005	18,336	11,166	1,540	1,184	3,207	1,239	6,312	4,556	2,678	499	1,378	860
1987		195,108	20,981	139,213	44,403	94,810	3,080	19,775	11,994	1,644	1,283	3,493	1,361	6,620	4,653	2,632	528	1,493	786
1988		199,858	21,410	141,657	42,128	99,528	3,168	21,229	12,828	1,739	1,393	3,772	1,497	6,838	4,796	2,631	555	1,610	761
1989		204,107	21,909	143,647	37,917	105,730	3,157	22,489	13,402	1,833	1,526	4,103	1,627	6,841	5,277	2,966	582	1,729	787
1990		210,515	21,705	148,758	35,737	113,022	3,217	23,461	13,766	1,938	1,614	4,413	1,730	6,778	5,715	3,249	610	1,856	881
1991		215,189	20,398	153,391	32,230	121,161	3,046	24,353	14,268	1,983	1,661	4,625	1,816	6,849	6,223	3,583	641	1,999	931
1992		216,053	20,714	152,559	29,228	123,331	3,075	25,333	15,062	1,993	1,724	4,663	1,891	6,872	6,524	3,666	681	2,177	977
1993		211,865	21,132	147,569	26,646	120,922	2,512	26,200	15,733	1,990	1,779	4,741	1,957	6,761	6,734	3,635	725	2,374	958
1994		211,847	20,477	146,975	25,367	121,608	2,757	27,051	16,270	2,031	1,823	4,930	1,996	6,628	7,009	3,645	772	2,592	949
1995		225,206	20,731	159,229	25,974	133,255	2,788	27,738	16,670	2,148	1,898	5,041	1,983	6,583	7,146	3,492	823	2,831	991
1996		237,513	19,960	171,348	25,703	145,646	2,765	28,545	16,951	2,240	2,012	5,338	2,004	6,493	7,473	3,497	879	3,097	929
1997		250,901	19,891	183,794	25,779	158,015	2,519	29,429	17,183	2,273	2,138	5,722	2,113	6,461	7,837	3,565	956	3,316	971

Appendix table 4-2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry			Industry FFRDCs[a]	U&C[b]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[c]
Year	Funding source:	All sources	Federal	Total	Federal[a]	Industry[d]	Total	Total	Federal	Other government[e]	Industry	U&C	Other nonprofit	Total	Total	Federal[c]	Industry	Other nonprofit	Total
1998		264,829	20,304	195,416	25,828	169,588	2,430	30,617	17,745	2,306	2,280	6,038	2,247	6,501	8,574	3,837	1,005	3,733	986
1999		282,726	20,908	209,856	23,621	186,235	2,350	32,472	18,744	2,418	2,399	6,476	2,434	6,514	9,458	4,334	1,073	4,052	1,168
2000		303,084	21,693	225,378	19,293	206,085	2,255	34,595	19,971	2,532	2,450	7,023	2,620	6,472	10,971	5,083	1,149	4,739	1,720
2001		308,304	24,661	222,664	18,626	204,038	2,227	37,166	21,787	2,640	2,413	7,523	2,802	6,862	12,308	6,049	1,134	5,125	2,416
2002		303,036	25,812	210,278	17,789	192,488	2,455	41,094	24,572	2,831	2,362	8,262	3,068	7,703	13,179	6,267	1,083	5,829	2,515
2003		311,319	26,539	213,230	18,907	194,323	2,611	44,573	27,330	3,034	2,301	8,739	3,169	7,756	13,960	6,315	1,084	6,561	2,649
2004		314,660	25,724	215,218	20,939	194,279	2,568	46,269	28,798	3,108	2,305	8,846	3,212	7,913	14,236	6,754	1,076	6,407	2,732
2005		327,185	26,322	226,159	21,909	204,250	2,601	47,006	29,019	3,060	2,368	9,265	3,294	7,817	14,452	6,545	1,107	6,800	2,828
2006		341,532	27,356	239,917	23,543	216,374	3,024	47,419	28,673	3,083	2,483	9,760	3,420	7,078	13,888	5,854	1,145	6,888	2,851
2007		357,212	28,109	253,484	25,027	228,457	4,862	48,151	28,393	3,237	2,638	10,198	3,685	5,241	14,245	5,629	1,183	7,433	3,121
2008		374,472	27,480	267,706	33,486	234,219	5,844	49,656	28,714	3,413	2,827	10,720	3,982	4,389	15,070	5,743	1,198	8,129	4,327
2009		368,815	27,850	257,355	36,064	221,290	6,057	51,891	30,469	3,471	2,913	10,831	4,207	4,604	16,406	6,468	1,146	8,792	4,653
2010		366,434	28,126	251,351	30,812	220,539	6,499	54,270	32,941	3,408	2,828	10,802	4,292	4,789	16,482	6,307	1,140	9,036	4,916
2011		374,394	27,792	259,433	27,619	231,814	6,207	55,665	34,147	3,381	2,799	11,016	4,322	4,670	15,724	5,534	1,176	9,014	4,903

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Federal support for industry in 1953–54 did not separate federal support for industry and for industry-administered FFRDCs; thus, the data for federal support to industry include support to FFRDCs for those years.
[b] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Non-S&E R&D was $1.4 billion in 2003 and $3.2 billion in 2011. Also, adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of (since 1998) S&E R&D and (since 2010) non-S&E funds passed through from one academic institution to another. For FY 1998, $479 million in total pass-through funds and $421 million in federal pass-through funds were reported. For FY 2011, total pass-through was an estimated $3,065 million and federal pass-through was an estimated $2,726 million.
[c] Federal support for nonprofit-administered FFRDCs in 1953–54 did not separate federal support for other nonprofits and for nonprofit-administered FFRDCs; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[d] Industry sources of funding for industry R&D expenditures include all nonfederal sources of funding for industry R&D expenditures.
[e] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for nonprofit sector. R&D expenditures of FFRDCs are chiefly from federal funds, but any nonfederal funds are also included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey (annual series), Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Survey of Federally Funded R&D Centers (annual series), R&D Funding and Performance by Nonprofit Organizations (FYs 1996–97). All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-3

U.S. basic research expenditures, by performing sector and source of funds: 1953–2011

Year	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
		Current $millions																	
1953		460	102	151	19	132	NA	123	82	7	13	6	16	36	48	27	9	12	NA
1954		509	96	166	23	143	NA	148	97	10	15	8	18	44	55	31	11	13	NA
1955		579	98	189	27	162	NA	180	117	14	17	12	21	50	63	36	13	14	NA
1956		718	114	253	37	216	NA	220	143	19	20	15	24	58	74	42	15	17	NA
1957		814	124	271	41	230	NA	261	167	25	23	20	27	72	87	49	15	23	NA
1958		944	149	295	43	252	NA	312	202	31	24	24	31	85	103	59	16	28	NA
1959		1,087	165	320	72	248	NA	388	263	38	24	28	36	95	120	72	18	30	NA
1960		1,286	184	376	79	297	NA	485	341	45	25	33	41	106	136	85	21	30	NA
1961		1,512	230	395	81	314	NA	598	432	54	25	40	48	126	164	105	22	37	NA
1962		1,824	252	488	143	345	NA	737	546	64	25	48	55	148	200	130	24	46	NA
1963		2,115	285	522	147	375	NA	909	689	75	25	58	63	175	225	150	25	50	NA
1964		2,396	339	507	123	384	42	1,071	824	84	25	70	68	200	238	166	25	47	NA
1965		2,664	375	563	157	406	29	1,221	944	94	27	86	70	218	260	179	29	52	NA
1966		2,930	410	593	142	451	31	1,380	1,066	104	29	106	75	239	278	188	32	58	NA
1967		3,168	434	595	168	427	34	1,554	1,188	114	34	136	83	263	289	194	34	61	NA
1968		3,376	482	607	145	462	35	1,681	1,265	131	38	156	91	276	296	196	37	63	NA
1969		3,491	545	581	123	458	37	1,754	1,288	153	40	171	103	272	302	192	43	67	NA
1970		3,594	562	566	122	444	36	1,855	1,323	179	43	196	115	265	311	195	44	72	NA
1971		3,720	581	557	101	456	33	1,968	1,385	194	50	214	127	252	329	207	45	77	NA
1972		3,850	603	554	91	463	39	2,038	1,437	195	55	216	134	270	347	216	47	84	NA
1973		4,099	652	595	96	499	36	2,103	1,489	196	59	223	137	343	371	232	49	90	NA
1974		4,511	715	650	114	536	49	2,282	1,609	204	66	250	153	415	401	245	54	102	NA
1975		4,875	760	677	104	573	53	2,480	1,768	212	72	264	164	476	430	255	59	116	NA
1976		5,373	850	750	116	634	69	2,675	1,924	218	75	283	175	556	474	278	65	131	NA
1977		6,008	943	836	135	701	75	2,967	2,114	232	89	334	198	667	521	301	72	148	NA
1978		6,959	1,044	941	156	785	94	3,376	2,399	260	107	398	213	906	598	351	79	168	NA
1979		7,836	1,112	1,054	161	893	104	3,828	2,719	286	128	466	229	1,050	689	413	87	190	NA
1980		8,745	1,212	1,205	170	1,035	120	4,315	3,061	307	156	544	248	1,167	726	416	95	215	NA
1981		9,658	1,343	1,477	164	1,313	137	4,737	3,331	338	183	615	269	1,284	671	324	105	243	9
1982		10,651	1,522	1,776	253	1,523	128	5,091	3,475	368	215	716	317	1,366	759	369	115	275	9
1983		11,880	1,733	2,106	346	1,760	117	5,518	3,689	396	260	816	358	1,536	863	426	127	311	8
1984		13,332	1,877	2,472	340	2,132	136	6,145	4,087	436	313	915	395	1,709	984	494	139	351	9
1985		14,748	1,947	2,731	358	2,373	131	7,024	4,606	514	389	1,075	440	1,793	1,110	560	153	397	13
1986		17,154	2,026	3,930	434	3,496	117	7,943	5,122	606	466	1,262	488	1,915	1,210	594	168	449	13

Appendix table 4-3

U.S. basic research expenditures, by performing sector and source of funds: 1953–2011

Year	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1987		18,481	2,047	4,181	598	3,583	142	8,644	5,527	659	514	1,399	545	2,086	1,367	675	185	507	14
1988		19,787	2,116	4,163	656	3,507	337	9,344	5,937	705	565	1,530	607	2,272	1,531	756	203	573	24
1989		21,891	2,309	4,818	986	3,832	398	10,219	6,422	766	637	1,714	680	2,371	1,730	860	223	647	46
1990		23,029	2,319	4,629	869	3,760	499	11,126	6,889	847	705	1,929	756	2,470	1,922	947	245	730	65
1991		27,140	2,378	7,376	1,251	6,125	461	12,062	7,423	912	764	2,127	836	2,657	2,129	1,036	269	825	77
1992		27,604	2,419	6,528	712	5,816	474	12,910	8,058	941	814	2,203	893	2,867	2,340	1,114	295	931	67
1993		28,743	2,621	6,427	466	5,961	492	13,646	8,638	952	851	2,268	936	2,953	2,532	1,157	324	1,051	72
1994		29,651	2,547	6,514	436	6,078	503	14,401	9,139	992	890	2,406	974	2,934	2,678	1,137	356	1,186	75
1995		29,610	2,689	5,569	190	5,379	530	15,147	9,634	1,070	945	2,511	987	2,702	2,899	1,170	390	1,338	75
1996		32,799	2,680	7,498	650	6,848	708	16,042	10,092	1,149	1,032	2,740	1,028	2,606	3,187	1,248	428	1,510	79
1997		36,921	2,746	9,795	1,029	8,766	625	17,654	10,924	1,248	1,175	3,144	1,162	2,671	3,322	1,317	449	1,557	108
1998		35,372	3,003	5,853	1,002	4,851	568	19,365	11,941	1,330	1,315	3,483	1,296	2,660	3,710	1,461	477	1,773	213
1999		38,935	3,347	6,645	1,108	5,537	557	21,022	12,892	1,432	1,421	3,835	1,442	2,765	4,203	1,734	517	1,952	397
2000		42,752	3,765	7,040	925	6,115	547	22,910	13,960	1,549	1,499	4,298	1,603	2,874	5,000	2,099	566	2,334	616
2001		47,727	4,260	8,053	754	7,299	552	25,225	15,541	1,663	1,519	4,738	1,765	3,104	5,617	2,464	571	2,582	915
2002		51,902	4,511	7,547	888	6,659	534	28,505	17,930	1,812	1,512	5,287	1,963	3,714	6,113	2,575	554	2,984	979
2003		56,089	4,664	8,330	1,386	6,944	299	31,310	20,127	1,967	1,493	5,667	2,055	3,747	6,710	2,714	567	3,429	1,029
2004		57,731	4,697	7,835	1,072	6,763	175	33,415	21,702	2,083	1,545	5,930	2,154	3,730	6,809	2,788	578	3,443	1,070
2005		61,321	4,770	8,667	1,108	7,559	136	35,454	22,788	2,155	1,667	6,525	2,319	3,820	7,293	2,903	614	3,776	1,181
2006		62,996	4,716	8,384	1,444	6,940	652	37,205	23,312	2,285	1,840	7,233	2,535	3,344	7,454	2,849	656	3,948	1,242
2007		68,061	4,621	11,268	2,780	8,488	2,258	38,929	23,673	2,499	2,037	7,874	2,845	1,724	7,911	2,829	698	4,384	1,350
2008		72,105	4,957	12,368	1,475	10,893	2,423	40,582	24,149	2,679	2,218	8,412	3,124	1,672	8,697	3,073	722	4,901	1,407
2009		75,824	5,441	14,784	1,340	13,444	2,629	39,982	24,098	2,573	2,161	8,036	3,115	1,902	9,553	3,498	698	5,357	1,533
2010		77,187	5,091	16,371	1,406	14,965	2,848	39,415	24,499	2,383	1,978	7,554	3,001	2,196	9,688	3,417	702	5,568	1,578
2011		74,961	4,875	13,020	677	12,343	2,761	40,952	25,662	2,402	1,989	7,828	3,071	2,212	9,521	3,108	740	5,673	1,619
		2005 constant $millions																	
1953		2,843	628	934	118	817	NA	761	504	40	80	37	99	223	297	167	56	74	NA
1954		3,118	589	1,018	141	877	NA	904	592	59	92	52	110	270	337	190	67	80	NA
1955		3,491	588	1,140	163	977	NA	1,082	702	84	102	70	124	301	380	217	78	84	NA
1956		4,185	662	1,475	216	1,259	NA	1,282	831	111	114	90	137	338	428	242	87	99	NA
1957		4,589	699	1,529	231	1,297	NA	1,470	939	140	127	111	152	403	488	274	85	130	NA
1958		5,205	822	1,628	237	1,390	NA	1,721	1,114	171	132	132	171	469	566	323	88	154	NA
1959		5,927	897	1,745	393	1,352	NA	2,116	1,431	205	131	155	194	515	654	393	98	164	NA
1960		6,916	987	2,022	425	1,597	NA	2,606	1,831	242	132	180	220	570	731	457	113	161	NA
1961		8,037	1,220	2,100	431	1,670	NA	3,177	2,294	285	133	212	253	667	872	558	117	197	NA
1962		9,568	1,322	2,560	750	1,810	NA	3,863	2,862	334	131	251	286	774	1,049	682	126	241	NA

Appendix table 4-3

U.S. basic research expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1963		10,978	1,477	2,709	763	1,946	NA	4,716	3,576	389	127	299	324	908	1,168	779	130	260	NA
1964		12,248	1,733	2,592	629	1,963	215	5,472	4,210	431	128	356	348	1,020	1,217	849	128	240	NA
1965		13,374	1,880	2,826	788	2,038	146	6,127	4,737	474	133	432	351	1,092	1,303	896	146	261	NA
1966		14,303	2,001	2,895	693	2,202	151	6,737	5,204	505	142	520	366	1,164	1,355	915	156	283	NA
1967		15,002	2,053	2,818	796	2,022	161	7,358	5,624	539	159	642	393	1,246	1,366	916	161	289	NA
1968		15,338	2,190	2,758	659	2,099	159	7,635	5,747	594	170	710	413	1,252	1,345	890	168	286	NA
1969		15,112	2,360	2,515	533	1,983	160	7,591	5,574	662	171	741	444	1,178	1,307	831	186	290	NA
1970		14,780	2,311	2,328	502	1,826	148	7,628	5,439	738	177	805	471	1,088	1,277	800	181	296	NA
1971		14,571	2,276	2,182	396	1,786	129	7,708	5,423	758	194	838	495	987	1,289	811	176	302	NA
1972		14,455	2,262	2,080	342	1,738	146	7,650	5,395	734	206	811	503	1,014	1,303	811	176	315	NA
1973		14,582	2,319	2,116	341	1,775	128	7,481	5,295	698	208	794	486	1,220	1,318	823	174	320	NA
1974		14,709	2,331	2,120	372	1,748	160	7,440	5,247	665	215	816	497	1,352	1,307	799	176	333	NA
1975		14,524	2,264	2,017	310	1,707	158	7,388	5,268	633	213	785	489	1,417	1,281	760	177	344	NA
1976		15,140	2,395	2,113	327	1,786	194	7,536	5,421	613	211	798	492	1,567	1,334	782	184	369	NA
1977		15,916	2,498	2,215	358	1,857	199	7,858	5,600	614	236	885	523	1,766	1,380	798	190	392	NA
1978		17,224	2,585	2,329	386	1,943	233	8,356	5,938	643	264	986	526	2,242	1,480	869	195	415	NA
1979		17,907	2,542	2,409	368	2,041	238	8,746	6,213	653	291	1,065	523	2,398	1,574	943	198	434	NA
1980		18,314	2,539	2,524	356	2,168	251	9,037	6,409	643	326	1,139	519	2,443	1,520	871	200	450	NA
1981		18,492	2,571	2,828	314	2,514	262	9,069	6,378	647	350	1,178	516	2,459	1,286	620	201	465	17
1982		19,221	2,746	3,205	457	2,748	231	9,187	6,270	664	389	1,293	572	2,466	1,370	666	208	496	16
1983		20,624	3,008	3,656	601	3,055	203	9,579	6,403	687	451	1,417	621	2,666	1,498	739	220	539	14
1984		22,306	3,140	4,136	569	3,567	228	10,281	6,837	729	523	1,531	661	2,859	1,647	827	233	588	15
1985		23,951	3,162	4,435	581	3,854	213	11,407	7,479	835	632	1,747	714	2,911	1,802	909	248	645	20
1986		27,255	3,219	6,244	690	5,555	186	12,620	8,137	962	740	2,005	775	3,043	1,923	943	267	713	21
1987		28,536	3,161	6,456	923	5,532	219	13,346	8,533	1,017	794	2,161	842	3,221	2,110	1,043	285	783	22
1988		29,538	3,159	6,215	979	5,235	503	13,948	8,862	1,053	843	2,284	906	3,391	2,286	1,129	303	855	36
1989		31,489	3,321	6,931	1,418	5,512	573	14,700	9,238	1,101	917	2,466	978	3,411	2,488	1,237	320	930	67
1990		31,896	3,212	6,411	1,204	5,208	691	15,410	9,541	1,173	977	2,672	1,047	3,421	2,662	1,312	339	1,012	89
1991		36,302	3,181	9,866	1,673	8,193	617	16,134	9,929	1,220	1,022	2,845	1,118	3,554	2,848	1,386	359	1,103	103
1992		36,068	3,160	8,530	930	7,599	619	16,868	10,529	1,230	1,064	2,878	1,167	3,746	3,058	1,456	385	1,217	87
1993		36,744	3,350	8,216	596	7,620	629	17,445	11,043	1,218	1,088	2,900	1,197	3,775	3,236	1,479	414	1,343	92
1994		37,123	3,189	8,156	546	7,610	630	18,029	11,441	1,241	1,114	3,013	1,220	3,673	3,353	1,423	445	1,485	93
1995		36,315	3,298	6,830	233	6,597	650	18,576	11,815	1,312	1,159	3,079	1,211	3,313	3,555	1,435	479	1,642	93
1996		39,475	3,225	9,024	782	8,242	852	19,306	12,146	1,383	1,242	3,297	1,238	3,136	3,836	1,502	516	1,817	95
1997		43,664	3,247	11,584	1,217	10,367	739	20,878	12,920	1,476	1,390	3,718	1,374	3,159	3,929	1,557	531	1,841	127

Appendix table 4-3

U.S. basic research expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1998		41,366	3,511	6,845	1,172	5,673	664	22,647	13,964	1,556	1,538	4,073	1,516	3,111	4,339	1,708	558	2,073	249
1999		44,872	3,857	7,658	1,276	6,381	642	24,228	14,858	1,650	1,637	4,420	1,662	3,186	4,843	1,998	596	2,250	457
2000		48,186	4,243	7,935	1,043	6,892	616	25,823	15,734	1,746	1,690	4,845	1,807	3,239	5,636	2,366	638	2,631	694
2001		52,605	4,696	8,876	831	8,045	609	27,803	17,129	1,832	1,675	5,222	1,945	3,421	6,192	2,716	630	2,846	1,009
2002		56,295	4,892	8,186	963	7,223	580	30,917	19,448	1,965	1,640	5,735	2,130	4,028	6,630	2,793	601	3,237	1,062
2003		59,584	4,955	8,849	1,472	7,377	318	33,260	21,381	2,090	1,586	6,020	2,184	3,980	7,128	2,884	602	3,643	1,093
2004		59,648	4,853	8,095	1,108	6,988	181	34,524	22,423	2,152	1,597	6,127	2,225	3,854	7,035	2,881	597	3,557	1,106
2005		61,321	4,770	8,667	1,108	7,559	136	35,454	22,788	2,155	1,667	6,525	2,319	3,820	7,293	2,903	614	3,776	1,181
2006		61,024	4,568	8,122	1,399	6,723	632	36,040	22,582	2,213	1,783	7,007	2,455	3,239	7,220	2,760	636	3,825	1,203
2007		64,072	4,350	10,608	2,617	7,990	2,126	36,647	22,285	2,353	1,918	7,413	2,679	1,623	7,447	2,663	657	4,127	1,271
2008		66,406	4,565	11,390	1,358	10,032	2,231	37,374	22,241	2,467	2,042	7,747	2,877	1,540	8,009	2,830	665	4,514	1,296
2009		69,101	4,958	13,473	1,221	12,252	2,396	36,437	21,961	2,345	1,969	7,323	2,839	1,733	8,706	3,188	636	4,882	1,397
2010		69,543	4,587	14,750	1,267	13,483	2,566	35,512	22,073	2,147	1,782	6,806	2,704	1,979	8,729	3,079	633	5,017	1,422
2011		66,126	4,300	11,486	597	10,888	2,436	36,126	22,637	2,119	1,755	6,906	2,709	1,952	8,399	2,742	653	5,005	1,428

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[b] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.
[c] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.
[d] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[e] Industry sources of funds for industry R&D expenditures include all nonfederal sources of industry funds for R&D expenditures.
[f] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are also included in the totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey (annual series), Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations (FYs 1996–97). All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2011

Year	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
		Current $millions																	
1953		1,289	347	726	288	438	NA	134	59	30	7	28	10	48	35	14	11	10	NA
1954		1,378	330	814	322	492	NA	137	60	32	8	28	10	58	40	16	13	11	NA
1955		1,514	333	928	368	560	NA	142	63	32	9	27	11	68	43	18	14	11	NA
1956		1,928	387	1,268	474	794	NA	146	65	33	10	27	11	79	49	21	14	14	NA
1957		2,414	446	1,670	678	992	NA	147	63	34	12	27	11	94	58	24	14	20	NA
1958		2,758	516	1,911	774	1,137	NA	152	66	35	12	27	12	111	69	30	14	25	NA
1959		2,940	577	1,991	813	1,178	NA	167	78	37	13	28	12	121	85	43	15	27	NA
1960		3,065	615	2,029	833	1,196	NA	186	93	39	13	29	12	129	108	63	17	28	NA
1961		3,123	668	1,977	812	1,165	NA	199	104	40	13	30	13	145	135	83	17	35	NA
1962		3,698	709	2,449	1,011	1,438	NA	216	119	41	14	30	13	163	162	98	19	45	NA
1963		3,865	809	2,457	1,007	1,450	NA	230	128	42	14	32	14	186	183	115	19	49	NA
1964		4,201	947	2,538	978	1,560	62	256	142	45	14	37	18	203	196	130	19	47	NA
1965		4,374	994	2,612	992	1,620	46	304	176	46	13	42	27	206	213	140	21	52	NA
1966		4,653	1,012	2,790	986	1,804	53	351	208	47	14	48	34	213	234	153	24	57	NA
1967		4,848	1,069	2,832	983	1,849	83	389	238	46	16	54	36	225	251	166	25	60	NA
1968		5,137	1,112	3,037	956	2,081	87	405	250	46	16	55	39	221	276	186	28	62	NA
1969		5,454	1,229	3,192	920	2,272	95	417	257	48	16	54	43	213	308	210	32	66	NA
1970		5,752	1,334	3,330	952	2,378	97	451	280	51	18	56	47	213	328	225	33	70	NA
1971		5,833	1,355	3,348	907	2,441	67	499	306	61	19	67	47	216	349	241	34	74	NA
1972		6,147	1,434	3,407	845	2,562	107	619	391	74	21	82	52	224	357	243	35	79	NA
1973		6,655	1,527	3,715	883	2,832	110	725	450	88	26	100	62	203	376	257	36	83	NA
1974		7,344	1,652	4,168	905	3,263	120	794	477	96	32	118	72	191	420	290	39	91	NA
1975		8,091	1,912	4,431	991	3,440	139	934	550	113	39	141	92	219	456	315	42	100	NA
1976		8,976	2,068	4,945	1,033	3,912	167	1,042	596	127	45	166	109	263	492	338	45	109	NA
1977		9,662	2,081	5,424	1,113	4,311	212	1,126	626	134	51	194	121	297	523	355	48	120	NA
1978		10,704	2,242	6,065	1,195	4,870	235	1,247	676	151	61	232	128	324	592	409	52	132	NA
1979		12,097	2,415	6,975	1,305	5,670	250	1,418	793	161	71	263	129	360	680	480	55	144	NA
1980		13,714	2,546	8,175	1,625	6,550	275	1,622	912	174	88	308	140	421	675	458	60	158	NA
1981		16,329	2,731	10,401	2,042	8,359	298	1,781	953	199	108	363	159	422	628	391	64	173	68
1982		18,218	2,802	11,956	2,593	9,363	367	1,915	1,007	207	121	402	178	433	655	398	69	189	91
1983		20,298	2,991	13,513	3,227	10,286	414	2,116	1,122	215	141	443	194	473	713	433	74	207	78
1984		22,451	2,961	15,218	3,677	11,541	547	2,332	1,226	234	168	491	212	548	764	459	79	226	80
1985		25,401	3,135	17,625	4,717	12,908	630	2,527	1,296	262	198	547	224	580	822	490	85	247	82
1986		27,240	3,204	19,131	4,049	15,082	629	2,780	1,393	298	229	620	240	554	867	506	91	270	75
1987		27,951	3,366	19,190	4,037	15,153	623	3,219	1,643	333	260	707	276	532	948	555	98	295	74
1988		29,528	3,362	20,377	3,846	16,531	371	3,779	1,958	377	302	818	325	547	1,026	599	105	322	66
1989		32,277	3,566	22,317	4,324	17,993	374	4,188	2,121	417	347	933	370	603	1,159	695	112	352	70
1990		34,897	3,652	24,399	5,967	18,432	386	4,406	2,140	453	377	1,031	404	689	1,284	780	120	384	81

Appendix table 4-4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2011

Year	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1991		38,631	4,093	27,013	5,588	21,425	433	4,611	2,232	468	392	1,091	428	927	1,468	921	129	419	86
1992		37,936	4,337	25,660	4,476	21,184	507	4,882	2,415	479	414	1,120	454	940	1,528	933	138	456	81
1993		37,283	4,838	24,251	4,295	19,956	435	5,149	2,542	496	443	1,181	487	962	1,544	900	148	497	103
1994		36,618	4,985	22,988	3,616	19,372	503	5,390	2,644	517	464	1,256	509	982	1,659	960	158	541	111
1995		40,936	4,952	26,919	3,164	23,755	535	5,659	2,779	559	494	1,311	516	1,050	1,692	934	170	589	129
1996		43,170	4,872	29,010	3,640	25,370	231	5,885	2,864	584	524	1,390	522	1,270	1,781	960	182	640	122
1997		46,554	4,997	32,430	2,648	29,782	213	5,523	2,550	553	519	1,389	512	1,337	1,926	1,011	205	711	128
1998		46,362	5,146	32,208	2,632	29,576	230	5,197	2,260	526	520	1,378	513	1,372	2,087	1,060	218	809	123
1999		52,007	5,530	36,638	2,817	33,821	274	5,762	2,661	546	542	1,463	550	1,247	2,427	1,300	236	891	130
2000		56,681	6,105	39,176	2,682	36,494	269	6,494	3,194	571	553	1,585	591	1,291	3,155	1,831	258	1,066	190
2001		64,176	7,052	44,012	3,603	40,409	821	7,054	3,553	601	549	1,712	638	1,405	3,589	2,150	261	1,178	244
2002		50,796	7,487	28,533	2,452	26,081	1,090	7,876	4,056	654	546	1,911	709	1,663	3,882	2,267	253	1,362	266
2003		61,379	7,672	37,334	4,473	32,861	1,413	8,801	4,660	729	553	2,098	761	1,600	4,311	2,487	259	1,565	249
2004		69,469	7,455	45,432	4,775	40,657	1,459	9,164	4,902	758	562	2,158	783	1,481	4,283	2,448	264	1,572	194
2005		70,001	7,557	45,284	5,289	39,995	1,414	9,395	5,032	743	575	2,247	799	1,637	4,435	2,432	280	1,723	278
2006		76,735	7,435	51,173	6,140	45,033	1,314	9,794	5,318	736	593	2,331	816	1,827	4,694	2,592	300	1,802	500
2007		83,559	7,222	57,570	8,945	48,625	1,168	10,249	5,548	770	628	2,426	877	1,354	4,902	2,583	318	2,001	1,094
2008		74,793	7,316	46,864	5,397	41,467	1,975	11,316	6,144	843	698	2,647	983	855	5,167	2,600	330	2,237	1,300
2009		72,881	7,874	41,055	7,797	33,258	2,010	13,434	7,699	929	779	2,898	1,128	1,282	5,813	3,049	319	2,445	1,414
2010		79,543	7,985	44,906	4,705	40,201	2,249	15,562	9,439	978	812	3,101	1,232	1,277	5,922	3,060	321	2,542	1,642
2011		82,379	7,747	47,186	4,404	42,782	2,223	16,614	10,256	999	827	3,255	1,277	1,314	5,693	2,766	338	2,590	1,602
		2005 constant $millions																	
1953		7,977	2,147	4,493	1,782	2,710	NA	826	365	186	40	172	62	294	217	87	68	62	NA
1954		8,449	2,020	4,991	1,974	3,017	NA	837	365	193	46	172	61	356	245	98	80	67	NA
1955		9,125	2,008	5,595	2,219	3,376	NA	853	380	195	51	164	63	410	259	109	84	66	NA
1956		11,236	2,253	7,391	2,763	4,628	NA	851	379	193	58	157	64	458	283	119	82	82	NA
1957		13,615	2,513	9,421	3,825	5,596	NA	826	355	191	65	153	62	530	324	133	79	113	NA
1958		15,216	2,847	10,543	4,270	6,273	NA	836	361	195	66	150	63	610	381	166	77	138	NA
1959		16,029	3,144	10,857	4,433	6,424	NA	911	423	202	68	153	65	657	461	232	82	147	NA
1960		16,483	3,305	10,912	4,480	6,432	NA	998	500	208	70	155	65	691	578	336	91	151	NA
1961		16,606	3,552	10,512	4,318	6,195	NA	1,055	550	212	69	157	66	771	715	439	90	186	NA
1962		19,396	3,717	12,847	5,303	7,543	NA	1,133	622	213	71	160	68	852	847	511	100	236	NA
1963		20,059	4,199	12,753	5,227	7,526	NA	1,191	662	219	73	168	70	965	950	597	99	254	NA
1964		21,475	4,838	12,974	5,000	7,975	317	1,306	726	231	69	191	89	1,038	1,002	665	97	240	NA
1965		21,956	4,988	13,113	4,980	8,133	231	1,524	881	233	65	211	133	1,032	1,069	703	105	261	NA
1966		22,712	4,940	13,620	4,813	8,807	259	1,713	1,015	230	68	236	164	1,040	1,140	744	117	278	NA
1967		22,962	5,061	13,413	4,656	8,757	393	1,840	1,125	216	73	255	171	1,066	1,189	786	118	284	NA
1968		23,338	5,050	13,798	4,343	9,454	395	1,840	1,134	209	73	250	175	1,002	1,254	845	127	282	NA
1969		23,613	5,322	13,819	3,983	9,836	411	1,805	1,110	208	69	233	184	922	1,333	909	139	286	NA

Appendix table 4-4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1970		23,656	5,486	13,694	3,915	9,779	399	1,853	1,149	210	72	230	191	876	1,349	925	136	288	NA
1971		22,846	5,307	13,113	3,552	9,561	262	1,954	1,199	237	72	262	184	844	1,365	942	133	290	NA
1972		23,079	5,384	12,792	3,173	9,619	402	2,322	1,466	279	77	307	193	841	1,338	910	131	297	NA
1973		23,674	5,433	13,215	3,141	10,074	391	2,577	1,599	312	92	355	219	720	1,337	914	128	295	NA
1974		23,949	5,388	13,592	2,951	10,641	391	2,588	1,554	313	103	384	233	621	1,369	946	126	297	NA
1975		24,107	5,696	13,202	2,953	10,249	414	2,783	1,637	338	115	419	274	653	1,360	939	124	298	NA
1976		25,294	5,828	13,934	2,911	11,023	471	2,936	1,678	359	125	467	307	740	1,385	951	126	309	NA
1977		25,595	5,511	14,368	2,948	11,420	562	2,981	1,657	356	135	514	319	787	1,386	940	127	318	NA
1978		26,495	5,549	15,012	2,958	12,054	582	3,086	1,673	374	150	574	316	802	1,465	1,012	128	326	NA
1979		27,643	5,519	15,939	2,982	12,957	571	3,239	1,811	369	163	601	295	822	1,553	1,097	127	329	NA
1980		28,722	5,332	17,121	3,403	13,717	576	3,397	1,910	364	185	645	294	881	1,414	959	125	330	NA
1981		31,267	5,230	19,916	3,910	16,006	571	3,410	1,824	381	206	694	304	808	1,202	749	122	331	130
1982		32,877	5,056	21,576	4,679	16,897	662	3,455	1,816	374	218	725	321	781	1,183	718	124	341	164
1983		35,238	5,193	23,459	5,602	17,857	719	3,673	1,948	373	245	769	337	822	1,238	751	128	359	135
1984		37,564	4,954	25,462	6,152	19,310	915	3,901	2,052	392	281	822	355	918	1,279	768	132	379	135
1985		41,251	5,091	28,623	7,660	20,963	1,023	4,104	2,106	425	321	889	364	941	1,335	795	138	402	133
1986		43,280	5,091	30,397	6,433	23,963	999	4,417	2,213	473	364	986	381	880	1,377	803	145	429	120
1987		43,158	5,197	29,631	6,233	23,397	962	4,970	2,537	514	401	1,092	426	821	1,464	857	151	456	114
1988		44,079	5,019	30,419	5,741	24,678	554	5,642	2,923	563	451	1,221	485	816	1,531	894	156	481	98
1989		46,430	5,130	32,103	6,220	25,883	538	6,024	3,051	600	499	1,342	532	867	1,667	999	161	506	101
1990		48,333	5,058	33,793	8,265	25,529	535	6,102	2,965	627	522	1,428	560	954	1,778	1,080	167	532	113
1991		51,674	5,475	36,133	7,475	28,658	579	6,167	2,985	626	524	1,459	573	1,239	1,964	1,232	172	560	115
1992		49,568	5,667	33,528	5,849	27,680	662	6,379	3,155	626	541	1,463	594	1,229	1,996	1,220	180	596	106
1993		47,661	6,185	31,002	5,491	25,511	556	6,582	3,249	634	566	1,510	623	1,230	1,974	1,150	189	635	131
1994		45,845	6,242	28,781	4,527	24,254	630	6,748	3,310	648	581	1,572	637	1,229	2,077	1,201	198	677	139
1995		50,206	6,074	33,015	3,880	29,134	656	6,940	3,408	685	606	1,608	633	1,288	2,075	1,145	208	722	158
1996		51,957	5,864	34,915	4,381	30,534	278	7,082	3,446	703	631	1,673	629	1,528	2,144	1,155	219	770	147
1997		55,058	5,909	38,353	3,132	35,222	252	6,531	3,016	654	613	1,643	606	1,582	2,278	1,196	242	840	152
1998		54,218	6,017	37,665	3,078	34,587	269	6,077	2,642	615	608	1,611	600	1,604	2,440	1,240	255	946	144
1999		59,938	6,373	42,225	3,247	38,978	316	6,641	3,067	630	625	1,686	634	1,437	2,797	1,498	272	1,027	149
2000		63,885	6,881	44,156	3,023	41,133	303	7,319	3,600	644	623	1,786	666	1,456	3,556	2,064	291	1,201	214
2001		70,735	7,773	48,510	3,971	44,539	905	7,774	3,917	662	606	1,887	703	1,548	3,956	2,370	287	1,299	268
2002		55,096	8,121	30,948	2,660	28,289	1,183	8,542	4,399	710	592	2,072	769	1,804	4,210	2,458	274	1,477	288
2003		65,203	8,149	39,660	4,752	34,908	1,501	9,349	4,950	774	587	2,229	808	1,700	4,579	2,642	275	1,663	264
2004		71,775	7,702	46,941	4,934	42,007	1,508	9,468	5,065	784	581	2,229	809	1,531	4,426	2,529	273	1,624	201
2005		70,001	7,557	45,284	5,289	39,995	1,414	9,395	5,032	743	575	2,247	799	1,637	4,435	2,432	280	1,723	278
2006		74,333	7,202	49,571	5,948	43,623	1,272	9,487	5,151	713	574	2,258	791	1,770	4,547	2,511	290	1,746	484
2007		78,661	6,798	54,196	8,421	45,775	1,100	9,648	5,223	725	591	2,284	825	1,275	4,615	2,431	300	1,884	1,030
2008		68,881	6,738	43,160	4,970	38,189	1,819	10,421	5,658	776	643	2,438	906	787	4,758	2,395	304	2,060	1,198

Appendix table 4-4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
2009		66,419	7,176	37,415	7,106	30,309	1,831	12,243	7,017	847	710	2,641	1,028	1,168	5,297	2,779	290	2,228	1,289
2010		71,666	7,195	40,459	4,239	36,220	2,026	14,021	8,504	881	731	2,794	1,110	1,150	5,335	2,757	289	2,290	1,480
2011		72,670	6,834	41,625	3,885	37,740	1,961	14,656	9,048	881	730	2,871	1,126	1,159	5,022	2,440	298	2,284	1,413

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[b] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those year.
[c] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.
[d] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[e] Industry sources of funds for industry R&D expenditures include all nonfederal sources of industry funds for R&D expenditures.
[f] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are also included in the totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey (annual series), Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-5

U.S. development expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
		Current $millions																	
1953		3,412	567	2,753	1,123	1,630	NA	16	9	3	1	3	1	48	29	17	6	6	NA
1954		3,734	537	3,090	1,405	1,685	NA	17	9	3	1	3	1	59	32	18	7	7	NA
1955		4,189	543	3,523	1,785	1,738	NA	21	12	4	2	3	1	69	34	19	8	7	NA
1956		5,855	631	5,084	2,817	2,267	NA	25	14	4	2	4	2	81	35	20	8	7	NA
1957		6,681	728	5,790	3,616	2,174	NA	26	12	5	3	4	2	101	37	21	8	8	NA
1958		7,214	842	6,183	3,942	2,241	NA	28	13	6	3	4	2	120	42	25	8	9	NA
1959		8,463	940	7,307	4,750	2,557	NA	31	16	6	3	5	2	134	51	32	9	10	NA
1960		9,360	1,003	8,104	5,169	2,935	NA	35	19	6	3	5	2	151	69	49	10	10	NA
1961		9,930	1,090	8,536	5,347	3,189	NA	38	22	7	2	5	2	170	97	73	10	14	NA
1962		10,115	1,227	8,526	5,280	3,246	NA	40	23	8	2	6	2	190	132	103	11	18	NA
1963		11,540	1,465	9,651	6,116	3,535	NA	40	22	8	2	6	2	219	165	134	11	20	NA
1964		12,506	1,680	10,004	6,156	3,848	359	49	30	8	2	7	3	227	188	159	11	18	NA
1965		13,215	1,789	10,637	6,218	4,419	298	71	48	9	2	8	4	207	215	183	12	20	NA
1966		14,490	1,886	11,810	6,849	4,961	271	87	61	9	2	10	5	200	236	199	14	23	NA
1967		15,332	1,943	12,539	6,795	5,744	302	93	66	9	3	10	7	208	247	208	15	24	NA
1968		16,154	1,904	13,370	7,044	6,326	293	102	72	8	4	9	9	226	259	217	16	26	NA
1969		17,051	2,016	14,071	6,944	7,127	332	110	80	7	5	8	10	246	277	231	18	28	NA
1970		16,925	2,258	13,698	6,232	7,466	340	112	84	6	5	7	10	249	268	220	18	30	NA
1971		17,399	2,473	13,924	6,167	7,757	391	98	69	8	4	9	9	267	246	194	19	33	NA
1972		18,743	2,639	15,043	6,533	8,510	402	101	63	12	4	14	9	291	267	213	19	35	NA
1973		20,197	2,657	16,394	6,621	9,773	399	126	71	18	5	20	13	296	326	268	20	38	NA
1974		21,504	2,765	17,421	6,553	10,868	479	141	75	20	7	25	15	321	377	314	22	42	NA
1975		22,706	2,890	18,352	6,783	11,569	535	156	83	22	8	27	16	373	400	330	23	47	NA
1976		25,085	2,972	20,412	7,522	12,890	654	182	100	24	12	31	16	447	418	341	25	52	NA
1977		27,667	3,188	22,603	8,275	14,328	675	254	153	28	15	40	19	503	444	359	27	58	NA
1978		31,056	3,676	25,216	8,756	16,460	753	373	254	32	15	49	24	542	496	403	30	64	NA
1979		35,445	3,944	29,033	9,888	19,145	810	469	336	34	16	56	28	603	586	483	32	71	NA
1980		40,765	4,072	33,848	10,957	22,891	882	518	362	38	19	68	31	719	726	612	35	79	NA
1981		46,305	4,530	38,547	12,791	25,756	950	568	386	44	24	80	35	778	485	360	37	88	447
1982		51,879	5,178	43,434	14,215	29,219	989	597	397	46	27	88	39	745	500	362	40	98	436
1983		57,771	6,106	48,064	15,522	32,542	1,054	617	399	47	31	97	43	832	599	447	44	109	500
1984		66,461	7,078	55,371	17,640	37,731	1,056	677	435	51	37	108	47	986	762	594	47	120	530
1985		74,522	8,011	62,020	20,258	41,762	1,102	756	486	57	43	120	49	1,244	829	644	51	134	560
1986		75,855	8,275	62,871	21,517	41,354	1,145	818	513	65	50	136	53	1,504	790	587	55	149	453

Appendix table 4-5

U.S. development expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1987		79,929	8,176	66,789	24,122	42,667	1,230	945	599	73	57	155	61	1,670	698	474	60	165	421
1988		84,567	8,864	70,353	23,719	46,634	1,414	1,098	698	83	66	180	71	1,762	655	407	65	183	420
1989		87,723	9,355	72,725	21,049	51,676	1,423	1,227	773	91	76	205	81	1,782	780	507	70	203	430
1990		94,067	9,700	78,376	18,966	59,410	1,438	1,407	910	99	83	226	89	1,735	920	619	75	226	490
1991		95,105	8,778	80,286	17,256	63,030	1,383	1,534	1,012	103	86	239	94	1,537	1,054	722	82	251	533
1992		99,811	9,098	84,569	17,181	67,388	1,372	1,596	1,055	105	91	246	100	1,452	1,125	758	88	279	599
1993		99,705	9,071	84,757	16,083	68,674	1,038	1,700	1,127	109	97	259	107	1,374	1,191	787	95	309	574
1994		102,938	8,823	87,890	16,209	71,681	1,196	1,816	1,213	114	102	276	112	1,378	1,261	815	103	343	573
1995		113,079	9,262	97,342	17,824	79,518	1,208	1,812	1,180	123	108	288	113	1,616	1,236	744	111	381	603
1996		121,377	9,033	105,863	17,066	88,797	1,358	1,791	1,128	128	115	305	115	1,520	1,241	698	120	423	571
1997		128,677	9,077	113,184	18,121	95,063	1,292	1,708	1,055	121	114	305	112	1,454	1,378	687	155	536	585
1998		144,723	9,214	129,041	18,452	110,589	1,280	1,619	974	116	114	302	113	1,527	1,535	760	164	611	507
1999		154,376	9,265	138,807	16,571	122,236	1,208	1,391	710	120	119	321	121	1,640	1,578	727	178	673	487
2000		169,472	9,377	153,745	13,510	140,235	1,185	1,289	565	125	121	348	130	1,577	1,579	580	195	804	720
2001		167,812	11,062	149,952	12,542	137,410	647	1,441	673	132	121	376	140	1,717	1,960	874	197	890	1,033
2002		176,689	11,800	157,788	13,061	144,727	639	1,507	669	144	120	419	156	1,726	2,156	937	191	1,028	1,074
2003		175,591	12,646	155,060	11,939	143,121	747	1,849	940	160	121	461	167	1,954	2,120	743	195	1,182	1,216
2004		177,347	12,746	155,034	14,419	140,615	851	2,204	1,268	166	123	474	172	2,447	2,686	1,300	199	1,186	1,379
2005		195,864	13,994	172,208	15,512	156,696	1,052	2,157	1,199	163	126	493	175	2,360	2,723	1,211	212	1,301	1,369
2006		212,836	16,089	188,112	16,720	171,392	1,156	1,952	970	162	130	512	179	2,136	2,189	603	226	1,360	1,202
2007		227,834	18,016	200,429	14,860	185,569	1,738	1,971	939	169	138	533	192	2,488	2,319	568	240	1,511	872
2008		259,713	17,566	231,449	29,488	201,961	1,948	2,020	885	185	153	581	216	2,239	2,500	562	249	1,689	1,991
2009		255,993	17,245	226,554	30,436	196,118	2,008	3,523	1,636	306	256	951	374	1,868	2,636	550	241	1,846	2,158
2010		249,979	18,141	217,700	28,088	189,612	2,118	5,259	2,623	421	349	1,335	530	1,842	2,684	523	242	1,919	2,236
2011		267,074	18,884	233,887	26,228	207,659	2,053	5,536	2,792	431	357	1,405	551	1,768	2,610	400	255	1,955	2,336
		2005 constant $millions																	
1953		21,111	3,506	17,036	6,949	10,087	NA	99	53	18	6	16	6	294	176	102	37	37	NA
1954		22,895	3,293	18,946	8,615	10,331	NA	104	52	21	6	19	6	359	193	107	43	43	NA
1955		25,256	3,271	21,241	10,762	10,479	NA	127	69	23	9	19	6	416	202	112	48	42	NA
1956		34,127	3,675	29,636	16,421	13,215	NA	146	79	26	12	21	9	469	201	114	47	41	NA
1957		37,688	4,104	32,662	20,398	12,264	NA	147	68	30	14	24	11	570	206	116	45	45	NA
1958		39,798	4,643	34,112	21,749	12,364	NA	152	69	31	17	24	11	662	229	135	44	50	NA
1959		46,149	5,126	39,845	25,902	13,943	NA	169	85	33	16	25	11	731	278	174	49	55	NA
1960		50,337	5,391	43,582	27,798	15,784	NA	186	102	34	13	25	11	809	368	261	54	54	NA
1961		52,799	5,793	45,389	28,432	16,957	NA	199	114	37	11	27	11	901	516	388	53	74	NA
1962		53,058	6,436	44,725	27,697	17,028	NA	210	118	40	10	30	10	997	690	538	58	94	NA

Appendix table 4-5

U.S. development expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1963		59,896	7,604	50,094	31,745	18,348	NA	208	114	41	10	32	10	1,134	856	696	57	104	NA
1964		63,930	8,588	51,140	31,469	19,671	1,835	248	151	41	10	33	13	1,158	961	813	56	92	NA
1965		66,343	8,979	53,401	31,216	22,185	1,496	354	241	43	10	39	20	1,037	1,077	916	60	100	NA
1966		70,733	9,207	57,653	33,435	24,218	1,323	425	298	46	10	47	24	976	1,150	969	68	112	NA
1967		72,615	9,203	59,389	32,183	27,205	1,430	440	310	40	12	47	31	985	1,167	983	71	114	NA
1968		73,389	8,650	60,743	32,002	28,740	1,331	461	325	35	18	42	41	1,027	1,177	986	73	118	NA
1969		73,818	8,727	60,918	30,063	30,855	1,437	474	344	31	22	34	43	1,065	1,197	998	78	121	NA
1970		69,602	9,285	56,332	25,628	30,703	1,398	461	343	27	21	29	41	1,024	1,102	905	74	123	NA
1971		68,144	9,684	54,536	24,154	30,382	1,531	384	270	31	16	34	33	1,046	964	760	74	129	NA
1972		70,372	9,909	56,479	24,528	31,951	1,509	379	235	47	13	51	34	1,093	1,002	800	71	131	NA
1973		71,842	9,452	58,315	23,552	34,764	1,419	446	251	62	18	71	44	1,051	1,158	952	71	135	NA
1974		70,126	9,018	56,810	21,369	35,441	1,562	458	243	65	21	80	49	1,047	1,231	1,022	71	138	NA
1975		67,651	8,610	54,679	20,210	34,470	1,594	465	246	66	24	82	48	1,110	1,193	983	70	140	NA
1976		70,684	8,374	57,516	21,195	36,321	1,843	513	280	67	32	88	45	1,260	1,179	961	71	147	NA
1977		73,290	8,445	59,875	21,920	37,955	1,788	673	405	74	38	107	49	1,333	1,177	951	72	153	NA
1978		76,870	9,100	62,414	21,673	40,742	1,864	923	628	79	36	121	58	1,341	1,228	996	73	159	NA
1979		80,998	9,012	66,345	22,596	43,749	1,851	1,073	769	78	36	127	63	1,379	1,339	1,103	73	163	NA
1980		85,372	8,529	70,886	22,947	47,940	1,847	1,084	758	80	41	142	64	1,505	1,520	1,282	72	166	NA
1981		88,665	8,675	73,810	24,492	49,318	1,819	1,087	739	84	45	152	67	1,489	929	689	72	168	856
1982		93,624	9,345	78,383	25,653	52,730	1,785	1,077	717	82	48	159	70	1,344	903	654	73	176	787
1983		100,293	10,600	83,441	26,947	56,494	1,830	1,072	693	82	54	169	74	1,444	1,041	776	76	188	867
1984		111,201	11,843	92,646	29,515	63,131	1,767	1,133	727	86	62	180	78	1,650	1,275	995	79	202	887
1985		121,024	13,009	100,722	32,899	67,822	1,790	1,228	789	93	70	195	80	2,020	1,346	1,046	83	217	909
1986		120,524	13,147	99,894	34,188	65,706	1,819	1,299	816	104	80	216	84	2,389	1,256	932	88	236	719
1987		123,415	12,624	103,126	37,246	65,881	1,899	1,459	924	113	88	240	93	2,578	1,078	731	92	255	650
1988		126,241	13,232	105,023	35,408	69,615	2,111	1,639	1,042	124	99	268	106	2,630	978	608	96	274	627
1989		126,188	13,458	104,614	30,279	74,335	2,047	1,765	1,112	132	110	295	117	2,563	1,122	729	100	293	619
1990		130,286	13,435	108,554	26,269	82,285	1,992	1,949	1,260	138	115	313	123	2,403	1,275	857	104	313	679
1991		127,213	11,741	107,391	23,082	84,310	1,850	2,052	1,353	137	115	320	126	2,055	1,411	966	109	336	713
1992		130,416	11,887	110,501	22,449	88,052	1,793	2,086	1,378	137	119	321	130	1,897	1,470	991	115	364	783
1993		127,460	11,597	108,351	20,560	87,791	1,327	2,173	1,441	139	124	331	137	1,756	1,523	1,006	122	395	734
1994		128,879	11,047	110,039	20,294	89,745	1,497	2,274	1,519	142	128	345	140	1,726	1,579	1,020	129	430	717
1995		138,685	11,359	119,384	21,860	97,524	1,482	2,222	1,447	150	133	353	139	1,982	1,516	912	136	468	740
1996		146,081	10,872	127,410	20,540	106,870	1,634	2,156	1,358	154	138	367	138	1,829	1,494	840	145	510	687
1997		152,179	10,734	133,857	21,431	112,426	1,528	2,020	1,248	143	135	361	133	1,720	1,629	812	183	634	691

Appendix table 4-5

U.S. development expenditures, by performing sector and source of funds: 1953–2011

	Performer:	All performers	Federal	Industry[a]			Industry FFRDCs[b]	U&C[c]						U&C FFRDCs	Other nonprofit				Nonprofit FFRDCs[d]
Year	Funding source:	All sources	Federal	Total	Federal[b]	Industry[e]	Total	Total	Federal	Other government[f]	Industry	U&C	Other nonprofit	Total	Total	Federal[d]	Industry	Other nonprofit	Total
1998		169,245	10,775	150,906	21,579	129,328	1,497	1,893	1,139	135	134	354	132	1,786	1,795	889	192	714	593
1999		177,917	10,678	159,974	19,098	140,876	1,392	1,603	819	138	137	370	139	1,890	1,818	838	205	775	561
2000		191,013	10,568	173,287	15,227	158,060	1,336	1,453	637	141	137	392	146	1,778	1,780	653	220	907	812
2001		184,963	12,192	165,278	13,824	151,454	713	1,588	741	145	133	414	154	1,892	2,161	963	217	981	1,139
2002		191,644	12,798	171,144	14,167	156,977	693	1,635	725	156	130	455	169	1,872	2,338	1,016	207	1,115	1,165
2003		186,531	13,434	164,721	12,683	152,038	793	1,964	998	170	129	489	177	2,076	2,252	790	207	1,255	1,292
2004		183,236	13,169	160,182	14,898	145,284	879	2,277	1,310	172	128	489	178	2,529	2,775	1,344	206	1,226	1,425
2005		195,864	13,994	172,208	15,512	156,696	1,052	2,157	1,199	163	126	493	175	2,360	2,723	1,211	212	1,301	1,369
2006		206,175	15,586	182,224	16,197	166,028	1,120	1,891	940	157	126	496	174	2,069	2,121	584	219	1,318	1,164
2007		214,479	16,960	188,681	13,989	174,692	1,636	1,856	884	159	130	501	181	2,342	2,183	534	226	1,422	821
2008		239,185	16,178	213,155	27,157	185,998	1,794	1,860	815	170	141	535	199	2,062	2,302	518	229	1,555	1,833
2009		233,295	15,716	206,467	27,737	178,729	1,830	3,211	1,491	279	233	867	341	1,703	2,402	501	219	1,682	1,967
2010		225,224	16,344	196,142	25,307	170,835	1,908	4,738	2,364	379	315	1,203	478	1,659	2,418	472	218	1,729	2,015
2011		235,598	16,658	206,322	23,137	183,185	1,811	4,884	2,463	380	315	1,240	486	1,560	2,303	353	225	1,725	2,061

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[b] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.
[c] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with the data reported in earlier years.
[d] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[e] Industry sources of funds for industry R&D expenditures include all nonfederal sources of industry funds for R&D expenditures.
[f] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are also included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey (annual series), Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-6

U.S. R&D expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source: / Performer:	All sources / All performers	Federal								Industry				U&C	Other nonprofit			Other government[a]
			Total	Federal	Industry[b]	Industry FFRDCs[b]	U&C[c]	U&C FFRDCs	Other nonprofit[d]	Nonprofit FFRDCs[d]	Total	Industry[e]	U&C[c]	Other nonprofit	U&C[c]	Total	Other nonprofit	U&C[c]	U&C[c]
										Current $millions									
1953		5,160	2,783	1,015	1,430	NA	149	131	58	NA	2,247	2,200	21	26	37	55	28	27	40
1954		5,617	3,098	963	1,750	NA	165	161	61	NA	2,375	2,320	24	31	40	60	31	29	45
1955		6,281	3,603	973	2,057	123	191	187	64	9	2,522	2,460	27	35	42	64	32	32	50
1956		8,500	4,978	1,130	2,995	333	221	217	71	11	3,346	3,277	32	37	46	74	38	36	57
1957		9,908	6,233	1,297	3,928	407	242	267	79	14	3,470	3,396	37	37	51	91	51	40	64
1958		10,915	6,974	1,507	4,436	323	280	316	95	18	3,707	3,630	39	38	56	107	62	45	72
1959		12,490	8,167	1,681	5,217	418	356	349	125	22	4,065	3,983	40	42	61	117	67	50	81
1960		13,711	8,915	1,801	5,604	477	453	385	148	48	4,516	4,428	40	48	67	123	68	55	90
1961		14,564	9,484	1,987	5,685	555	557	440	169	92	4,757	4,668	40	49	75	148	86	62	101
1962		15,636	10,138	2,188	6,008	426	687	500	200	130	5,124	5,029	41	54	84	179	109	70	112
1963		17,519	11,645	2,558	6,856	414	839	580	234	165	5,456	5,360	41	55	96	197	119	78	125
1964		19,103	12,764	2,965	7,257	463	995	629	250	205	5,888	5,792	41	55	114	200	112	88	138
1965		20,252	13,194	3,156	7,367	373	1,167	630	286	215	6,549	6,445	42	62	136	225	124	101	150
1966		22,072	14,165	3,308	7,977	355	1,335	652	329	210	7,331	7,216	45	70	165	252	138	114	160
1967		23,346	14,563	3,444	7,946	419	1,491	696	342	225	8,146	8,020	52	74	200	271	145	126	168
1968		24,666	14,964	3,497	8,145	415	1,586	722	364	235	9,008	8,869	58	81	221	290	151	139	185
1969		25,996	15,228	3,790	7,987	464	1,624	731	388	245	10,011	9,857	61	93	233	316	161	155	208
1970		26,271	14,984	4,154	7,306	473	1,686	727	410	230	10,449	10,288	66	95	259	343	172	171	237
1971		26,952	15,210	4,409	7,175	491	1,760	735	427	215	10,824	10,654	72	98	290	366	184	182	262
1972		28,740	16,039	4,676	7,469	548	1,890	785	472	200	11,715	11,535	79	101	312	393	198	195	282
1973		30,952	16,587	4,837	7,600	545	2,009	841	566	190	13,299	13,104	90	105	343	422	211	211	302
1974		33,359	17,287	5,132	7,572	648	2,160	926	639	210	14,885	14,667	104	114	393	474	235	239	320
1975		35,671	18,533	5,561	7,878	727	2,400	1,067	675	225	15,824	15,582	118	124	432	534	262	272	348
1976		39,435	20,292	5,890	8,671	890	2,619	1,266	711	245	17,702	17,436	131	135	480	592	292	300	369
1977		43,338	22,071	6,211	9,523	962	2,893	1,467	740	275	19,642	19,340	155	147	569	662	326	337	394
1978		48,719	24,414	6,962	10,107	1,082	3,329	1,772	830	333	22,457	22,115	182	160	679	727	363	364	443
1979		55,379	27,225	7,471	11,354	1,164	3,848	2,013	985	390	26,097	25,708	215	174	785	791	405	386	482
1980		63,224	29,986	7,831	12,752	1,277	4,335	2,306	1,017	469	30,929	30,476	264	189	920	871	452	419	519
1981		72,292	33,739	8,605	14,997	1,385	4,670	2,484	1,075	524	35,948	35,428	314	206	1,058	967	504	463	581
1982		80,748	37,133	9,501	17,061	1,484	4,879	2,544	1,129	536	40,692	40,105	363	224	1,207	1,095	561	534	621
1983		89,950	41,451	10,830	19,095	1,585	5,210	2,840	1,306	585	45,264	44,588	432	244	1,357	1,220	626	595	658
1984		102,244	46,470	11,916	21,657	1,739	5,748	3,243	1,548	620	52,187	51,404	518	265	1,514	1,351	698	654	721
1985		114,671	52,641	13,093	25,333	1,863	6,388	3,616	1,694	655	57,962	57,043	630	289	1,743	1,491	778	713	834
1986		120,249	54,622	13,504	26,000	1,891	7,028	3,973	1,686	541	60,991	59,932	745	314	2,019	1,647	867	780	969
1987		126,360	58,609	13,588	28,757	1,995	7,768	4,287	1,704	509	62,576	61,403	831	342	2,262	1,849	967	882	1,065
1988		133,881	60,131	14,342	28,221	2,122	8,593	4,581	1,762	510	67,977	66,672	933	372	2,527	2,081	1,078	1,003	1,165
1989		141,891	60,466	15,231	26,359	2,195	9,317	4,756	2,062	547	74,966	73,501	1,061	405	2,852	2,333	1,202	1,131	1,274
1990		151,993	61,610	15,671	25,802	2,323	9,939	4,894	2,346	636	83,208	81,602	1,166	440	3,187	2,589	1,340	1,249	1,399

Appendix table 4-6

U.S. R&D expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b]	Industry FFRDCs[b]	U&C[c]	U&C FFRDCs	Other nonprofit[d]	Nonprofit FFRDCs[d]	Total	Industry[e]	U&C[c]	Other nonprofit	U&C[c]	Total	Other nonprofit	U&C[c]	U&C[c]
1991		160,876	60,783	15,249	24,095	2,277	10,667	5,120	2,679	696	92,300	90,580	1,242	479	3,458	2,852	1,494	1,358	1,483
1992		165,350	60,915	15,853	22,369	2,353	11,528	5,259	2,806	748	96,229	94,388	1,320	521	3,569	3,113	1,666	1,448	1,525
1993		165,730	60,528	16,531	20,844	1,965	12,307	5,289	2,843	749	96,549	94,591	1,392	567	3,709	3,388	1,857	1,531	1,557
1994		169,207	60,777	16,355	20,261	2,202	12,996	5,294	2,911	758	99,204	97,131	1,456	617	3,938	3,665	2,071	1,595	1,623
1995		183,625	62,969	16,904	21,178	2,273	13,592	5,367	2,847	808	110,871	108,652	1,548	671	4,110	3,925	2,308	1,617	1,751
1996		197,346	63,394	16,585	21,356	2,297	14,084	5,395	2,906	772	123,417	121,015	1,672	730	4,436	4,239	2,574	1,666	1,861
1997		212,152	64,574	16,819	21,798	2,130	14,530	5,463	3,014	821	136,228	133,611	1,808	809	4,838	4,590	2,804	1,786	1,922
1998		226,457	66,383	17,362	22,086	2,078	15,174	5,559	3,281	843	147,825	145,016	1,950	859	5,163	5,114	3,192	1,922	1,972
1999		245,318	67,366	18,142	20,496	2,039	16,264	5,652	3,761	1,013	164,606	161,594	2,082	931	5,619	5,628	3,516	2,112	2,098
2000		268,905	67,862	19,247	17,117	2,001	17,719	5,742	4,510	1,526	186,037	182,844	2,174	1,020	6,231	6,528	4,204	2,324	2,246
2001		279,716	74,966	22,374	16,899	2,020	19,767	6,225	5,488	2,192	188,336	185,118	2,189	1,029	6,826	7,192	4,650	2,542	2,395
2002		279,387	80,315	23,798	16,401	2,263	22,654	7,102	5,778	2,319	180,643	177,467	2,178	998	7,617	8,203	5,374	2,828	2,610
2003		293,060	86,705	24,982	17,798	2,458	25,727	7,301	5,945	2,494	186,113	182,926	2,166	1,020	8,226	9,160	6,176	2,984	2,856
2004		304,547	92,360	24,898	20,266	2,485	27,872	7,659	6,537	2,644	191,307	188,035	2,231	1,041	8,562	9,310	6,201	3,109	3,008
2005		327,185	97,041	26,322	21,909	2,601	29,019	7,817	6,545	2,828	207,725	204,250	2,368	1,107	9,265	10,095	6,800	3,294	3,060
2006		352,567	101,558	28,240	24,304	3,122	29,600	7,306	6,044	2,943	227,110	223,365	2,563	1,182	10,076	10,641	7,111	3,530	3,182
2007		379,454	106,631	29,859	26,585	5,165	30,160	5,567	5,980	3,316	246,741	242,682	2,803	1,257	10,833	11,810	7,896	3,915	3,438
2008		406,610	119,423	29,839	36,360	6,346	31,178	4,766	6,236	4,698	258,691	254,321	3,069	1,301	11,640	13,151	8,827	4,324	3,706
2009		404,697	127,467	30,560	39,573	6,646	33,433	5,052	7,097	5,106	247,274	242,820	3,196	1,258	11,884	14,264	9,647	4,617	3,808
2010		406,708	126,962	31,217	34,199	7,214	36,561	5,315	7,000	5,457	249,182	244,778	3,139	1,265	11,990	14,793	10,029	4,764	3,782
2011		424,413	125,686	31,505	31,309	7,037	38,710	5,294	6,274	5,558	267,290	262,784	3,173	1,333	12,488	15,117	10,218	4,899	3,832
		2005 constant $millions																	
1953		31,931	17,219	6,281	8,849	NA	922	811	356	NA	13,902	13,614	127	161	226	340	173	167	244
1954		34,437	18,995	5,902	10,730	NA	1,009	984	371	NA	14,559	14,225	144	190	242	368	190	178	273
1955		37,871	21,725	5,865	12,402	742	1,152	1,127	386	51	15,206	14,832	163	211	253	386	193	193	301
1956		49,548	29,018	6,590	17,459	1,941	1,288	1,265	411	64	19,502	19,102	184	216	268	431	222	210	329
1957		55,893	35,159	7,318	22,158	2,296	1,362	1,503	443	79	19,572	19,157	206	209	288	513	288	226	361
1958		60,220	38,477	8,312	24,474	1,782	1,545	1,741	524	99	20,452	20,027	215	210	306	588	342	246	397
1959		68,106	44,535	9,167	28,448	2,279	1,939	1,903	679	120	22,164	21,719	215	229	333	635	365	270	439
1960		73,737	47,944	9,684	30,137	2,565	2,433	2,070	796	258	24,286	23,813	215	258	360	661	366	296	484
1961		77,444	50,431	10,567	30,229	2,951	2,959	2,340	899	487	25,295	24,821	213	261	396	787	457	330	534
1962		82,022	53,182	11,476	31,516	2,235	3,601	2,623	1,049	682	26,876	26,381	212	283	441	936	572	365	588
1963		90,932	60,446	13,280	35,586	2,149	4,352	3,008	1,215	856	28,317	27,821	210	285	498	1,023	618	405	649
1964		97,653	65,251	15,158	37,098	2,367	5,086	3,215	1,278	1,048	30,097	29,609	207	281	580	1,022	573	450	703
1965		101,672	66,236	15,845	36,985	1,873	5,859	3,160	1,436	1,079	32,875	32,356	208	311	683	1,127	623	505	751
1966		107,747	69,147	16,147	38,941	1,733	6,517	3,180	1,604	1,025	35,788	35,226	220	342	803	1,228	674	554	781
1967		110,576	68,974	16,314	37,635	1,985	7,059	3,296	1,620	1,066	38,580	37,985	244	350	945	1,281	687	594	796
1968		112,063	67,985	15,888	37,004	1,885	7,206	3,280	1,654	1,068	40,923	40,294	261	368	1,002	1,315	686	629	838
1969		112,544	65,928	16,409	34,578	2,009	7,029	3,165	1,678	1,061	43,339	42,674	262	403	1,009	1,368	697	671	901

Appendix table 4-6

U.S. R&D expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b]	Industry FFRDCs[b]	U&C[c]	U&C FFRDCs	Other nonprofit[d]	Nonprofit FFRDCs[d]	Total	Industry[e]	U&C[c]	Other nonprofit	U&C[c]	Total	Other nonprofit	U&C[c]	U&C[c]
1970		108,038	61,621	17,082	30,045	1,945	6,931	2,988	1,684	946	42,968	42,308	269	391	1,063	1,411	707	703	975
1971		105,561	59,573	17,268	28,102	1,923	6,891	2,877	1,670	842	42,394	41,728	282	384	1,134	1,434	721	713	1,026
1972		107,905	60,219	17,555	28,042	2,057	7,096	2,947	1,770	751	43,984	43,308	297	379	1,170	1,474	743	730	1,059
1973		110,098	59,002	17,204	27,034	1,939	7,144	2,992	2,013	676	47,304	46,612	318	373	1,220	1,499	751	749	1,072
1974		108,784	56,373	16,737	24,692	2,113	7,044	3,020	2,082	685	48,541	47,829	339	373	1,280	1,547	767	779	1,044
1975		106,282	55,220	16,570	23,472	2,166	7,151	3,179	2,011	670	47,148	46,426	352	370	1,286	1,592	781	810	1,037
1976		111,118	57,177	16,597	24,433	2,508	7,380	3,566	2,003	690	49,881	49,131	369	381	1,353	1,668	824	844	1,040
1977		114,802	58,467	16,454	25,226	2,548	7,662	3,887	1,961	728	52,030	51,231	409	390	1,506	1,755	864	891	1,044
1978		120,589	60,429	17,233	25,017	2,678	8,239	4,385	2,054	823	55,584	54,739	449	396	1,681	1,799	900	900	1,097
1979		126,549	62,213	17,073	25,946	2,660	8,793	4,599	2,251	891	59,635	58,747	490	398	1,794	1,807	926	881	1,100
1980		132,407	62,799	16,399	26,706	2,674	9,078	4,829	2,130	982	64,773	63,825	552	397	1,926	1,824	946	877	1,086
1981		138,425	64,603	16,476	28,716	2,652	8,941	4,757	2,058	1,003	68,834	67,838	601	395	2,025	1,851	964	887	1,112
1982		145,722	67,013	17,146	30,789	2,678	8,804	4,590	2,038	967	73,435	72,376	655	405	2,177	1,976	1,013	963	1,121
1983		156,156	71,960	18,800	33,150	2,752	9,045	4,931	2,266	1,016	78,580	77,406	750	424	2,355	2,119	1,087	1,032	1,142
1984		171,072	77,753	19,937	36,236	2,910	9,617	5,427	2,590	1,038	87,318	86,008	866	444	2,533	2,261	1,168	1,093	1,206
1985		186,227	85,490	21,263	41,141	3,026	10,374	5,872	2,751	1,063	94,131	92,639	1,023	469	2,831	2,422	1,264	1,158	1,354
1986		191,059	86,788	21,457	41,311	3,005	11,166	6,312	2,678	860	96,907	95,224	1,184	499	3,207	2,618	1,378	1,239	1,540
1987		195,108	90,497	20,981	44,403	3,080	11,994	6,620	2,632	786	96,621	94,810	1,283	528	3,493	2,854	1,493	1,361	1,644
1988		199,858	89,764	21,410	42,128	3,168	12,828	6,838	2,631	761	101,476	99,528	1,393	555	3,772	3,107	1,610	1,497	1,739
1989		204,107	86,979	21,909	37,917	3,157	13,402	6,841	2,966	787	107,837	105,730	1,526	582	4,103	3,356	1,729	1,627	1,833
1990		210,515	85,332	21,705	35,737	3,217	13,766	6,778	3,249	881	115,246	113,022	1,614	610	4,413	3,586	1,856	1,730	1,938
1991		215,189	81,304	20,398	32,230	3,046	14,268	6,849	3,583	931	123,462	121,161	1,661	641	4,625	3,815	1,999	1,816	1,983
1992		216,053	79,593	20,714	29,228	3,075	15,062	6,872	3,666	977	125,736	123,331	1,724	681	4,663	4,068	2,177	1,891	1,993
1993		211,865	77,377	21,132	26,646	2,512	15,733	6,761	3,635	958	123,426	120,922	1,779	725	4,741	4,331	2,374	1,957	1,990
1994		211,847	76,093	20,477	25,367	2,757	16,270	6,628	3,645	949	124,204	121,608	1,823	772	4,930	4,589	2,592	1,996	2,031
1995		225,206	77,228	20,731	25,974	2,788	16,670	6,583	3,492	991	135,976	133,255	1,898	823	5,041	4,814	2,831	1,983	2,148
1996		237,513	76,297	19,960	25,703	2,765	16,951	6,493	3,497	929	148,536	145,646	2,012	879	5,338	5,102	3,097	2,004	2,240
1997		250,901	76,368	19,891	25,779	2,519	17,183	6,461	3,565	971	161,109	158,015	2,138	956	5,722	5,428	3,316	2,113	2,273
1998		264,829	77,632	20,304	25,828	2,430	17,745	6,501	3,837	986	172,873	169,588	2,280	1,005	6,038	5,981	3,733	2,247	2,306
1999		282,726	77,639	20,908	23,621	2,350	18,744	6,514	4,334	1,168	189,707	186,235	2,399	1,073	6,476	6,486	4,052	2,434	2,418
2000		303,084	76,487	21,693	19,293	2,255	19,971	6,472	5,083	1,720	209,684	206,085	2,450	1,149	7,023	7,358	4,739	2,620	2,532
2001		308,304	82,628	24,661	18,626	2,227	21,787	6,862	6,049	2,416	207,585	204,038	2,413	1,134	7,523	7,927	5,125	2,802	2,640
2002		303,036	87,113	25,812	17,789	2,455	24,572	7,703	6,267	2,515	195,933	192,488	2,362	1,083	8,262	8,897	5,829	3,068	2,831
2003		311,319	92,107	26,539	18,907	2,611	27,330	7,756	6,315	2,649	197,708	194,323	2,301	1,084	8,739	9,730	6,561	3,169	3,034
2004		314,660	95,427	25,724	20,939	2,568	28,798	7,913	6,754	2,732	197,660	194,279	2,305	1,076	8,846	9,619	6,407	3,212	3,108
2005		327,185	97,041	26,322	21,909	2,601	29,019	7,817	6,545	2,828	207,725	204,250	2,368	1,107	9,265	10,095	6,800	3,294	3,060
2006		341,532	98,379	27,356	23,543	3,024	28,673	7,078	5,854	2,851	220,002	216,374	2,483	1,145	9,760	10,308	6,888	3,420	3,083
2007		357,212	100,381	28,109	25,027	4,862	28,393	5,241	5,629	3,121	232,278	228,457	2,638	1,183	10,198	11,118	7,433	3,685	3,237
2008		374,472	109,984	27,480	33,486	5,844	28,714	4,389	5,743	4,327	238,244	234,219	2,827	1,198	10,720	12,111	8,129	3,982	3,413

Appendix table 4-6

U.S. R&D expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b]	Industry FFRDCs[b]	U&C[c]	U&C FFRDCs	Other nonprofit[d]	Nonprofit FFRDCs[d]	Total	Industry[e]	U&C[c]	Other nonprofit	U&C[c]	Total	Other nonprofit	U&C[c]	U&C[c]
2009		368,815	116,165	27,850	36,064	6,057	30,469	4,604	6,468	4,653	225,349	221,290	2,913	1,146	10,831	12,999	8,792	4,207	3,471
2010		366,434	114,390	28,126	30,812	6,499	32,941	4,789	6,307	4,916	224,506	220,539	2,828	1,140	10,802	13,328	9,036	4,292	3,408
2011		374,394	110,873	27,792	27,619	6,207	34,147	4,670	5,534	4,903	235,788	231,814	2,799	1,176	11,016	13,335	9,014	4,322	3,381

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).
[b] Federal support for industry in 1953–54 did not separate federal support for industry and for industry-administered FFRDCs; thus, the data for federal support to industry include support to FFRDCs for those years.
[c] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Non-S&E R&D was $1.4 billion in 2003 and $3.2 billion in 2011. Also, adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of (since 1998) S&E R&D and (since 2010) non-S&E funds passed through from one academic institution to another. For FY 1998, $479 million in total pass-through funds and $421 million in federal pass-through funds were reported. For FY 2011, total pass-through was an estimated $3,065 million and federal pass-through was an estimated $2,726 million.
[d] Federal support for nonprofit-administered FFRDCs in 1953–54 did not separate federal support for other nonprofits and for nonprofit-administered FFRDCs; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[e] Industry sources of funding for industry R&D expenditures include all nonfederal sources of funding for industry R&D expenditures.

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly from federal funds, but any nonfederal funds are included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

Science and Engineering Indicators 2014

Appendix table 4-7

U.S. basic research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
		Current $millions																	
1953		460	265	102	19	NA	82	36	27	NA	154	132	13	9	6	28	12	16	7
1954		509	291	96	23	NA	97	44	31	NA	169	143	15	11	8	31	13	18	10
1955		579	327	98	27	NA	117	50	36	NA	192	162	17	13	12	35	14	21	14
1956		718	393	114	37	NA	143	58	42	NA	251	216	20	15	15	41	17	24	19
1957		814	452	124	41	NA	167	72	49	NA	268	230	23	15	20	50	23	27	25
1958		944	538	149	43	NA	202	85	59	NA	292	252	24	16	24	59	28	31	31
1959		1,087	666	165	72	NA	263	95	72	NA	290	248	24	18	28	66	30	36	38
1960		1,286	794	184	79	NA	341	106	85	NA	343	297	25	21	33	71	30	41	45
1961		1,512	973	230	81	NA	432	126	105	NA	361	314	25	22	40	85	37	48	54
1962		1,824	1,218	252	143	NA	546	148	130	NA	394	345	25	24	48	101	46	55	64
1963		2,115	1,446	285	147	NA	689	175	150	NA	425	375	25	25	58	113	50	63	75
1964		2,396	1,693	339	123	42	824	200	166	NA	434	384	25	25	70	115	47	68	84
1965		2,664	1,900	375	157	29	944	218	179	NA	462	406	27	29	86	122	52	70	94
1966		2,930	2,075	410	142	31	1,066	239	188	NA	512	451	29	32	106	133	58	75	104
1967		3,168	2,280	434	168	34	1,188	263	194	NA	495	427	34	34	136	144	61	83	114
1968		3,376	2,399	482	145	35	1,265	276	196	NA	537	462	38	37	156	154	63	91	131
1969		3,491	2,457	545	123	37	1,288	272	192	NA	541	458	40	43	171	170	67	103	153
1970		3,594	2,501	562	122	36	1,323	265	195	NA	531	444	43	44	196	187	72	115	179
1971		3,720	2,559	581	101	33	1,385	252	207	NA	551	456	50	45	214	204	77	127	194
1972		3,850	2,656	603	91	39	1,437	270	216	NA	565	463	55	47	216	218	84	134	195
1973		4,099	2,847	652	96	36	1,489	343	232	NA	607	499	59	49	223	227	90	137	196
1974		4,511	3,146	715	114	49	1,609	415	245	NA	656	536	66	54	250	254	102	153	204
1975		4,875	3,415	760	104	53	1,768	476	255	NA	704	573	72	59	264	280	116	164	212
1976		5,373	3,793	850	116	69	1,924	556	278	NA	774	634	75	65	283	305	131	175	218
1977		6,008	4,235	943	135	75	2,114	667	301	NA	862	701	89	72	334	346	148	198	232
1978		6,959	4,950	1,044	156	94	2,399	906	351	NA	970	785	107	79	398	380	168	213	260
1979		7,836	5,558	1,112	161	104	2,719	1,050	413	NA	1,107	893	128	87	466	419	190	229	286
1980		8,745	6,145	1,212	170	120	3,061	1,167	416	NA	1,286	1,035	156	95	544	463	215	248	307
1981		9,658	6,591	1,343	164	137	3,331	1,284	324	9	1,600	1,313	183	105	615	512	243	269	338
1982		10,651	7,121	1,522	253	128	3,475	1,366	369	9	1,854	1,523	215	115	716	591	275	317	368
1983		11,880	7,853	1,733	346	117	3,689	1,536	426	8	2,146	1,760	260	127	816	668	311	358	396
1984		13,332	8,651	1,877	340	136	4,087	1,709	494	9	2,584	2,132	313	139	915	746	351	395	436
1985		14,748	9,407	1,947	358	131	4,606	1,793	560	13	2,915	2,373	389	153	1,075	837	397	440	514
1986		17,154	10,220	2,026	434	117	5,122	1,915	594	13	4,130	3,496	466	168	1,262	936	449	488	606

Appendix table 4-7

U.S. basic research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1987		18,481	11,090	2,047	598	142	5,527	2,086	675	14	4,282	3,583	514	185	1,399	1,052	507	545	659
1988		19,787	12,097	2,116	656	337	5,937	2,272	756	24	4,275	3,507	565	203	1,530	1,180	573	607	705
1989		21,891	13,392	2,309	986	398	6,422	2,371	860	46	4,692	3,832	637	223	1,714	1,327	647	680	766
1990		23,029	14,057	2,319	869	499	6,889	2,470	947	65	4,710	3,760	705	245	1,929	1,486	730	756	847
1991		27,140	15,283	2,378	1,251	461	7,423	2,657	1,036	77	7,157	6,125	764	269	2,127	1,660	825	836	912
1992		27,604	15,710	2,419	712	474	8,058	2,867	1,114	67	6,925	5,816	814	295	2,203	1,824	931	893	941
1993		28,743	16,399	2,621	466	492	8,638	2,953	1,157	72	7,136	5,961	851	324	2,268	1,987	1,051	936	952
1994		29,651	16,770	2,547	436	503	9,139	2,934	1,137	75	7,323	6,078	890	356	2,406	2,160	1,186	974	992
1995		29,610	16,990	2,689	190	530	9,634	2,702	1,170	75	6,715	5,379	945	390	2,511	2,326	1,338	987	1,070
1996		32,799	18,063	2,680	650	708	10,092	2,606	1,248	79	8,309	6,848	1,032	428	2,740	2,539	1,510	1,028	1,149
1997		36,921	19,420	2,746	1,029	625	10,924	2,671	1,317	108	10,390	8,766	1,175	449	3,144	2,718	1,557	1,162	1,248
1998		35,372	20,847	3,003	1,002	568	11,941	2,660	1,461	213	6,643	4,851	1,315	477	3,483	3,069	1,773	1,296	1,330
1999		38,935	22,799	3,347	1,108	557	12,892	2,765	1,734	397	7,474	5,537	1,421	517	3,835	3,394	1,952	1,442	1,432
2000		42,752	24,786	3,765	925	547	13,960	2,874	2,099	616	8,181	6,115	1,499	566	4,298	3,938	2,334	1,603	1,549
2001		47,727	27,591	4,260	754	552	15,541	3,104	2,464	915	9,390	7,299	1,519	571	4,738	4,347	2,582	1,765	1,663
2002		51,902	31,130	4,511	888	534	17,930	3,714	2,575	979	8,725	6,659	1,512	554	5,287	4,947	2,984	1,963	1,812
2003		56,089	33,967	4,664	1,386	299	20,127	3,747	2,714	1,029	9,003	6,944	1,493	567	5,667	5,485	3,429	2,055	1,967
2004		57,731	35,235	4,697	1,072	175	21,702	3,730	2,788	1,070	8,887	6,763	1,545	578	5,930	5,596	3,443	2,154	2,083
2005		61,321	36,705	4,770	1,108	136	22,788	3,820	2,903	1,181	9,841	7,559	1,667	614	6,525	6,095	3,776	2,319	2,155
2006		62,996	37,558	4,716	1,444	652	23,312	3,344	2,849	1,242	9,437	6,940	1,840	656	7,233	6,483	3,948	2,535	2,285
2007		68,061	39,235	4,621	2,780	2,258	23,673	1,724	2,829	1,350	11,223	8,488	2,037	698	7,874	7,230	4,384	2,845	2,499
2008		72,105	39,156	4,957	1,475	2,423	24,149	1,672	3,073	1,407	13,833	10,893	2,218	722	8,412	8,025	4,901	3,124	2,679
2009		75,824	40,440	5,441	1,340	2,629	24,098	1,902	3,498	1,533	16,303	13,444	2,161	698	8,036	8,471	5,357	3,115	2,573
2010		77,187	41,035	5,091	1,406	2,848	24,499	2,196	3,417	1,578	17,645	14,965	1,978	702	7,554	8,570	5,568	3,001	2,383
2011		74,961	40,913	4,875	677	2,761	25,662	2,212	3,108	1,619	15,072	12,343	1,989	740	7,828	8,744	5,673	3,071	2,402
		2005 constant $millions																	
1953		2,843	1,640	628	118	NA	504	223	167	NA	953	817	80	56	37	173	74	99	40
1954		3,118	1,781	589	141	NA	592	270	190	NA	1,036	877	92	67	52	190	80	110	59
1955		3,491	1,972	588	163	NA	702	301	217	NA	1,158	977	102	78	70	208	84	124	84
1956		4,185	2,288	662	216	NA	831	338	242	NA	1,460	1,259	114	87	90	236	99	137	111
1957		4,589	2,547	699	231	NA	939	403	274	NA	1,509	1,297	127	85	111	282	130	152	140
1958		5,205	2,965	822	237	NA	1,114	469	323	NA	1,611	1,390	132	88	132	326	154	171	171
1959		5,927	3,629	897	393	NA	1,431	515	393	NA	1,581	1,352	131	98	155	357	164	194	205
1960		6,916	4,270	987	425	NA	1,831	570	457	NA	1,842	1,597	132	113	180	382	161	220	242
1961		8,037	5,171	1,220	431	NA	2,294	667	558	NA	1,920	1,670	133	117	212	449	197	253	285
1962		9,568	6,389	1,322	750	NA	2,862	774	682	NA	2,067	1,810	131	126	251	527	241	286	334

Appendix table 4-7

U.S. basic research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1963		10,978	7,503	1,477	763	NA	3,576	908	779	NA	2,203	1,946	127	130	299	584	260	324	389
1964		12,248	8,655	1,733	629	215	4,210	1,020	849	NA	2,219	1,963	128	128	356	588	240	348	431
1965		13,374	9,539	1,880	788	146	4,737	1,092	896	NA	2,317	2,038	133	146	432	612	261	351	474
1966		14,303	10,129	2,001	693	151	5,204	1,164	915	NA	2,499	2,202	142	156	520	649	283	366	505
1967		15,002	10,796	2,053	796	161	5,624	1,246	916	NA	2,342	2,022	159	161	642	682	289	393	539
1968		15,338	10,897	2,190	659	159	5,747	1,252	890	NA	2,437	2,099	170	168	710	700	286	413	594
1969		15,112	10,636	2,360	533	160	5,574	1,178	831	NA	2,340	1,983	171	186	741	734	290	444	662
1970		14,780	10,287	2,311	502	148	5,439	1,088	800	NA	2,184	1,826	177	181	805	767	296	471	738
1971		14,571	10,022	2,276	396	129	5,423	987	811	NA	2,156	1,786	194	176	838	797	302	495	758
1972		14,455	9,970	2,262	342	146	5,395	1,014	811	NA	2,121	1,738	206	176	811	818	315	503	734
1973		14,582	10,127	2,319	341	128	5,295	1,220	823	NA	2,157	1,775	208	174	794	806	320	486	698
1974		14,709	10,260	2,331	372	160	5,247	1,352	799	NA	2,139	1,748	215	176	816	830	333	497	665
1975		14,524	10,176	2,264	310	158	5,268	1,417	760	NA	2,097	1,707	213	177	785	833	344	489	633
1976		15,140	10,687	2,395	327	194	5,421	1,567	782	NA	2,182	1,786	211	184	798	860	369	492	613
1977		15,916	11,218	2,498	358	199	5,600	1,766	798	NA	2,283	1,857	236	190	885	916	392	523	614
1978		17,224	12,253	2,585	386	233	5,938	2,242	869	NA	2,402	1,943	264	195	986	941	415	526	643
1979		17,907	12,702	2,542	368	238	6,213	2,398	943	NA	2,530	2,041	291	198	1,065	957	434	523	653
1980		18,314	12,869	2,539	356	251	6,409	2,443	871	NA	2,694	2,168	326	200	1,139	969	450	519	643
1981		18,492	12,621	2,571	314	262	6,378	2,459	620	17	3,065	2,514	350	201	1,178	981	465	516	647
1982		19,221	12,851	2,746	457	231	6,270	2,466	666	16	3,345	2,748	389	208	1,293	1,067	496	572	664
1983		20,624	13,634	3,008	601	203	6,403	2,666	739	14	3,726	3,055	451	220	1,417	1,160	539	621	687
1984		22,306	14,475	3,140	569	228	6,837	2,859	827	15	4,323	3,567	523	233	1,531	1,248	588	661	729
1985		23,951	15,277	3,162	581	213	7,479	2,911	909	20	4,734	3,854	632	248	1,747	1,359	645	714	835
1986		27,255	16,238	3,219	690	186	8,137	3,043	943	21	6,562	5,555	740	267	2,005	1,487	713	775	962
1987		28,536	17,123	3,161	923	219	8,533	3,221	1,043	22	6,611	5,532	794	285	2,161	1,624	783	842	1,017
1988		29,538	18,059	3,159	979	503	8,862	3,391	1,129	36	6,381	5,235	843	303	2,284	1,761	855	906	1,053
1989		31,489	19,265	3,321	1,418	573	9,238	3,411	1,237	67	6,749	5,512	917	320	2,466	1,908	930	978	1,101
1990		31,896	19,469	3,212	1,204	691	9,541	3,421	1,312	89	6,524	5,208	977	339	2,672	2,059	1,012	1,047	1,173
1991		36,302	20,443	3,181	1,673	617	9,929	3,554	1,386	103	9,574	8,193	1,022	359	2,845	2,221	1,103	1,118	1,220
1992		36,068	20,528	3,160	930	619	10,529	3,746	1,456	87	9,049	7,599	1,064	385	2,878	2,384	1,217	1,167	1,230
1993		36,744	20,964	3,350	596	629	11,043	3,775	1,479	92	9,122	7,620	1,088	414	2,900	2,540	1,343	1,197	1,218
1994		37,123	20,996	3,189	546	630	11,441	3,673	1,423	93	9,169	7,610	1,114	445	3,013	2,705	1,485	1,220	1,241
1995		36,315	20,837	3,298	233	650	11,815	3,313	1,435	93	8,235	6,597	1,159	479	3,079	2,853	1,642	1,211	1,312
1996		39,475	21,739	3,225	782	852	12,146	3,136	1,502	95	10,000	8,242	1,242	516	3,297	3,055	1,817	1,238	1,383
1997		43,664	22,967	3,247	1,217	739	12,920	3,159	1,557	127	12,288	10,367	1,390	531	3,718	3,215	1,841	1,374	1,476

Appendix table 4-7

U.S. basic research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1998		41,366	24,380	3,511	1,172	664	13,964	3,111	1,708	249	7,769	5,673	1,538	558	4,073	3,589	2,073	1,516	1,556
1999		44,872	26,276	3,857	1,276	642	14,858	3,186	1,998	457	8,614	6,381	1,637	596	4,420	3,911	2,250	1,662	1,650
2000		48,186	27,936	4,243	1,043	616	15,734	3,239	2,366	694	9,220	6,892	1,690	638	4,845	4,438	2,631	1,807	1,746
2001		52,605	30,411	4,696	831	609	17,129	3,421	2,716	1,009	10,349	8,045	1,675	630	5,222	4,791	2,846	1,945	1,832
2002		56,295	33,765	4,892	963	580	19,448	4,028	2,793	1,062	9,464	7,223	1,640	601	5,735	5,366	3,237	2,130	1,965
2003		59,584	36,083	4,955	1,472	318	21,381	3,980	2,884	1,093	9,564	7,377	1,586	602	6,020	5,826	3,643	2,184	2,090
2004		59,648	36,405	4,853	1,108	181	22,423	3,854	2,881	1,106	9,182	6,988	1,597	597	6,127	5,782	3,557	2,225	2,152
2005		61,321	36,705	4,770	1,108	136	22,788	3,820	2,903	1,181	9,841	7,559	1,667	614	6,525	6,095	3,776	2,319	2,155
2006		61,024	36,383	4,568	1,399	632	22,582	3,239	2,760	1,203	9,141	6,723	1,783	636	7,007	6,280	3,825	2,455	2,213
2007		64,072	36,935	4,350	2,617	2,126	22,285	1,623	2,663	1,271	10,565	7,990	1,918	657	7,413	6,806	4,127	2,679	2,353
2008		66,406	36,061	4,565	1,358	2,231	22,241	1,540	2,830	1,296	12,739	10,032	2,042	665	7,747	7,391	4,514	2,877	2,467
2009		69,101	36,855	4,958	1,221	2,396	21,961	1,733	3,188	1,397	14,857	12,252	1,969	636	7,323	7,720	4,882	2,839	2,345
2010		69,543	36,972	4,587	1,267	2,566	22,073	1,979	3,079	1,422	15,898	13,483	1,782	633	6,806	7,721	5,017	2,704	2,147
2011		66,126	36,092	4,300	597	2,436	22,637	1,952	2,742	1,428	13,296	10,888	1,755	653	6,906	7,714	5,005	2,709	2,119

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).
[b] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[c] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.
[d] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.
[e] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[f] Industry sources of funds for industry R&D expenditures include all nonfederal sources of funds for industry R&D expenditures.

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

Science and Engineering Indicators 2014

Appendix table 4-8

U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
		Current $millions																	
1953		1,289	756	347	288	NA	59	48	14	NA	456	438	7	11	28	20	10	10	30
1954		1,378	785	330	322	NA	60	58	16	NA	513	492	8	13	28	21	11	10	32
1955		1,514	850	333	368	NA	63	68	18	NA	583	560	9	14	27	22	11	11	32
1956		1,928	1,025	387	474	NA	65	79	21	NA	818	794	10	14	27	25	14	11	33
1957		2,414	1,304	446	678	NA	63	94	24	NA	1,018	992	12	14	27	31	20	11	34
1958		2,758	1,496	516	774	NA	66	111	30	NA	1,163	1,137	12	14	27	37	25	12	35
1959		2,940	1,630	577	813	NA	78	121	43	NA	1,206	1,178	13	15	28	39	27	12	37
1960		3,065	1,732	615	833	NA	93	129	63	NA	1,226	1,196	13	17	29	40	28	12	39
1961		3,123	1,811	668	812	NA	104	145	83	NA	1,195	1,165	13	17	30	48	35	13	40
1962		3,698	2,098	709	1,011	NA	119	163	98	NA	1,471	1,438	14	19	30	58	45	13	41
1963		3,865	2,245	809	1,007	NA	128	186	115	NA	1,483	1,450	14	19	32	63	49	14	42
1964		4,201	2,462	947	978	62	142	203	130	NA	1,593	1,560	14	19	37	65	47	18	45
1965		4,374	2,553	994	992	46	176	206	140	NA	1,654	1,620	13	21	42	79	52	27	46
1966		4,653	2,625	1,012	986	53	208	213	153	NA	1,842	1,804	14	24	48	91	57	34	47
1967		4,848	2,763	1,069	983	83	238	225	166	NA	1,890	1,849	16	25	54	96	60	36	46
1968		5,137	2,811	1,112	956	87	250	221	186	NA	2,125	2,081	16	28	55	101	62	39	46
1969		5,454	2,924	1,229	920	95	257	213	210	NA	2,320	2,272	16	32	54	109	66	43	48
1970		5,752	3,100	1,334	952	97	280	213	225	NA	2,429	2,378	18	33	56	117	70	47	51
1971		5,833	3,091	1,355	907	67	306	216	241	NA	2,494	2,441	19	34	67	121	74	47	61
1972		6,147	3,243	1,434	845	107	391	224	243	NA	2,618	2,562	21	35	82	131	79	52	74
1973		6,655	3,429	1,527	883	110	450	203	257	NA	2,894	2,832	26	36	100	145	83	62	88
1974		7,344	3,634	1,652	905	120	477	191	290	NA	3,333	3,263	32	39	118	163	91	72	96
1975		8,091	4,125	1,912	991	139	550	219	315	NA	3,520	3,440	39	42	141	192	100	92	113
1976		8,976	4,464	2,068	1,033	167	596	263	338	NA	4,001	3,912	45	45	166	218	109	109	127
1977		9,662	4,683	2,081	1,113	212	626	297	355	NA	4,410	4,311	51	48	194	241	120	121	134
1978		10,704	5,080	2,242	1,195	235	676	324	409	NA	4,982	4,870	61	52	232	259	132	128	151
1979		12,097	5,602	2,415	1,305	250	793	360	480	NA	5,797	5,670	71	55	263	273	144	129	161
1980		13,714	6,237	2,546	1,625	275	912	421	458	NA	6,698	6,550	88	60	308	298	158	140	174
1981		16,329	6,905	2,731	2,042	298	953	422	391	68	8,531	8,359	108	64	363	332	173	159	199
1982		18,218	7,689	2,802	2,593	367	1,007	433	398	91	9,553	9,363	121	69	402	367	189	178	207
1983		20,298	8,738	2,991	3,227	414	1,122	473	433	78	10,501	10,286	141	74	443	401	207	194	215
1984		22,451	9,499	2,961	3,677	547	1,226	548	459	80	11,788	11,541	168	79	491	438	226	212	234
1985		25,401	10,930	3,135	4,717	630	1,296	580	490	82	13,191	12,908	198	85	547	471	247	224	262
1986		27,240	10,409	3,204	4,049	629	1,393	554	506	75	15,402	15,082	229	91	620	510	270	240	298

Appendix table 4-8

U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1987		27,951	10,829	3,366	4,037	623	1,643	532	555	74	15,511	15,153	260	98	707	571	295	276	333
1988		29,528	10,749	3,362	3,846	371	1,958	547	599	66	16,938	16,531	302	105	818	647	322	325	377
1989		32,277	11,753	3,566	4,324	374	2,121	603	695	70	18,452	17,993	347	112	933	722	352	370	417
1990		34,897	13,695	3,652	5,967	386	2,140	689	780	81	18,930	18,432	377	120	1,031	788	384	404	453
1991		38,631	14,280	4,093	5,588	433	2,232	927	921	86	21,946	21,425	392	129	1,091	847	419	428	468
1992		37,936	13,690	4,337	4,476	507	2,415	940	933	81	21,736	21,184	414	138	1,120	911	456	454	479
1993		37,283	14,075	4,838	4,295	435	2,542	962	900	103	20,547	19,956	443	148	1,181	984	497	487	496
1994		36,618	13,800	4,985	3,616	503	2,644	982	960	111	19,995	19,372	464	158	1,256	1,049	541	509	517
1995		40,936	13,543	4,952	3,164	535	2,779	1,050	934	129	24,418	23,755	494	170	1,311	1,104	589	516	559
1996		43,170	13,958	4,872	3,640	231	2,864	1,270	960	122	26,076	25,370	524	182	1,390	1,162	640	522	584
1997		46,554	12,884	4,997	2,648	213	2,550	1,337	1,011	128	30,506	29,782	519	205	1,389	1,223	711	512	553
1998		46,362	12,822	5,146	2,632	230	2,260	1,372	1,060	123	30,314	29,576	520	218	1,378	1,322	809	513	526
1999		52,007	13,959	5,530	2,817	274	2,661	1,247	1,300	130	34,599	33,821	542	236	1,463	1,441	891	550	546
2000		56,681	15,563	6,105	2,682	269	3,194	1,291	1,831	190	37,305	36,494	553	258	1,585	1,657	1,066	591	571
2001		64,176	18,828	7,052	3,603	821	3,553	1,405	2,150	244	41,219	40,409	549	261	1,712	1,816	1,178	638	601
2002		50,796	19,280	7,487	2,452	1,090	4,056	1,663	2,267	266	26,880	26,081	546	253	1,911	2,071	1,362	709	654
2003		61,379	22,553	7,672	4,473	1,413	4,660	1,600	2,487	249	33,672	32,861	553	259	2,098	2,326	1,565	761	729
2004		69,469	22,714	7,455	4,775	1,459	4,902	1,481	2,448	194	41,483	40,657	562	264	2,158	2,355	1,572	783	758
2005		70,001	23,639	7,557	5,289	1,414	5,032	1,637	2,432	278	40,850	39,995	575	280	2,247	2,523	1,723	799	743
2006		76,735	25,124	7,435	6,140	1,314	5,318	1,827	2,592	500	45,925	45,033	593	300	2,331	2,619	1,802	816	736
2007		83,559	27,914	7,222	8,945	1,168	5,548	1,354	2,583	1,094	49,571	48,625	628	318	2,426	2,878	2,001	877	770
2008		74,819	25,614	7,316	5,397	1,975	6,144	855	2,600	1,326	42,495	41,467	698	330	2,647	3,220	2,237	983	843
2009		72,881	31,125	7,874	7,797	2,010	7,699	1,282	3,049	1,414	34,356	33,258	779	319	2,898	3,573	2,445	1,128	929
2010		79,543	30,356	7,985	4,705	2,249	9,439	1,277	3,060	1,642	41,333	40,201	812	321	3,101	3,774	2,542	1,232	978
2011		82,379	30,311	7,747	4,404	2,223	10,256	1,314	2,766	1,602	43,947	42,782	827	338	3,255	3,866	2,590	1,277	999
		2005 constant $millions																	
1953		7,977	4,675	2,147	1,782	NA	365	294	87	NA	2,819	2,710	40	68	172	124	62	62	186
1954		8,449	4,813	2,020	1,974	NA	365	356	98	NA	3,142	3,017	46	80	172	129	67	61	193
1955		9,125	5,125	2,008	2,219	NA	380	410	109	NA	3,512	3,376	51	84	164	130	66	63	195
1956		11,236	5,972	2,253	2,763	NA	379	458	119	NA	4,768	4,628	58	82	157	146	82	64	193
1957		13,615	7,356	2,513	3,825	NA	355	530	133	NA	5,740	5,596	65	79	153	175	113	62	191
1958		15,216	8,254	2,847	4,270	NA	361	610	166	NA	6,416	6,273	66	77	150	201	138	63	195
1959		16,029	8,888	3,144	4,433	NA	423	657	232	NA	6,574	6,424	68	82	153	213	147	65	202
1960		16,483	9,312	3,305	4,480	NA	500	691	336	NA	6,593	6,432	70	91	155	215	151	65	208
1961		16,606	9,630	3,552	4,318	NA	550	771	439	NA	6,354	6,195	69	90	157	253	186	66	212
1962		19,396	11,005	3,717	5,303	NA	622	852	511	NA	7,714	7,543	71	100	160	304	236	68	213

Appendix table 4-8

U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1963		20,059	11,650	4,199	5,227	NA	662	965	597	NA	7,698	7,526	73	99	168	324	254	70	219
1964		21,475	12,583	4,838	5,000	317	726	1,038	665	NA	8,141	7,975	69	97	191	330	240	89	231
1965		21,956	12,814	4,988	4,980	231	881	1,032	703	NA	8,304	8,133	65	105	211	394	261	133	233
1966		22,712	12,812	4,940	4,813	259	1,015	1,040	744	NA	8,992	8,807	68	117	236	442	278	164	230
1967		22,962	13,086	5,061	4,656	393	1,125	1,066	786	NA	8,949	8,757	73	118	255	455	284	171	216
1968		23,338	12,769	5,050	4,343	395	1,134	1,002	845	NA	9,654	9,454	73	127	250	457	282	175	209
1969		23,613	12,658	5,322	3,983	411	1,110	922	909	NA	10,044	9,836	69	139	233	470	286	184	208
1970		23,656	12,750	5,486	3,915	399	1,149	876	925	NA	9,987	9,779	72	136	230	479	288	191	210
1971		22,846	12,106	5,307	3,552	262	1,199	844	942	NA	9,766	9,561	72	133	262	474	290	184	237
1972		23,079	12,176	5,384	3,173	402	1,466	841	910	NA	9,827	9,619	77	131	307	490	297	193	279
1973		23,674	12,199	5,433	3,141	391	1,599	720	914	NA	10,294	10,074	92	128	355	514	295	219	312
1974		23,949	11,851	5,388	2,951	391	1,554	621	946	NA	10,870	10,641	103	126	384	530	297	233	313
1975		24,107	12,291	5,696	2,953	414	1,637	653	939	NA	10,488	10,249	115	124	419	572	298	274	338
1976		25,294	12,578	5,828	2,911	471	1,678	740	951	NA	11,274	11,023	125	126	467	616	309	307	359
1977		25,595	12,406	5,511	2,948	562	1,657	787	940	NA	11,682	11,420	135	127	514	637	318	319	356
1978		26,495	12,575	5,549	2,958	582	1,673	802	1,012	NA	12,332	12,054	150	128	574	641	326	316	374
1979		27,643	12,802	5,519	2,982	571	1,811	822	1,097	NA	13,247	12,957	163	127	601	624	329	295	369
1980		28,722	13,062	5,332	3,403	576	1,910	881	959	NA	14,027	13,717	185	125	645	624	330	294	364
1981		31,267	13,222	5,230	3,910	571	1,824	808	749	130	16,334	16,006	206	122	694	635	331	304	381
1982		32,877	13,876	5,056	4,679	662	1,816	781	718	164	17,239	16,897	218	124	725	662	341	321	374
1983		35,238	15,170	5,193	5,602	719	1,948	822	751	135	18,230	17,857	245	128	769	696	359	337	373
1984		37,564	15,894	4,954	6,152	915	2,052	918	768	135	19,723	19,310	281	132	822	733	379	355	392
1985		41,251	17,750	5,091	7,660	1,023	2,106	941	795	133	21,422	20,963	321	138	889	766	402	364	425
1986		43,280	16,539	5,091	6,433	999	2,213	880	803	120	24,472	23,963	364	145	986	810	429	381	473
1987		43,158	16,721	5,197	6,233	962	2,537	821	857	114	23,949	23,397	401	151	1,092	882	456	426	514
1988		44,079	16,045	5,019	5,741	554	2,923	816	894	98	25,285	24,678	451	156	1,221	966	481	485	563
1989		46,430	16,907	5,130	6,220	538	3,051	867	999	101	26,543	25,883	499	161	1,342	1,038	506	532	600
1990		48,333	18,968	5,058	8,265	535	2,965	954	1,080	113	26,218	25,529	522	167	1,428	1,092	532	560	627
1991		51,674	19,101	5,475	7,475	579	2,985	1,239	1,232	115	29,355	28,658	524	172	1,459	1,133	560	573	626
1992		49,568	17,888	5,667	5,849	662	3,155	1,229	1,220	106	28,402	27,680	541	180	1,463	1,190	596	594	626
1993		47,661	17,992	6,185	5,491	556	3,249	1,230	1,150	131	26,267	25,511	566	189	1,510	1,258	635	623	634
1994		45,845	17,278	6,242	4,527	630	3,310	1,229	1,201	139	25,034	24,254	581	198	1,572	1,314	677	637	648
1995		50,206	16,610	6,074	3,880	656	3,408	1,288	1,145	158	29,948	29,134	606	208	1,608	1,354	722	633	685
1996		51,957	16,799	5,864	4,381	278	3,446	1,528	1,155	147	31,383	30,534	631	219	1,673	1,399	770	629	703
1997		55,058	15,238	5,909	3,132	252	3,016	1,582	1,196	152	36,077	35,222	613	242	1,643	1,446	840	606	654

Appendix table 4-8

U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
Year	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1998		54,218	14,995	6,017	3,078	269	2,642	1,604	1,240	144	35,450	34,587	608	255	1,611	1,546	946	600	615
1999		59,938	16,087	6,373	3,247	316	3,067	1,437	1,498	149	39,875	38,978	625	272	1,686	1,660	1,027	634	630
2000		63,885	17,541	6,881	3,023	303	3,600	1,456	2,064	214	42,047	41,133	623	291	1,786	1,867	1,201	666	644
2001		70,735	20,752	7,773	3,971	905	3,917	1,548	2,370	268	45,432	44,539	606	287	1,887	2,002	1,299	703	662
2002		55,096	20,912	8,121	2,660	1,183	4,399	1,804	2,458	288	29,155	28,289	592	274	2,072	2,247	1,477	769	710
2003		65,203	23,959	8,149	4,752	1,501	4,950	1,700	2,642	264	35,770	34,908	587	275	2,229	2,471	1,663	808	774
2004		71,775	23,469	7,702	4,934	1,508	5,065	1,531	2,529	201	42,861	42,007	581	273	2,229	2,433	1,624	809	784
2005		70,001	23,639	7,557	5,289	1,414	5,032	1,637	2,432	278	40,850	39,995	575	280	2,247	2,523	1,723	799	743
2006		74,333	24,338	7,202	5,948	1,272	5,151	1,770	2,511	484	44,488	43,623	574	290	2,258	2,537	1,746	791	713
2007		78,661	26,278	6,798	8,421	1,100	5,223	1,275	2,431	1,030	46,666	45,775	591	300	2,284	2,709	1,884	825	725
2008		68,881	23,565	6,738	4,970	1,819	5,658	787	2,395	1,198	39,136	38,189	643	304	2,438	2,966	2,060	906	776
2009		66,419	28,365	7,176	7,106	1,831	7,017	1,168	2,779	1,289	31,310	30,309	710	290	2,641	3,256	2,228	1,028	847
2010		71,666	27,350	7,195	4,239	2,026	8,504	1,150	2,757	1,480	37,240	36,220	731	289	2,794	3,400	2,290	1,110	881
2011		72,670	26,739	6,834	3,885	1,961	9,048	1,159	2,440	1,413	38,767	37,740	730	298	2,871	3,411	2,284	1,126	881

NA = not available, included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).
[b] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[c] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.
[d] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.
[e] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus; the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[f] Industry sources of funds for industry R&D expenditures include all nonfederal sources of funds for industry R&D expenditures.

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are also included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-9

U.S. development expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
		Current $millions																	
1953		3,412	1,762	567	1,123	NA	9	48	17	NA	1,637	1,630	1	6	3	7	6	1	3
1954		3,734	2,027	537	1,405	NA	9	59	18	NA	1,693	1,685	1	7	3	8	7	1	3
1955		4,189	2,427	543	1,785	NA	12	69	19	NA	1,748	1,738	2	8	3	8	7	1	4
1956		5,855	3,561	631	2,817	NA	14	81	20	NA	2,277	2,267	2	8	4	9	7	2	4
1957		6,681	4,477	728	3,616	NA	12	101	21	NA	2,185	2,174	3	8	4	10	8	2	5
1958		7,214	4,941	842	3,942	NA	13	120	25	NA	2,252	2,241	3	8	4	11	9	2	6
1959		8,463	5,872	940	4,750	NA	16	134	32	NA	2,569	2,557	3	9	5	12	10	2	6
1960		9,360	6,390	1,003	5,169	NA	19	151	49	NA	2,948	2,935	3	10	5	12	10	2	6
1961		9,930	6,701	1,090	5,347	NA	22	170	73	NA	3,201	3,189	2	10	5	16	14	2	7
1962		10,115	6,822	1,227	5,280	NA	23	190	103	NA	3,259	3,246	2	11	6	20	18	2	8
1963		11,540	7,956	1,465	6,116	NA	22	219	134	NA	3,548	3,535	2	11	6	22	20	2	8
1964		12,506	8,610	1,680	6,156	359	30	227	159	NA	3,861	3,848	2	11	7	21	18	3	8
1965		13,215	8,742	1,789	6,218	298	48	207	183	NA	4,433	4,419	2	12	8	24	20	4	9
1966		14,490	9,466	1,886	6,849	271	61	200	199	NA	4,977	4,961	2	14	10	28	23	5	9
1967		15,332	9,521	1,943	6,795	302	66	208	208	NA	5,762	5,744	3	15	10	31	24	7	9
1968		16,154	9,756	1,904	7,044	293	72	226	217	NA	6,346	6,326	4	16	9	35	26	9	8
1969		17,051	9,848	2,016	6,944	332	80	246	231	NA	7,150	7,127	5	18	8	38	28	10	7
1970		16,925	9,382	2,258	6,232	340	84	249	220	NA	7,489	7,466	5	18	7	40	30	10	6
1971		17,399	9,561	2,473	6,167	391	69	267	194	NA	7,780	7,757	4	19	9	42	33	9	8
1972		18,743	10,141	2,639	6,533	402	63	291	213	NA	8,533	8,510	4	19	14	44	35	9	12
1973		20,197	10,311	2,657	6,621	399	71	296	268	NA	9,798	9,773	5	20	20	51	38	13	18
1974		21,504	10,506	2,765	6,553	479	75	321	314	NA	10,896	10,868	7	22	25	57	42	15	20
1975		22,706	10,993	2,890	6,783	535	83	373	330	NA	11,600	11,569	8	23	27	63	47	16	22
1976		25,085	12,035	2,972	7,522	654	100	447	341	NA	12,927	12,890	12	25	31	68	52	16	24
1977		27,667	13,153	3,188	8,275	675	153	503	359	NA	14,370	14,328	15	27	40	76	58	19	28
1978		31,056	14,383	3,676	8,756	753	254	542	403	NA	16,504	16,460	15	30	49	88	64	24	32
1979		35,445	16,064	3,944	9,888	810	336	603	483	NA	19,193	19,145	16	32	56	99	71	28	34
1980		40,765	17,604	4,072	10,957	882	362	719	612	NA	22,945	22,891	19	35	68	110	79	31	38
1981		46,305	20,242	4,530	12,791	950	386	778	360	447	25,817	25,756	24	37	80	123	88	35	44
1982		51,879	22,323	5,178	14,215	989	397	745	362	436	29,286	29,219	27	40	88	137	98	39	46
1983		57,771	24,859	6,106	15,522	1,054	399	832	447	500	32,617	32,542	31	44	97	151	109	43	47
1984		66,461	28,320	7,078	17,640	1,056	435	986	594	530	37,815	37,731	37	47	108	167	120	47	51
1985		74,522	32,304	8,011	20,258	1,102	486	1,244	644	560	41,857	41,762	43	51	120	183	134	49	57
1986		75,855	33,993	8,275	21,517	1,145	513	1,504	587	453	41,460	41,354	50	55	136	201	149	53	65
1987		79,929	36,691	8,176	24,122	1,230	599	1,670	474	421	42,784	42,667	57	60	155	226	165	61	73
1988		84,567	37,285	8,864	23,719	1,414	698	1,762	407	420	46,765	46,634	66	65	180	254	183	71	83
1989		87,723	35,320	9,355	21,049	1,423	773	1,782	507	430	51,822	51,676	76	70	205	285	203	81	91
1990		94,067	33,859	9,700	18,966	1,438	910	1,735	619	490	59,568	59,410	83	75	226	315	226	89	99

Appendix table 4-9

U.S. development expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1991		95,105	31,220	8,778	17,256	1,383	1,012	1,537	722	533	63,197	63,030	86	82	239	345	251	94	103
1992		99,811	31,514	9,098	17,181	1,372	1,055	1,452	758	599	67,567	67,388	91	88	246	378	279	100	105
1993		99,705	30,054	9,071	16,083	1,038	1,127	1,374	787	574	68,866	68,674	97	95	259	416	309	107	109
1994		102,938	30,208	8,823	16,209	1,196	1,213	1,378	815	573	71,886	71,681	102	103	276	455	343	112	114
1995		113,079	32,436	9,262	17,824	1,208	1,180	1,616	744	603	79,738	79,518	108	111	288	495	381	113	123
1996		121,377	31,373	9,033	17,066	1,358	1,128	1,520	698	571	89,032	88,797	115	120	305	538	423	115	128
1997		128,677	32,270	9,077	18,121	1,292	1,055	1,454	687	585	95,332	95,063	114	155	305	649	536	112	121
1998		144,723	32,714	9,214	18,452	1,280	974	1,527	760	507	110,868	110,589	114	164	302	723	611	113	116
1999		154,376	30,609	9,265	16,571	1,208	710	1,640	727	487	122,533	122,236	119	178	321	793	673	121	120
2000		169,472	27,513	9,377	13,510	1,185	565	1,577	580	720	140,551	140,235	121	195	348	934	804	130	125
2001		167,812	28,547	11,062	12,542	647	673	1,717	874	1,033	137,727	137,410	121	197	376	1,030	890	140	132
2002		176,689	29,904	11,800	13,061	639	669	1,726	937	1,074	145,038	144,727	120	191	419	1,184	1,028	156	144
2003		175,591	30,185	12,646	11,939	747	940	1,954	743	1,216	143,438	143,121	121	195	461	1,349	1,182	167	160
2004		177,347	34,411	12,746	14,419	851	1,268	2,447	1,300	1,379	140,938	140,615	123	199	474	1,358	1,186	172	166
2005		195,864	36,697	13,994	15,512	1,052	1,199	2,360	1,211	1,369	157,034	156,696	126	212	493	1,477	1,301	175	163
2006		212,836	38,875	16,089	16,720	1,156	970	2,136	603	1,202	171,748	171,392	130	226	512	1,540	1,360	179	162
2007		227,834	39,482	18,016	14,860	1,738	939	2,488	568	872	185,947	185,569	138	240	533	1,703	1,511	192	169
2008		259,713	54,679	17,566	29,488	1,948	885	2,239	562	1,991	202,363	201,961	153	249	581	1,905	1,689	216	185
2009		255,993	55,901	17,245	30,436	2,008	1,636	1,868	550	2,158	196,615	196,118	256	241	951	2,220	1,846	374	306
2010		249,979	55,571	18,141	28,088	2,118	2,623	1,842	523	2,236	190,203	189,612	349	242	1,335	2,449	1,919	530	421
2011		267,074	54,461	18,884	26,228	2,053	2,792	1,768	400	2,336	208,271	207,659	357	255	1,405	2,506	1,955	551	431
		2005 constant $millions																	
1953		21,111	10,904	3,506	6,949	NA	53	294	102	NA	10,130	10,087	6	37	16	43	37	6	18
1954		22,895	12,425	3,293	8,615	NA	52	359	107	NA	10,381	10,331	6	43	19	49	43	6	21
1955		25,256	14,630	3,271	10,762	NA	69	416	112	NA	10,536	10,479	9	48	19	48	42	6	23
1956		34,127	20,758	3,675	16,421	NA	79	469	114	NA	13,273	13,215	12	47	21	50	41	9	26
1957		37,688	25,255	4,104	20,398	NA	68	570	116	NA	12,323	12,264	14	45	24	56	45	11	30
1958		39,798	27,257	4,643	21,749	NA	69	662	135	NA	12,425	12,364	17	44	24	61	50	11	31
1959		46,149	32,017	5,126	25,902	NA	85	731	174	NA	14,009	13,943	16	49	25	65	55	11	33
1960		50,337	34,362	5,391	27,798	NA	102	809	261	NA	15,851	15,784	13	54	25	65	54	11	34
1961		52,799	35,629	5,793	28,432	NA	114	901	388	NA	17,021	16,957	11	53	27	85	74	11	37
1962		53,058	35,786	6,436	27,697	NA	118	997	538	NA	17,096	17,028	10	58	30	105	94	10	40
1963		59,896	41,293	7,604	31,745	NA	114	1,134	696	NA	18,416	18,348	10	57	32	114	104	10	41
1964		63,930	44,014	8,588	31,469	1,835	151	1,158	813	NA	19,737	19,671	10	56	33	105	92	13	41
1965		66,343	43,885	8,979	31,216	1,496	241	1,037	916	NA	22,255	22,185	10	60	39	120	100	20	43
1966		70,733	46,208	9,207	33,435	1,323	298	976	969	NA	24,296	24,218	10	68	47	137	112	24	46
1967		72,615	45,094	9,203	32,183	1,430	310	985	983	NA	27,288	27,205	12	71	47	144	114	31	40
1968		73,389	44,321	8,650	32,002	1,331	325	1,027	986	NA	28,831	28,740	18	73	42	159	118	41	35
1969		73,818	42,634	8,727	30,063	1,437	344	1,065	998	NA	30,955	30,855	22	78	34	165	121	43	31

Appendix table 4-9

U.S. development expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
1970		69,602	38,584	9,285	25,628	1,398	343	1,024	905	NA	30,798	30,703	21	74	29	164	123	41	27
1971		68,144	37,446	9,684	24,154	1,531	270	1,046	760	NA	30,472	30,382	16	74	34	163	129	33	31
1972		70,372	38,073	9,909	24,528	1,509	235	1,093	800	NA	32,035	31,951	13	71	51	165	131	34	47
1973		71,842	36,676	9,452	23,552	1,419	251	1,051	952	NA	34,853	34,764	18	71	71	180	135	44	62
1974		70,126	34,262	9,018	21,369	1,562	243	1,047	1,022	NA	35,533	35,441	21	71	80	187	138	49	65
1975		67,651	32,753	8,610	20,210	1,594	246	1,110	983	NA	34,563	34,470	24	70	82	187	140	48	66
1976		70,684	33,913	8,374	21,195	1,843	280	1,260	961	NA	36,425	36,321	32	71	88	192	147	45	67
1977		73,290	34,843	8,445	21,920	1,788	405	1,333	951	NA	38,066	37,955	38	72	107	202	153	49	74
1978		76,870	35,601	9,100	21,673	1,864	628	1,341	996	NA	40,851	40,742	36	73	121	217	159	58	79
1979		80,998	36,709	9,012	22,596	1,851	769	1,379	1,103	NA	43,858	43,749	36	73	127	226	163	63	78
1980		85,372	36,868	8,529	22,947	1,847	758	1,505	1,282	NA	48,053	47,940	41	72	142	230	166	64	80
1981		88,665	38,760	8,675	24,492	1,819	739	1,489	689	856	49,434	49,318	45	72	152	235	168	67	84
1982		93,624	40,285	9,345	25,653	1,785	717	1,344	654	787	52,851	52,730	48	73	159	247	176	70	82
1983		100,293	43,156	10,600	26,947	1,830	693	1,444	776	867	56,624	56,494	54	76	169	262	188	74	82
1984		111,201	47,384	11,843	29,515	1,767	727	1,650	995	887	63,271	63,131	62	79	180	280	202	78	86
1985		121,024	52,463	13,009	32,899	1,790	789	2,020	1,046	909	67,976	67,822	70	83	195	297	217	80	93
1986		120,524	54,010	13,147	34,188	1,819	816	2,389	932	719	65,874	65,706	80	88	216	320	236	84	104
1987		123,415	56,653	12,624	37,246	1,899	924	2,578	731	650	66,061	65,881	88	92	240	348	255	93	113
1988		126,241	55,659	13,232	35,408	2,111	1,042	2,630	608	627	69,811	69,615	99	96	268	380	274	106	124
1989		126,188	50,807	13,458	30,279	2,047	1,112	2,563	729	619	74,545	74,335	110	100	295	410	293	117	132
1990		130,286	46,895	13,435	26,269	1,992	1,260	2,403	857	679	82,504	82,285	115	104	313	436	313	123	138
1991		127,213	41,760	11,741	23,082	1,850	1,353	2,055	966	713	84,534	84,310	115	109	320	461	336	126	137
1992		130,416	41,178	11,887	22,449	1,793	1,378	1,897	991	783	88,286	88,052	119	115	321	494	364	130	137
1993		127,460	38,421	11,597	20,560	1,327	1,441	1,756	1,006	734	88,037	87,791	124	122	331	532	395	137	139
1994		128,879	37,820	11,047	20,294	1,497	1,519	1,726	1,020	717	90,001	89,745	128	129	345	570	430	140	142
1995		138,685	39,781	11,359	21,860	1,482	1,447	1,982	912	740	97,794	97,524	133	136	353	607	468	139	150
1996		146,081	37,759	10,872	20,540	1,634	1,358	1,829	840	687	107,153	106,870	138	145	367	648	510	138	154
1997		152,179	38,164	10,734	21,431	1,528	1,248	1,720	812	691	112,744	112,426	135	183	361	767	634	133	143
1998		169,245	38,257	10,775	21,579	1,497	1,139	1,786	889	593	129,653	129,328	134	192	354	846	714	132	135
1999		177,917	35,276	10,678	19,098	1,392	819	1,890	838	561	141,218	140,876	137	205	370	914	775	139	138
2000		191,013	31,010	10,568	15,227	1,336	637	1,778	653	812	158,416	158,060	137	220	392	1,053	907	146	141
2001		184,963	31,465	12,192	13,824	713	741	1,892	963	1,139	151,804	151,454	133	217	414	1,135	981	154	145
2002		191,644	32,435	12,798	14,167	693	725	1,872	1,016	1,165	157,314	156,977	130	207	455	1,284	1,115	169	156
2003		186,531	32,065	13,434	12,683	793	998	2,076	790	1,292	152,374	152,038	129	207	489	1,433	1,255	177	170
2004		183,236	35,554	13,169	14,898	879	1,310	2,529	1,344	1,425	145,618	145,284	128	206	489	1,403	1,226	178	172
2005		195,864	36,697	13,994	15,512	1,052	1,199	2,360	1,211	1,369	157,034	156,696	126	212	493	1,477	1,301	175	163
2006		206,175	37,658	15,586	16,197	1,120	940	2,069	584	1,164	166,373	166,028	126	219	496	1,491	1,318	174	157
2007		214,479	37,167	16,960	13,989	1,636	884	2,342	534	821	175,048	174,692	130	226	501	1,603	1,422	181	159
2008		239,185	50,357	16,178	27,157	1,794	815	2,062	518	1,833	186,368	185,998	141	229	535	1,754	1,555	199	170

Appendix table 4-9

U.S. development expenditures, by source of funds and performing sector: 1953–2011

	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit			Other government[a]
Year	Performer:	All performers	Total	Federal	Industry[b, c]	Industry FFRDCs[c]	U&C[d]	U&C FFRDCs	Other nonprofit[e]	Nonprofit FFRDCs[e]	Total	Industry[b, f]	U&C[d]	Other nonprofit	U&C[d]	Total	Other nonprofit	U&C[d]	U&C[d]
2009		233,295	50,945	15,716	27,737	1,830	1,491	1,703	501	1,967	179,182	178,729	233	219	867	2,023	1,682	341	279
2010		225,224	50,068	16,344	25,307	1,908	2,364	1,659	472	2,015	171,368	170,835	315	218	1,203	2,207	1,729	478	379
2011		235,598	48,042	16,658	23,137	1,811	2,463	1,560	353	2,061	183,725	183,185	315	225	1,240	2,211	1,725	486	380

NA = not available; included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

[a] Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).
[b] Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.
[c] Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.
[d] Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.
[e] Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.
[f] Industry sources of funds for industry R&D expenditures include all nonfederal sources of funds for industry R&D expenditures.

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some $2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than $1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-10

R&D expenditures of federally funded R&D centers, by FFRDC and source of funds: FY 2010 and FY 2011

(Millions of current dollars)

FFRDC	FY 2010 Total	FY 2010 Federal funding	FY 2011 Total	FY 2011 Federal funding	Sponsoring agency	Location
All FFRDCs	18,044	17,591	17,808	17,385	na	na
University-administered FFRDCs	5,330	5,178	5,270	5,132	na	na
Ames Laboratory	31	30	32	31	Department of Energy	Ames, IA
Argonne National Laboratory	651	604	710	663	Department of Energy	Argonne, IL
Fermi National Accelerator Laboratory	403	402	420	420	Department of Energy	Batavia, IL
Jet Propulsion Laboratory	1,640	1,640	1,544	1,544	National Aeronautics and Space Administration	Pasadena, CA
Lawrence Berkeley National Laboratory	759	704	788	733	Department of Energy	Berkeley, CA
Lincoln Laboratory	790	786	822	820	DOD, Air Force	Lexington, MA
National Astronomy and Ionosphere Center	13	13	14	14	National Science Foundation	Arecibo, PR
National Center for Atmospheric Research	220	189	198	182	National Science Foundation	Boulder, CO
National Optical Astronomy Observatories	57	53	48	43	National Science Foundation	Tucson, AZ
National Radio Astronomy Observatory	138	137	81	80	National Science Foundation	Charlottesville, VA
Princeton Plasma Physics Laboratory	84	84	85	84	Department of Energy	Princeton, NJ
SLAC National Accelerator Laboratory	354	350	328	321	Department of Energy	Stanford, CA
Software Engineering Institute	99	97	108	107	DOD, Office of the Secretary of Defense	Pittsburgh, PA
Thomas Jefferson National Accelerator Facility	90	90	90	90	Department of Energy	Newport News, VA
Nonprofit-administered FFRDCs	5,431	5,277	5,533	5,383	na	na
Aerospace FFRDC	44	13	46	14	DOD, Air Force	El Segundo, CA
Arroyo Center	29	29	32	32	DOD, Army	Santa Monica, CA
Brookhaven National Laboratory	536	515	527	504	Department of Energy	Upton, NY
Center for Advanced Aviation System Development	150	8	166	155	DOT, Federal Aviation Administration	McLean, VA
Center for Communications and Computing	72	72	73	73	DOD, National Security Agency	Alexandria, VA
Center for Enterprise Modernization[a]	170	170	188	188	Treasury, Internal Revenue Service; Department of Veterans Affairs	McLean, VA
Center for Naval Analyses	109	93	85	85	DOD, Navy	Alexandria, VA
Center for Nuclear Waste Regulatory Analyses	15	15	16	16	Nuclear Regulatory Commission	San Antonio, TX
Homeland Security Studies and Analysis Institute[b]	33	33	37	37	DHS, Science and Technology Directorate	Arlington, VA
Homeland Security Systems Engineering and Development Institute[b]	59	59	85	85	DHS, Science and Technology Directorate	McLean, VA
National Biodefense Analysis and Countermeasures Center	50	50	42	42	DHS, Science and Technology Directorate	Frederick, MD
National Defense Research Institute	52	52	46	46	DOD, Office of the Secretary of Defense	Santa Monica, CA
National Renewable Energy Laboratory	327	316	387	371	Department of Energy	Golden, CO
National Security Engineering Center[c]	925	925	941	941	DOD, Office of the Secretary of Defense	Bedford, MA/McLean, VA
Oak Ridge National Laboratory	1,538	1,495	1,558	1,514	Department of Energy	Oak Ridge, TN
Pacific Northwest National Laboratory	1,117	1,092	1,096	1,072	Department of Energy	Richland, WA
Project Air Force	44	44	44	44	DOD, Air Force	Santa Monica, CA
The Science and Technology Policy Institute	6	6	9	9	National Science Foundation	Washington, DC
Studies and Analyses Center	156	156	156	156	DOD, Office of the Secretary of Defense	Alexandria, VA
Industry-administered FFRDCs	7,283	7,136	7,005	6,870	na	na

Appendix table 4-10

R&D expenditures of federally funded R&D centers, by FFRDC and source of funds: FY 2010 and FY 2011

(Millions of current dollars)

FFRDC	FY 2010 Total	FY 2010 Federal funding	FY 2011 Total	FY 2011 Federal funding	Sponsoring agency	Location
Idaho National Engineering and Environmental Laboratory	478	464	425	415	Department of Energy	Idaho Falls, ID
Judiciary Engineering and Modernization Center[d]	na	na	5	5	U.S. Courts	McLean, VA
Lawrence Livermore National Laboratory	1,371	1,324	1,425	1,380	Department of Energy	Livermore, CA
Los Alamos National Laboratory	2,506	2,470	2,307	2,267	Department of Energy	Los Alamos, NM
National Cancer Institute at Frederick	644	644	432	432	HHS, National Institutes of Health	Frederick, MD
Sandia National Laboratory	2,157	2,107	2,277	2,237	Department of Energy	Albuquerque, NM
Savannah River National Laboratory	127	127	135	135	Department of Energy	Aiken, SC

na = not applicable.

DHS = Department of Homeland Security; DOD = Department of Defense; DOT = Department of Transportation; FFRDC = federally funded R&D center; HHS = Department of Health and Human Services.

[a] In prior-year tables, the Center for Enterprise Modernization was listed as the Internal Revenue Service FFRDC.
[b] On 5 March 2009, the Homeland Security Studies and Analysis Institute and the Homeland Security Systems Engineering and Development Institute were created. These new FFRDCs replaced the Homeland Security Institute.
[c] In prior-year tables, the National Security Engineering Center was listed as C3I FFRDC.
[d] The Judiciary Engineering and Modernization Center was established on 2 September 2010.

NOTES: Totals differ from those reported in tables 4-1 and 4-3 for FFRDCs because data in tables 4-1 and 4-3 have been adjusted from a fiscal-year basis to a calendar-year basis. More information about the FFRDCs can be found on the National Science Foundation website, http://www.nsf.gov/statistics/ffrdc/.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of R&D Expenditures at Federally Funded R&D Centers (FY 2011).

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Appendix table 4-11

U.S. R&D expenditures, by state, performing sector, and source of funds: 2010

(Millions of current dollars)

Performer:			Federal	FFRDCs			Business				U&C[a]						Other nonprofit institutions	State, internal[b]			R&D intensity[c]	
									Paid by others													
State	Funding source: All R&D	R&D rank	Federal	Total	Federal	Non-federal[d]	Total	Own	Non-federal[e]	Federal	Total	Federal	Other government	Business	U&C	Non-profit	Federal[f]	Total	GDP	GDP rank	Percent	Rank
U.S. total[g]	406,708	na	31,217	17,722	NA	NA	278,977	221,706	23,072	34,199	60,235	36,561	3,782	3,139	11,990	4,764	7,000	NA	14,526,500	na	2.80	na
States total[g]	376,952	na	29,779	18,031	17,578	453	261,016	205,336	18,583	24,717	61,028	37,358	3,849	3,200	11,845	4,776	7,099	0	14,416,604	na	2.61	na
Alabama	3,738	26	1,410	0	0	0	1,449	628	72	749	847	541	42	33	197	34	32	NA	170,219	26	2.20	23
Alaska	347	49	89	0	0	0	74	D	D	D	181	111	10	6	49	5	4	NA	47,713	46	0.73	46
Arizona	5,473	21	372	57	53	4	4,054	2,841	246	967	945	495	61	32	274	83	45	NA	249,824	20	2.19	24
Arkansas	590	43	26	0	0	0	276	245	19	12	268	126	61	11	55	14	21	NA	102,235	35	0.58	49
California	81,005	1	2,747	4,293	4,155	138	64,914	53,327	3,987	7,600	7,833	4,766	378	492	1,168	1,028	1,217	NA	1,877,568	1	4.31	5
Colorado	6,164	20	283	547	505	42	3,899	3,270	219	410	1,180	893	46	65	102	75	256	NA	253,101	19	2.44	20
Connecticut	7,435	16	23	0	0	0	6,498	5,482	429	587	889	620	20	29	147	73	25	NA	221,347	24	3.36	12
Delaware	2,327	31	6	0	0	0	2,144	D	D	D	169	116	7	6	36	4	9	NA	64,010	40	3.64	9
District of Columbia	3,568	27	2,551	6	6	0	235	84	28	123	470	308	12	11	84	55	305	NA	103,546	34	3.45	11
Florida	7,952	15	709	0	0	0	5,127	3,045	313	1,770	1,995	1,103	194	80	520	97	121	NA	736,065	4	1.08	37
Georgia	5,451	22	154	0	0	0	3,644	2,931	283	429	1,627	985	53	85	411	94	25	NA	403,230	11	1.35	35
Hawaii	688	42	97	0	0	0	257	173	47	37	318	209	24	24	45	16	16	NA	65,599	39	1.05	39
Idaho	1,779	34	50	478	464	15	1,120	810	296	13	126	76	23	3	22	3	4	NA	56,038	43	3.17	13
Illinois	15,820	8	204	1,053	1,006	47	12,221	11,500	483	237	2,224	1,427	56	80	504	156	117	NA	646,794	5	2.45	19
Indiana	6,339	18	165	0	0	0	4,985	4,219	580	186	1,186	530	68	57	404	127	2	NA	267,277	17	2.37	21
Iowa	2,765	29	64	31	30	1	1,950	1,516	D	D	707	398	51	31	196	30	14	NA	140,945	30	1.96	28
Kansas	2,002	33	21	0	0	0	1,492	1,039	406	47	483	232	53	34	141	23	6	NA	126,074	32	1.59	31
Kentucky	1,498	35	24	0	0	0	889	820	48	21	575	283	55	19	187	31	10	NA	159,350	28	0.94	43
Louisiana	1,200	37	53	0	0	0	428	340	39	49	714	333	109	39	193	40	5	NA	232,394	23	0.52	50
Maine	488	45	18	0	0	0	251	228	9	14	138	66	22	4	38	7	81	NA	50,674	44	0.96	41
Maryland	18,429	4	9,896	694	694	0	4,384	2,538	600	1,247	3,139	2,423	63	97	380	176	315	NA	293,349	15	6.28	2
Massachusetts	20,657	2	835	1,252	1,248	4	14,020	11,139	1,804	1,077	2,750	2,010	24	185	240	291	1,801	NA	377,846	12	5.47	3
Michigan	14,702	9	480	0	0	0	12,144	10,750	1,017	377	2,031	1,178	62	61	626	105	46	NA	368,371	13	3.99	6
Minnesota	7,393	17	61	0	0	0	6,246	5,677	255	314	832	443	70	30	195	94	254	NA	270,792	16	2.73	16
Mississippi	852	41	164	0	0	0	243	170	13	61	444	268	76	11	77	11	1	NA	95,480	36	0.89	44
Missouri	9,253	13	26	0	0	0	8,106	D	D	D	1,087	684	28	55	223	97	33	NA	243,386	22	3.80	7
Montana	390	48	29	0	0	0	145	123	15	7	208	140	8	1	47	12	8	NA	36,540	48	1.07	38
Nebraska	935	40	34	0	0	0	527	491	22	15	368	195	16	16	103	39	6	NA	90,072	37	1.04	40
Nevada	939	39	50	0	0	0	709	646	22	41	174	119	9	2	40	4	6	NA	126,188	31	0.74	45
New Hampshire	2,159	32	26	0	0	0	1,818	841	D	D	311	204	7	19	56	25	4	NA	61,636	42	3.50	10
New Jersey	17,876	5	766	84	84	*	15,925	13,916	1,750	259	1,076	602	103	41	249	81	26	NA	480,446	7	3.72	8
New Mexico	6,225	19	550	4,663	4,577	86	546	231	48	267	423	290	25	14	81	13	43	NA	77,095	38	8.07	1
New York	17,141	6	260	536	515	20	10,954	8,126	694	2,134	4,951	2,971	324	264	953	439	440	NA	1,128,823	3	1.52	33
North Carolina	8,746	14	404	0	0	0	5,749	4,688	849	211	2,465	1,481	148	323	346	166	128	NA	424,562	9	2.06	27
North Dakota	468	46	27	0	0	0	236	211	18	7	204	105	44	12	37	5	1	NA	35,654	50	1.31	36
Ohio	10,048	12	898	0	0	0	6,857	5,134	561	1,162	2,052	1,250	165	166	364	107	241	NA	466,930	8	2.15	26
Oklahoma	1,029	38	112	0	0	0	478	422	37	19	401	176	54	29	124	18	39	NA	147,587	29	0.70	48
Oregon	5,250	24	110	0	0	0	4,396	4,188	144	64	696	503	41	23	75	54	48	NA	185,211	25	2.83	15

Appendix table 4-11

U.S. R&D expenditures, by state, performing sector, and source of funds: 2010

(Millions of current dollars)

State	All R&D	R&D rank	Federal	FFRDCs			Business				U&C[a]						Other nonprofit institutions	State, internal[b]	GDP	GDP rank	R&D intensity[c]	
Performer:									Paid by others													
Funding source:						Non-federal[d]			Non-federal[e]	Federal			Other government	Business	U&C	Non-profit	Federal[f]	Total			Percent	Rank
Pennsylvania	13,074	10	292	99	97	3	9,246	8,412	538	296	3,128	2,187	144	157	479	162	308	NA	558,918	6	2.34	22
Rhode Island	1,439	36	384	0	0	0	531	448	42	40	429	192	8	6	199	23	95	NA	48,840	45	2.95	14
South Carolina	2,384	30	220	127	127	0	1,316	944	264	109	660	346	8	42	238	27	61	NA	160,374	27	1.49	34
South Dakota	270	50	10	0	0	0	120	99	13	8	131	84	19	2	20	5	8	NA	38,215	47	0.71	47
Tennessee	3,955	25	138	1,538	1,495	44	1,244	1,113	88	43	938	642	65	31	158	43	96	NA	256,194	18	1.54	32
Texas	19,504	3	488	15	15	*	14,384	11,850	1,193	1,342	4,416	2,238	623	262	869	425	200	NA	1,222,904	2	1.59	30
Utah	3,197	28	567	0	0	0	2,066	1,419	D	D	562	340	30	27	137	28	2	NA	119,231	33	2.68	17
Vermont	452	47	6	0	0	0	313	278	16	19	133	101	*	2	23	6	*	NA	25,264	51	1.79	29
Virginia	10,838	11	3,406	1,440	1,415	24	4,655	2,340	292	2,023	1,199	726	116	46	241	70	138	NA	419,365	10	2.58	18
Washington	16,685	7	264	1,117	1,092	25	13,545	13,022	319	204	1,358	960	82	102	162	52	401	NA	339,829	14	4.91	4
West Virginia	584	44	137	0	0	0	240	191	12	38	195	110	14	5	63	3	12	NA	61,934	41	0.94	42
Wisconsin	5,346	23	65	0	0	0	3,927	3,399	449	79	1,336	723	124	26	265	197	18	NA	245,720	21	2.18	25
Wyoming	104	51	8	0	0	0	39	32	4	3	55	45	4	2	3	1	2	NA	35,845	49	0.29	51
U.S. undistributed[h]	17,960	na	0	0	0	0	17,960	12,534	3,063	2,363	0	0	0	0	0	0	0	0	0	na	na	na
Puerto Rico[i]	NA	na	6	13	13	*	NA	NA	NA	NA	125	84	2	5	31	3	*	NA	96,260	na	NA	na
Other[j]	227	na	189	0	0	0	0	0	0	0	38	33	2	*	*	2	*	na	na	na	na	na

* = amount < $0.5 million; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available.

FFRDC = federally funded R&D center; GDP = gross domestic product; U&C = universities and colleges.

[a] State-level university R&D data have not been adjusted to eliminate double counting of funds passed through from one academic institution to another. At the national level, funds passed through to educational subrecipients account for 4.5% of the total R&D expenditures reported by U&C in FY 2010.
[b] Internal performers include state agency and department employees, as well as services performed by others in support of an internal R&D project. Data from the National Science Foundation's (NSF's) FYs 2010–11 survey of state R&D spending not available at the time of this report. In FY 2009, these state R&D expenditures totaled $318 million.
[c] R&D intensity is the ratio of total R&D performed in a state to its GDP.
[d] Nonfederal sources of R&D expenditures reported by FFRDCs in FY 2010 included state and local governments ($53 million), business ($167 million), nonprofit organizations ($44 million), and all other sources ($190 million).
[e] R&D paid for by nonfederal sources includes funding from other companies located inside ($11.0 billion) or outside ($11.0 billion) the United States, foreign government agencies and laboratories ($37 million), other organizations located inside ($779 million) or outside ($74 million) the United States.
[f] Other sources of support for nonprofit institutions were unavailable by state. In 2010, the total of nonprofit performance is estimated at $18.3 billion. Business provided an estimated $1.3 billion to the nonprofit sector, and nonprofit institutions provided an estimated $10.0 billion.
[g] States totals differ from U.S. totals for several reasons: (1) some R&D expenditures cannot be allocated to 1 of 50 states or the District of Columbia, (2) nonfederal sources of other nonprofit R&D expenditures could not be allocated by state, (3) state-level U&C data have not been adjusted to eliminate double counting of funds passed through from one academic institution to another, and (4) state-level R&D data are not converted from fiscal years to calendar years.
[h] Reported data that could not be assigned to 1 of the 50 states or the District of Columbia.
[i] Data on business R&D performance in Puerto Rico are not collected.
[j] Includes R&D expenditures reported for outlying areas (Guam, Virgin Islands) and offices abroad, but excluding Puerto Rico.

NOTE: Industry R&D data refer to calendar years; other R&D data refer to fiscal years but are used here as approximations to calendar year data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources, Business Research and Development and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded R&D Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations (FYs 1996–97). All NSF/NCSES reports are available at http://www.nsf.gov/statistics/. State GDP data are from the U.S. Bureau of Economic Analysis, http://www.bea.gov, accessed 27 November 2012.

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Appendix table 4-12

U.S. R&D and gross domestic product, by state: 2010

Rank (R&D)	State	R&D ($millions)	GDP ($millions)	R&D/GDP (%)	R&D/GDP (rank)	% of all state R&D	Cumulative (%)
–	All states	376,952	14,416,604	2.61	–	100	–
1	California	81,005	1,877,568	4.31	9	21.5	21.5
2	Massachusetts	20,657	377,846	5.47	4	5.5	27.0
3	Texas	19,504	1,222,904	1.59	28	5.2	32.1
4	Maryland	18,429	293,349	6.28	3	4.9	37.0
5	New Jersey	17,876	480,446	3.72	7	4.7	41.8
6	New York	17,141	1,128,823	1.52	34	4.5	46.3
7	Washington	16,685	339,829	4.91	6	4.4	50.7
8	Illinois	15,820	646,794	2.45	27	4.2	54.9
9	Michigan	14,702	368,371	3.99	10	3.9	58.8
10	Pennsylvania	13,074	558,918	2.34	19	3.5	62.3
11	Virginia	10,838	419,365	2.58	11	2.9	65.2
12	Ohio	10,048	466,930	2.15	24	2.7	67.9
13	Missouri	9,253	243,386	3.80	31	2.5	70.3
14	North Carolina	8,746	424,562	2.06	25	2.3	72.6
15	Florida	7,952	736,065	1.08	43	2.1	74.7
16	Connecticut	7,435	221,347	3.36	5	2.0	76.7
17	Minnesota	7,393	270,792	2.73	17	2.0	78.7
18	Indiana	6,339	267,277	2.37	20	1.7	80.4
19	New Mexico	6,225	77,095	8.07	1	1.7	82.0
20	Colorado	6,164	253,101	2.44	21	1.6	83.6
21	Arizona	5,473	249,824	2.19	15	1.5	85.1
22	Georgia	5,451	403,230	1.35	36	1.4	86.5
23	Wisconsin	5,346	245,720	2.18	26	1.4	88.0
24	Oregon	5,250	185,211	2.83	13	1.4	89.3
25	Tennessee	3,955	256,194	1.54	32	1.0	90.4
26	Alabama	3,738	170,219	2.20	12	1.0	91.4
27	District of Columbia	3,568	103,546	3.45	2	0.9	92.3
28	Utah	3,197	119,231	2.68	22	0.8	93.2
29	Iowa	2,765	140,945	1.96	33	0.7	93.9
30	South Carolina	2,384	160,374	1.49	35	0.6	94.6
31	Delaware	2,327	64,010	3.64	14	0.6	95.2
32	New Hampshire	2,159	61,636	3.50	8	0.6	95.7
33	Kansas	2,002	126,074	1.59	30	0.5	96.3
34	Idaho	1,779	56,038	3.17	18	0.5	96.7
35	Kentucky	1,498	159,350	0.94	42	0.4	97.1
36	Rhode Island	1,439	48,840	2.95	16	0.4	97.5
37	Louisiana	1,200	232,394	0.52	49	0.3	97.8
38	Oklahoma	1,029	147,587	0.70	47	0.3	98.1
39	Nevada	939	126,188	0.74	46	0.2	98.4
40	Nebraska	935	90,072	1.04	38	0.2	98.6
41	Mississippi	852	95,480	0.89	44	0.2	98.8
42	Hawaii	688	65,599	1.05	41	0.2	99.0
43	Arkansas	590	102,235	0.58	45	0.2	99.2
44	West Virginia	584	61,934	0.94	37	0.2	99.3
45	Maine	488	50,674	0.96	40	0.1	99.5
46	North Dakota	468	35,654	1.31	29	0.1	99.6
47	Vermont	452	25,264	1.79	23	0.1	99.7
48	Montana	390	36,540	1.07	39	0.1	99.8

Appendix table 4-12

U.S. R&D and gross domestic product, by state: 2010

Rank (R&D)	State	R&D ($millions)	GDP ($millions)	R&D/GDP (%)	R&D/GDP (rank)	% of all state R&D	Cumulative (%)
49	Alaska	347	47,713	0.73	50	0.1	99.9
50	South Dakota	270	38,215	0.71	48	0.1	100.0
51	Wyoming	104	35,845	0.29	51	0.0	100.0

GDP = gross domestic product.

NOTE: U.S. total R&D expenditures for 2010 is an estimated $406.7 billion; $377.0 billion is allocable to the 50 states and District of Columbia.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (2010–11), Business Research and Development and Innovation Survey (2010), Higher Education R&D Survey (FY 2010), Survey of Federal Funds for R&D (FYs 2010–12). State GDP data are from the U.S. Bureau of Economic Analysis, http://www.bea.gov, accessed 27 November 2012.

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Appendix table 4-13

Gross expenditures for R&D and expenditures for R&D as share of gross domestic product, for selected countries: 1981–2011

Year	United States	European Union	France	Germany	United Kingdom	China	Japan	South Korea
				GERD, PPP $billions				
1981	72.7	na	11.0	18.4	12.0	NA	25.6	NA
1982	81.2	na	12.4	20.0	NA	NA	29.2	NA
1983	90.4	na	13.3	21.2	12.9	NA	33.1	NA
1984	102.9	na	14.7	22.6	NA	NA	37.1	NA
1985	115.2	na	15.8	25.6	14.8	NA	42.6	NA
1986	120.6	na	16.4	27.0	15.9	NA	44.3	NA
1987	126.7	na	17.6	29.4	16.6	NA	48.8	NA
1988	134.2	na	19.0	31.4	17.6	NA	54.4	NA
1989	142.2	na	21.0	33.7	18.8	NA	61.4	NA
1990	152.4	na	23.2	35.3	19.6	NA	69.0	NA
1991	161.4	na	24.3	39.5	19.3	7.5	73.3	7.1
1992	165.8	na	25.4	39.2	19.4	8.9	74.6	8.1
1993	166.1	na	26.1	38.4	20.6	9.8	74.8	9.6
1994	169.6	na	26.6	38.6	21.4	10.3	75.7	11.7
1995	184.1	138.1	27.4	40.1	21.9	10.5	82.5	13.3
1996	197.8	143.8	28.1	41.4	22.3	11.7	83.0	14.9
1997	212.7	150.8	28.5	43.2	23.1	14.7	87.8	16.3
1998	226.9	158.6	29.3	45.2	23.9	16.3	91.1	14.6
1999	245.8	170.2	30.8	49.4	25.9	20.6	92.8	15.8
2000	269.5	184.2	33.0	52.3	27.9	27.2	98.7	18.6
2001	280.2	196.3	35.8	54.4	29.2	31.7	103.7	21.3
2002	279.9	206.3	38.2	56.7	30.6	39.6	108.2	22.5
2003	293.9	210.8	36.9	59.4	31.0	47.1	112.2	24.0
2004	305.6	218.6	38.0	61.3	32.0	57.8	117.6	27.9
2005	328.1	230.5	39.2	64.3	34.1	71.1	128.7	30.6
2006	353.3	253.9	41.9	70.1	37.0	86.6	138.3	35.3
2007	380.3	270.9	44.0	74.0	38.7	102.3	147.7	40.7
2008	407.2	294.2	46.5	82.0	39.4	120.7	148.7	43.9
2009	406.0	298.4	49.5	82.4	39.2	154.0	136.0	46.7
2010	409.6	303.8	49.9	86.3	39.5	178.2	139.6	52.8
2011	429.1	320.5	51.9	93.1	39.6	208.2	146.5	59.9
				GERD, constant 2005 PPP $billions				
1981	139.3	na	21.4	35.6	23.7	NA	49.0	NA
1982	146.5	na	22.9	36.5	NA	NA	52.6	NA
1983	157.0	na	23.6	37.2	23.1	NA	57.4	NA
1984	172.2	na	25.1	38.3	NA	NA	62.0	NA
1985	187.1	na	26.2	42.0	25.0	NA	69.1	NA
1986	191.5	na	26.6	43.4	26.2	NA	70.2	NA
1987	195.5	na	27.8	45.9	26.6	NA	75.2	NA
1988	200.2	na	29.0	47.3	27.2	NA	81.0	NA
1989	204.4	na	30.8	48.9	27.9	NA	88.1	NA
1990	210.9	na	32.8	49.4	28.1	NA	95.4	NA
1991	215.7	na	33.2	53.3	26.7	10.0	97.9	9.2
1992	216.5	na	33.8	51.7	26.2	11.5	97.3	10.3
1993	212.2	na	34.1	49.6	27.2	12.5	95.5	11.9
1994	212.2	na	34.0	48.8	27.8	12.8	94.6	14.2
1995	225.6	171.2	34.3	49.7	27.7	12.8	101.0	15.8
1996	237.9	174.3	34.5	50.3	27.4	13.9	99.7	17.3
1997	251.6	179.2	34.1	52.2	27.0	17.3	103.6	18.7
1998	265.4	185.8	34.4	54.1	27.9	18.8	106.3	16.5
1999	283.3	197.2	35.8	58.2	30.0	23.5	106.7	17.6
2000	303.8	208.2	36.9	61.6	31.2	30.4	110.0	20.2
2001	308.9	215.4	38.5	62.6	31.6	34.7	113.1	22.6

Appendix table 4-13

Gross expenditures for R&D and expenditures for R&D as share of gross domestic product, for selected countries: 1981–2011

Year	United States	European Union	France	Germany	United Kingdom	China	Japan	South Korea
2002	303.6	220.3	39.5	63.3	32.5	42.6	114.9	23.6
2003	312.2	222.4	38.8	64.0	32.9	49.6	117.9	25.1
2004	315.8	224.7	39.4	63.8	32.6	59.3	120.3	28.3
2005	328.1	230.5	39.2	64.3	34.1	71.1	128.7	30.6
2006	342.3	242.7	40.2	67.6	35.4	83.9	134.8	34.7
2007	358.0	251.9	40.6	69.6	37.4	96.3	139.9	38.9
2008	375.1	263.8	41.4	74.7	37.2	111.2	138.7	41.7
2009	370.7	263.8	42.9	74.4	37.0	140.6	126.9	44.3
2010	369.0	268.4	43.0	76.9	36.7	160.5	128.7	49.4
2011	378.6	276.9	44.0	815.4	36.6	183.1	133.2	55.3
				GERD/GDP (%)				
1981	2.34	na	1.90	2.35	2.35	NA	2.26	NA
1982	2.51	na	1.98	2.42	NA	NA	2.35	NA
1983	2.58	na	2.02	2.43	2.17	NA	2.48	NA
1984	2.64	na	2.11	2.43	NA	NA	2.57	NA
1985	2.75	na	2.17	2.60	2.20	NA	2.69	NA
1986	2.72	na	2.16	2.63	2.22	NA	2.66	NA
1987	2.70	na	2.20	2.74	2.15	NA	2.74	NA
1988	2.65	na	2.19	2.73	2.10	NA	2.75	NA
1989	2.61	na	2.23	2.71	2.11	NA	2.84	NA
1990	2.65	na	2.32	2.61	2.10	NA	2.91	NA
1991	2.72	na	2.32	2.47	2.03	0.73	2.89	1.80
1992	2.64	na	2.33	2.35	1.99	0.74	2.85	1.89
1993	2.51	na	2.36	2.28	2.02	0.70	2.79	2.06
1994	2.41	na	2.31	2.18	1.97	0.64	2.74	2.26
1995	2.50	1.66	2.28	2.19	1.91	0.57	2.87	2.30
1996	2.54	1.66	2.27	2.20	1.83	0.57	2.77	2.36
1997	2.55	1.66	2.19	2.24	1.75	0.64	2.83	2.41
1998	2.58	1.67	2.14	2.28	1.75	0.65	2.96	2.26
1999	2.63	1.72	2.16	2.41	1.82	0.76	2.98	2.17
2000	2.71	1.74	2.15	2.47	1.82	0.90	3.00	2.30
2001	2.72	1.76	2.20	2.47	1.79	0.95	3.07	2.47
2002	2.63	1.77	2.24	2.50	1.80	1.07	3.12	2.40
2003	2.64	1.75	2.18	2.54	1.75	1.13	3.14	2.49
2004	2.58	1.73	2.16	2.50	1.69	1.23	3.13	2.68
2005	2.60	1.73	2.11	2.51	1.72	1.32	3.31	2.79
2006	2.64	1.76	2.11	2.54	1.74	1.39	3.41	3.01
2007	2.71	1.76	2.08	2.53	1.77	1.40	3.46	3.21
2008	2.85	1.83	2.12	2.69	1.78	1.47	3.47	3.36
2009	2.91	1.91	2.27	2.82	1.84	1.70	3.36	3.56
2010	2.83	1.91	2.24	2.80	1.80	1.76	3.25	3.74
2011	2.85	1.94	2.24	2.88	1.77	1.84	3.39	4.03

na = not applicable; NA = not available.

GERD = gross expenditures for R&D; GDP = gross domestic product; PPP = purchasing power parity.

NOTES: Conversions of foreign currencies to U.S. dollars are calculated with each country's GDP implicit price deflator and with OECD purchasing power parity exchange rates. Data for the United States reflect international standards for calculating gross expenditures on R&D, which vary slightly from NSF's protocol for tallying U.S. total R&D. Data for Japan for 1996 onward, many not be consistent with earlier data because of changes in methodology. Data for Germany from 1981 to 1990 are for West Germany.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series); OECD, Main Science and Technology Indicators (2013/1).

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Appendix table 4-14

Gross expenditures on R&D, by performing and funding sectors, for selected countries: 2010

(Million of current PPP dollars)

Country/R&D performer	Source of R&D funds						Performers, % distribution
	All sources	Business	Government	Higher education	Private nonprofit	Abroad	
United States (2010)	409,599	234,202	133,497	12,100	14,472	15,328	100.0
Business	278,977	229,792	34,199	0	0	14,986	68.1
Government	51,632	0	51,632	0	0	0	12.6
Higher education	60,369	3,145	40,353	12,100	4,771	NA	14.7
Private nonprofit	18,621	1,265	7,313	0	9,701	342	4.5
Sources, % distribution	100.0	57.2	32.6	3.0	3.5	3.7	–
France (2010)	49,934	26,717	18,496	517	404	3,799	100.0
Business	31,538	25,862	2,683	18	12	2,962	63.2
Government	6,976	563	5,840	37	58	478	14.0
Higher education	10,785	212	9,726	458	95	293	21.6
Private nonprofit	634	79	246	4	239	66	1.3
Sources, % distribution	100.0	53.5	37.0	1.0	0.8	7.6	–
Germany (2010)	86,280	56,588	26,139	0	203	3,351	100.0
Business	57,886	53,266	2,585	0	50	1,986	67.1
Government	12,771	1,144	10,860	0	153	614	14.8
Higher education	15,622	2,178	12,693	**	**	751	18.1
Private nonprofit	0	**	**	**	**	**	0.0
Sources, % distribution	100.0	65.6	30.3	0.0	0.2	3.9	–
United Kingdom (2010)	39,685	17,600	12,740	494	1,909	6,942	100.0
Business	24,357	16,796	2,098	**	7	5,456	61.4
Government	3,664	278	3,103	33	128	122	9.2
Higher education	10,684	440	7,143	446	1,451	1,205	26.9
Private nonprofit	979	87	395	14	323	160	2.5
Sources, % distribution	100.0	44.3	32.1	1.2	4.8	17.5	–
China (2010)	178,168	127,728	42,793	NA	NA	2,324	100.0
Business	130,814	121,316	5,973	NA	NA	2,090	73.4
Government	32,286	1,404	27,768	NA	NA	98	18.1
Higher education	15,068	5,008	9,052	NA	NA	137	8.5
Private nonprofit	0	NA	NA	NA	NA	NA	0.0
Sources, % distribution	97.0	71.7	24.0	NA	NA	1.3	–
Japan (2010)	140,959	107,031	24,206	7,985	1,106	630	100.0
Business	107,853	105,919	1,258	14	73	589	76.5
Government	12,721	94	12,546	28	40	12	9.0
Higher education	18,145	477	9,541	7,937	179	11	12.9
Private nonprofit	2,240	541	861	6	814	17	1.6
Sources, % distribution	100.0	75.9	17.2	5.7	0.8	0.4	–
South Korea (2010)	53,243	38,231	14,241	454	203	115	100.0
Business	39,826	37,059	2,678	17	11	61	74.8
Government	6,748	234	6,453	18	28	15	12.7

Appendix table 4-14

Gross expenditures on R&D, by performing and funding sectors, for selected countries: 2010

(Million of current PPP dollars)

Country/R&D performer	Source of R&D funds						Performers, % distribution
	All sources	Business	Government	Higher education	Private nonprofit	Abroad	
Higher education	5,761	650	4,596	415	76	24	10.8
Private nonprofit	908	288	514	4	87	15	1.7
Sources, % distribution	100.0	71.8	26.7	0.9	0.4	0.2	na

** = included in other categories; na = not applicable; NA = not available.

PPP = purchasing power parity.

NOTES: Included the top seven R&D performing countries globally. Foreign currencies are converted to dollars through purchasing power parities. Data for the United States reflect international standards for calculating gross expenditures on R&D, which vary slightly from NSF's protocol for tallying U.S. total R&D.

SOURCE: National Science Foundation, National Center for Science and Engingeering Statistics, National Patterns of R&D Resources (annual series); Organisation for Economic Co-operation and Development, Research and Development Statistics database, http://www.oecd.org/sti/inno/researchanddevelopmentstatisticsrds.htm, accessed 13 August 2013.

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Appendix table 4-15

Domestic business R&D by major funding source, by industry and company size: 2008–11

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total U.S. R&D business performance	Paid by company	Paid by others		Federal	Paid by company and nonfederal
				Total	Nonfederal		
2008							
All industries	21–23, 31–33, 42–81	290,680	232,505	58,176	21,816	36,360	254,320
Manufacturing industries	31–33	203,755	164,386	39,368	8,266	31,102	172,653
Food	311	2,100	2,063	37	35	2	2,098
Beverage and tobacco products	312	780	777	3	3	0	780
Wood products	321	273	270	3	3	0	273
Printing and related support activities	323	349	312	37	5	32	317
Chemicals	325	58,250	55,042	3,207	3,010	197	58,053
Pharmaceuticals and medicines	3254	48,131	45,169	2,962	2,825	137	47,994
Plastic and rubber products	326	1,817	1,713	104	100	4	1,813
Nonmetallic mineral products	327	1,556	1,509	46	13	33	1,523
Primary metals	331	695	654	42	33	9	686
Fabricated metal products	332	2,419	2,362	57	41	16	2,403
Machinery	333	10,104	9,846	258	196	62	10,042
Computer and electronic products	334	60,464	52,912	7,551	2,905	4,646	55,818
Electrical equipment, appliances, and components	335	3,143	2,947	196	105	91	3,052
Transportation equipment	336	50,552	23,039	27,513	1,572	25,941	24,611
Furniture and related products	337	477	477	D	D	0	477
Nonmanufacturing industries	21–23, 42–81	86,926	68,118	18,807	13,549	5,258	81,668
Information	51	37,695	36,922	772	543	229	37,466
Publishing	511	28,427	27,871	556	380	176	28,251
Telecommunications	517	1,684	1,601	83	48	35	1,649
Internet service providers, Web search portals, and data processing services	518	6,567	6,493	75	74	1	6,566
Professional, scientific, and technical services	54	37,954	20,539	17,415	12,571	4,844	33,110
Architectural, engineering, and related services	5413	3,422	1,378	2,044	1,116	928	2,494
Computer system design and related services	5415	12,146	8,569	3,577	2,793	784	11,362
Scientific research and development services	5417	17,913	8,708	9,205	7,090	2,115	15,798
Company size (number of domestic employees)[a]							
5–499	–	58,137	46,396	11,741	7,624	4,117	54,020
500–999	–	11,886	9,673	2,213	1,466	747	11,139
1,000–4,999	–	46,336	39,010	7,327	5,165	2,162	44,174
5,000–9,999	–	24,764	20,358	4,406	3,238	1,168	23,596
10,000–24,999	–	48,737	43,049	5,688	2,664	3,024	45,713
25,000 or more	–	100,820	74,020	26,800	1,658	25,142	75,678

Appendix table 4-15

Domestic business R&D by major funding source, by industry and company size: 2008–11

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total U.S. R&D business performance	Paid by company	Paid by others		Federal	Paid by company and nonfederal
				Total	Nonfederal		
2009							
All industries	21–23, 31–33, 42–81	282,393	224,920	57,473	17,900	39,573	242,820
Manufacturing industries	31–33	195,144	158,225	36,920	8,095	28,825	166,319
Food	311	4,192	D	D	D	D	D
Beverage and tobacco products	312	477	475	2	D	D	D
Wood products	321	512	495	17	17	0	512
Printing and related support activities	323	195	194	1	0	1	194
Chemicals	325	53,328	49,876	3,452	3,245	207	53,121
Pharmaceuticals and medicines	3254	44,936	41,751	3,185	3,072	113	44,823
Plastic and rubber products	326	2,468	2,329	139	112	27	2,441
Nonmetallic mineral products	327	1,100	1,077	23	5	18	1,082
Primary metals	331	837	593	244	233	11	826
Fabricated metal products	332	2,040	1,931	109	90	19	2,021
Machinery	333	9,138	8,782	356	206	150	8,988
Computer and electronic products	334	56,436	48,865	7,571	2,361	5,210	51,226
Electrical equipment, appliances, and components	335	3,334	3,105	228	158	70	3,264
Transportation equipment	336	48,337	24,223	24,114	1,091	23,023	25,314
Furniture and related products	337	396	393	3	3	0	396
Nonmanufacturing industries	21–23, 42–81	87,248	66,695	20,553	9,804	10,749	76,499
Information	51	33,806	32,995	811	617	194	33,612
Publishing	511	27,077	26,412	666	490	176	26,901
Telecommunications	517	1,496	1,414	82	77	5	1,491
Internet service providers, Web search portals, and data processing services	518	2,735	2,675	60	48	12	2,723
Professional, scientific, and technical services	54	44,946	26,031	18,915	8,454	10,461	34,485
Architectural, engineering, and related services	5413	3,281	1,223	2,058	637	1,421	1,860
Computer system design and related services	5415	12,560	10,742	1,818	578	1,240	11,320
Scientific research and development services	5417	17,270	7,981	9,289	6,632	2,657	14,613
Company size (number of domestic employees)[a]							
5–499	–	58,719	44,258	14,461	5,627	8,834	49,885
500–999	–	10,119	8,577	1,542	1,069	473	9,646
1,000–4,999	–	44,008	38,383	5,625	4,013	1,612	42,396
5,000–9,999	–	21,864	17,585	4,279	3,274	1,005	20,859
10,000–24,999	–	51,037	42,191	8,847	2,958	5,889	45,148
25,000 or more	–	96,645	73,927	22,719	960	21,759	74,886

Appendix table 4-15

Domestic business R&D by major funding source, by industry and company size: 2008–11

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total U.S. R&D business performance	Paid by company	Paid by others		Federal	Paid by company and nonfederal
				Total	Nonfederal		
2010							
All industries	21–23, 31–33, 42–81	278,977	221,706	57,271	23,072	34,199	244,778
Manufacturing industries	31–33	196,711	159,579	37,133	10,394	26,739	169,972
Food	311	D	3,659	D	D	15	D
Beverage and tobacco products	312	D	717	D	D	D	D
Wood products	321	247	229	18	18	0	247
Printing and related support activities	323	231	201	30	29	1	230
Chemicals	325	58,038	53,555	4,483	4,303	180	57,858
Pharmaceuticals and medicines	3254	49,415	45,398	4,017	3,918	99	49,316
Plastic and rubber products	326	2,121	1,809	312	304	8	2,113
Nonmetallic mineral products	327	1,276	1,246	30	7	23	1,253
Primary metals	331	653	579	74	45	29	624
Fabricated metal products	332	1,703	1,464	239	149	90	1,613
Machinery	333	9,955	9,384	571	473	98	9,857
Computer and electronic products	334	59,875	51,223	8,652	2,717	5,935	53,940
Electrical equipment, appliances, and components	335	3,320	3,141	180	96	84	3,236
Transportation equipment	336	42,913	21,076	21,837	1,646	20,191	22,722
Furniture and related products	337	373	370	3	3	0	373
Nonmanufacturing industries	21–23, 42–81	82,265	62,127	20,138	12,678	7,460	74,805
Information	51	36,852	36,085	768	616	152	36,700
Publishing	511	26,982	26,387	595	455	140	26,842
Telecommunications	517	1,868	1,755	113	108	5	1,863
Internet service providers, Web search portals, and data processing services	518	2,538	2,491	47	44	3	2,535
Professional, scientific, and technical services	54	33,690	15,438	18,252	11,423	6,829	26,861
Architectural, engineering, and related services	5413	4,093	1,381	2,712	1,178	1,534	2,559
Computer system design and related services	5415	11,050	9,416	1,634	922	712	10,338
Scientific research and development services	5417	14,818	2,851	11,968	8,689	3,279	11,539
Company size (number of domestic employees)[a]							
5–499	–	52,202	40,822	11,379	6,428	4,951	47,251
500–999	–	10,116	8,640	1,477	892	585	9,531
1,000–4,999	–	48,227	39,468	8,760	7,086	1,674	46,553
5,000–9,999	–	27,463	21,940	5,523	4,886	637	26,826
10,000–24,999	–	41,835	36,688	5,147	2,358	2,789	39,046
25,000 or more	–	99,133	74,148	24,985	1,422	23,563	75,570

Appendix table 4-15

Domestic business R&D by major funding source, by industry and company size: 2008–11

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total U.S. R&D business performance	Paid by company	Paid by others		Federal	Paid by company and nonfederal
				Total	Nonfederal		
2011							
All industries	21–23, 31–33, 42–81	294,093	238,768	55,324	24,015	31,309	262,784
Manufacturing industries	31–33	201,361	163,340	38,021	13,323	24,698	176,663
Food	311	4,399	4,204	196	179	17	4,382
Beverage and tobacco products	312		684	D	D	D	D
Wood products	321	211	202	9	9	0	211
Printing and related support activities	323	175	174	1	0	1	174
Chemicals	325	55,324	49,988	5,337	5,227	110	55,214
Pharmaceuticals and medicines	3254	45,949	41,111	4,838	4,786	52	45,897
Plastic and rubber products	326	2,280	1,973	307	299	8	2,272
Nonmetallic mineral products	327	1,179	1,145	33	8	25	1,154
Primary metals	331	655	591	64	D	D	D
Fabricated metal products	332	1,853	1,738	115	D	D	D
Machinery	333	14,709	13,578	1,131	609	522	14,187
Computer and electronic products	334	62,704	53,664	9,040	3,879	5,161	57,543
Electrical equipment, appliances, and components	335	3,595	3,417	178	102	76	3,519
Transportation equipment	336	40,880	20,275	20,605	D	D	D
Furniture and related products	337	319	317	2	D	D	D
Nonmanufacturing industries	21–23, 42–81	92,731	75,428	17,303	10,692	6,611	86,120
Information	51	41,865	41,014	851	D	D	D
Publishing	511	28,435	27,748	687	551	136	28,299
Telecommunications	517	2,157	2,040	117	D	D	D
Internet service providers, Web search portals, and data processing services	518	4,285	4,257	28	D	D	D
Professional, scientific, and technical services	54	38,219	23,368	14,851	9,003	5,848	32,371
Architectural, engineering, and related services	5413	3,774	1,808	1,966	843	1,123	2,651
Computer system design and related services	5415	13,259	11,706	1,553	955	598	12,661
Scientific research and development services	5417	15,301	6,170	9,131	5,905	3,226	12,075
Company size (number of domestic employees)[a]							
5–499	–	56,793	46,509	10,283	6,345	3,938	52,855
500–999	–	10,027	8,739	1,288	911	377	9,650
1,000–4,999	–	50,485	42,905	7,579	5,877	1,702	48,783

Appendix table 4-15

Domestic business R&D by major funding source, by industry and company size: 2008–11

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total U.S. R&D business performance	Paid by company	Paid by others		Federal	Paid by company and nonfederal
				Total	Nonfederal		
5,000–9,999	–	24,951	18,659	6,292	5,816	476	24,475
10,000–24,999	–	49,214	42,585	6,630	3,053	3,577	45,637
25,000 or more	–	102,623	79,370	23,253	2,013	21,240	81,383

D = data withheld to avoid disclosing operations of individual companies.

NAICS = North American Industry Classification System.

[a] Upper bound is based on the U.S. Small Business Administration's definition of a small business; the Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total due to rounding. Industry classification is based on the dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Statistics pertain to companies located in the United States that performed or funded R&D.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2008–11).

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Appendix table 4-16

Domestic R&D performed by the company and paid for by others, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States		U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
				Foreign parent companies	Unaffiliated companies					
All industries	21–23, 31–33, 42–81	57,271	11,013	7,102	3,913	34,199 i	156	37	779	74
Manufacturing industries	31–33	37,133	3,655	4,051	2,432	26,739 i	30	31	166	29
Food	311	D	D	D	D	15	0	0	0	D
Beverage and tobacco products	312	D	D	0	D	* i	0	0	0	0
Textile, apparel, and leather products	313–16	12	D	0	D	5	0	0	0	D
Wood products	321	18	D	7	D	0	1 i	0	0	0
Paper manufacturing	322	28	D	2	D	D	D	0	*	0
Printing and related support activities	323	30	D	2	D	1	2	0	0	0
Petroleum and coal products	324	D	D	D	D	D	0	0	0	0
Chemicals	325	4,483	D	1,882	D	180	D	*	D	D
Basic chemicals	3251	85	D	D	*	40	1	0	1	0
Resin, synthetic rubber, fiber, and filament	3252	21	1	* i	9 i	5	0	0	6	0
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	D	D	0	D	0	0	D	0
Pharmaceuticals and medicines	3254	4,017	D	1,683	D	99	D	*	D	D
Soap, cleaning compound, and toilet preparation	3256	4	D	0	0	*	0	0	D	0
Paint, coating, adhesive, and other chemical manufacturing	3255, 3259	D	D	D	D	D	D	0	D	D
Plastic and rubber products	326	312 i	D	225 i	D	8	D	0	5	D
Nonmetallic mineral products	327	30	D	*	D	23	0	0	* i	0
Primary metals	331	74	D	34	*	29	D	D	4	D
Fabricated metal products	332	239	124	D	D	90	1	0	D	D
Machinery	333	571	176	200	82	98	5	*	6	3
Agricultural implement manufacturing	33311	23	12	D	1 i	3	D	0	D	*
Semiconductor machinery manufacturing	333295	127	D	111	D	3	0	0	2	0
transmission equipment manufacturing	3336	113	33	10	47	22	0	0	0	0
Other machinery manufacturing	other 333	308	D	D	D	69	D	*	D	2
Computer and electronic products	334	8,652	911	1,039	728	5,935	7	23	7	2
Communication equipment	3342	1,687	179 i	603	D	D	* i	* i	2	* i
Semiconductor and other electronic components	3344	615	161	172	101	177	D	0	D	1
Navigational, measuring, electromedical, and control instruments	3345	5,832	473	219	203	4,906	D	23	D	1 i

Appendix table 4-16

Domestic R&D performed by the company and paid for by others, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
and irradiation apparatus manufacturing	334510, 334517	197	9	D	89	62	0	0	D	0
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	334511	5,511	446	D	112	4,763	D	D	D	0
Other measuring and controlling device manufacturing	other 3345	124	17	D	2	81	0	D	D	1 i
Other computer and electronic products	other 334	518	97 i	44	D	D	D	0	D	0
Electrical equipment, appliances, and components	335	180	D	54	D	84	1	0	25	0
Transportation equipment	336	21,837 i	1,016	324	217	20,191 i	D	D	76	D
Automobiles, bodies, trailers, and parts	3361, 3362, 3363	D	D	D	D	D	D	0	D	0
Aerospace products and parts	3364	19,702 i	635	D	D	18,921 i	D	D	D	D
Aircraft, aircraft engine, and aircraft part manufacturing	336411–13	15,547 i	D	D	D	D	0	D	D	D
Guided missile, space vehicle, and related part manufacturing	336414–15, 336419	4,155	D	0	D	D	D	D	D	0
Military armored vehicle, tank, and tank component manufacturing	336992	D	D	0	0	0	0	0	0	0
Other transportation	other 336	D	D	D	D	D	D	0	0	0
Furniture and related products	337	3	2	0	0	0	0	0	1	0
Miscellaneous manufacturing	339	D	D	210	D	D	1	1	23	D
Medical equipment and supply manufacturing	3391	D	D	197	D	28	1	0	22	D
Other miscellaneous manufacturing	3399	72	19 i	13	D	D	*	1	1	D
Nonmanufacturing industries	21–23, 42–81	20,138	7,358	3,051	1,481	7,460	126	6	612	44
Mining, extraction, and support activities	21	289	D	0	D	4	0	0	0	0
Utilities	22	54	2	0	0	45	1	0	7	0
Construction	23	375	5 i	2	*	367	0	0	1	0
Wholesale trade	42	233	69	101 i	0	34	D	0	1	D
Retail trade	44–45	*	*	0	0	0	0	0	0	0
Electronic shopping and electronic auctions	454111–12	0	0	0	0	0	0	0	0	0
Other retail trade	other 44–45	*	*	0	0	0	0	0	0	0
Transportation and warehousing	48–49	7 i	2	* i	0	5 i	0	0	0	0
Information	51	768	244	342	D	152	D	1	10	D

Appendix table 4-16

Domestic R&D performed by the company and paid for by others, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
Publishing	511	595	134	305	D	140	D	1	1	D
Newspaper, periodical, book, and directory publishers	5111	*	* i	0	0	* i	*	0	0	0
Software publishers	5112	595	134	305	D	140	D	1	1	D
Telecommunications	517	113	74	30	D	5	*	0	0	D
Data processing, hosting, and related services	518	47	34	0	0	3	*	0	9	0
Other information	other 51	13	2	8 i	0	4	0	0	0	0
Finance and insurance	52	0	0	0	0	0	0	0	0	0
Real estate, rental, and leasing	53	2	2	0	0	0	0	0	0	0
Professional, scientific, and technical services	54	18,252	6,906	2,603	1,198	6,829	D	D	582	D
Architectural, engineering, and related services	5413	2,712	668	83	116	1,534 i	19	*	292	0
Computer system design and related services	5415	1,634	397	236	112	712	D	0	160	D
Scientific research and development services	5417	11,968	5,344	2,229	915	3,279	45	3 i	129	22
Biotechnology research and development	541711	3,890	1,756	1,043	565	465	8	2 i	37	15
Physical, engineering, and life sciences (except biotechnology) research and development	541712	7,547	3,568 i	1,184	351	2,352	23	1	60	7
Social sciences and humanities research and development	541720	530	20	2	0	463	14	0	31	0
Other professional, scientific, and technical services	other 54	1,939	498	54	54	1,303	22	D	2	D
Health care services	621–23	107	D	0	D	22	1	D	12	D
Other nonmanufacturing	55–56, 624, 71–72, 81	52	D	2	D	3	*	0	0	0
All companies (number of employees)	–	57,271	11,013	7,102	3,913	34,199 i	156	37	779	74
Small companies (number of employees)[a]										
5–499	–	11,379	3,610	1,357	647	4,951	94	6	647	67
5–99	–	7,078	1,997	671	341	3,369	84	6	568	43
5–49	–	4,623	1,255	396	133	2,200	73	5 i	540	22
5–9	–	944	253	18	17	577	12	2 i	54	11
10–24	–	2,002	632	170	29	779	46	1	343	3
25–49	–	1,678	370	209	87	844	15	2	143	8

Appendix table 4-16

Domestic R&D performed by the company and paid for by others, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States		U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
				Foreign parent companies	Unaffiliated companies					
50–99	–	2,455	742	275	208 i	1,169	11	1	28	22
100–249	–	2,431	756	403	228	962	D	D	54	D
250–499	–	1,870	857	284	78	620	D	D	24	D
Medium and large companies (number of employees)										
500–999	–	1,477	260	490	119	585	D	1	D	* i
1,000–4,999	–	8,760	2,179	2,808	2,036	1,674	26	*	32	4
5,000–9,999	–	5,523	2,997	1,706	181	637	1	0	1	1
10,000–24,999	–	5,147	910	737	616	2,789	D	*	D	0
25,000 or more	–	24,985 i	1,056	3	314	23,563 i	4	30	14	1

* = < $500,000; D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2007 North American Industry Classification System.

[a] Upper bound is based on the U.S. Small Business Administration's definition of a small business; the Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total due to rounding. Industry classification is based on the dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2010).

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Appendix table 4-17

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
All industries	21–23, 31–33, 42–81	14,644	3,519	7,102	3,913	37	74
Manufacturing industries	31–33	9,332	2,789	4,051	2,432	31	29
Food	311	D	D	D	D	0	D
Beverage and tobacco products	312	D	D	0	D	0	0
Textile, apparel, and leather products	313–16	1	0	0	D	0	D
Wood products	321	D	0	7	D	0	0
Paper manufacturing	322	D	0	2	D	0	0
Printing and related support activities	323	D	D	2	D	0	0
Petroleum and coal products	324	D	D	D	D	0	0
Chemicals	325	4,058	D	1,882	D	*	D
Basic chemicals	3251	107	80	D	*	0	0
Resin, synthetic rubber, fiber, and filament	3252	10 i	1	* i	9 i	0	0
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	D	D	0	0	0
Pharmaceuticals and medicines	3254	3,581	D	1,683	D	*	D
Soap, cleaning compound, and toilet preparation	3256	4	4	0	0	0	0
Paint, coating, adhesive, and other chemical manufacturing	3255, 3259	D	D	D	D	0	D
Plastic and rubber products	326	227 i	D	225 i	D	0	D
Nonmetallic mineral products	327	3	D	*	D	0	0
Primary metals	331	34	0	34	*	D	D
Fabricated metal products	332	D	0	D	D	0	D
Machinery	333	457	172	200	82	*	3
Agricultural implement manufacturing	33311	D	D	D	1 i	0	*
Semiconductor machinery manufacturing	333295	D	0	111	D	0	0
Engine, turbine, and power transmission equipment manufacturing	3336	57	0	10	47	0	0
Other machinery manufacturing	other 333	D	D	D	D	*	2
Computer and electronic products	334	2,274	482	1,039	728	23	2
Communication equipment	3342	814	D	603	D	* i	* i
Semiconductor and other electronic components	3344	519	244	172	101	0	1
Navigational, measuring, electromedical, and control instruments	3345	528	82	219	203	23	1 i
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	334510, 334517	190	65	D	89	0	0
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	334511	301	D	D	112	D	0

Appendix table 4-17

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
Other measuring and controlling device manufacturing	other 3345	37	D	D	2	D	1 i
Other computer and electronic products	other 334	413	D	44	D	0	0
Electrical equipment, appliances, and components	335	D	D	54	D	0	0
Transportation equipment	336	661	112	324	217	D	D
Automobiles, bodies, trailers, and parts	3361, 3362, 3363	554	D	D	D	0	0
Aerospace products and parts	3364	D	D	D	D	D	D
Aircraft, aircraft engine, and aircraft part manufacturing	336411–13	101	D	D	D	D	D
Guided missile, space vehicle, and related part manufacturing	336414–15, 336419	D	0	0	D	D	0
Military armored vehicle, tank, and tank component manufacturing	336992	0	0	0	0	0	0
Other transportation	other 336	D	0	D	D	0	0
Furniture and related products	337	0	0	0	0	0	0
Miscellaneous manufacturing	339	656	D	210	D	1	D
Medical equipment and supply manufacturing	3391	641	D	197	D	0	D
Other miscellaneous manufacturing	3399	15	0	13	D	1	D
Nonmanufacturing industries	21–23, 42–81	5,312	730	3,051	1,481	6	44
Mining, extraction, and support activities	21	587	D	0	D	0	0
Utilities	22	0	0	0	0	0	0
Construction	23	3	0	2	*	0	0
Wholesale trade	42	D	0	101 i	0	0	D
Retail trade	44–45	0	0	0	0	0	0
Electronic shopping and electronic auctions	454111–12	0	0	0	0	0	0
Other retail trade	other 44–45	0	0	0	0	0	0
Transportation and warehousing	48–49	* i	0	* i	0	0	0
Information	51	698	337	342	D	1	D
Publishing	511	520	200	305	D	1	D
Newspaper, periodical, book, and directory publishers	5111	0	0	0	0	0	0
Software publishers	5112	520	200	305	D	1	D
Telecommunications	517	D	D	30	D	0	D
Data processing, hosting, and related services	518	0	0	0	0	0	0
Other information	other 51	D	D	8 i	0	0	0
Finance and insurance	52	D	D	0	0	0	0
Real estate, rental, and leasing	53	11	11	0	0	0	0
Professional, scientific, and technical services	54	3,883	D	2,603	1,198	D	D
Architectural, engineering, and related services	5413	199	0	83	116	*	0

Appendix table 4-17

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2010

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
Computer system design and related services	5415	380	D	236	112	0	D
Scientific research and development services	5417	3,187	17	2,229	915	3 i	22
Biotechnology research and development	541711	1,634	10	1,043	565	2 i	15
Physical, engineering, and life sciences (except biotechnology) research and development	541712	1,551	7	1,184	351	1	7
Social sciences and humanities research and development	541720	2	0	2	0	0	0
Other professional, scientific, and technical services	other 54	116	D	54	54	D	D
Health care services	621–23	D	0	0	D	D	D
Other nonmanufacturing	55–56, 624, 71–72, 81	D	0	2	D	0	0
All companies (number of employees)	–	14,644	3,519	7,102	3,913	37	74
Small companies (number of employees)[b]							
5–499	–	2,273	195	1,357	647	6	67
5–99	–	1,115	54	671	341	6	43
5–49	–	555	*	396	133	5 i	22
5–9	–	47	0	18	17	2 i	11
10–24	–	203	*	170	29	1	3
25–49	–	305	0	209	87	2	8
50–99	–	559	54	275	208 i	1	22
100–249	–	685	D	403	228	D	D
250–499	–	473	D	284	78	D	D
Medium and large companies (number of employees)							
500–999	–	680	70	490	119	1	* i
1,000–4,999	–	5,565	717	2,808	2,036	*	4
5,000–9,999	–	2,210	323	1,706	181	0	1
10,000–24,999	–	2,137	784	737	616	*	0
25,000 or more	–	1,779	1,431	3	314	30	1

* = < $500,000; D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2007 North American Industry Classification System.

[a] Subsidiaries are company-owned units outside the United States. Although all estimates include an adjustment to the weight to account for unit nonresponse, the estimates for domestic R&D paid for by foreign subsidiaries do not include item imputation. Caution should be used when comparing the subsidiaries estimates to other estimates presented in this table.

[b] Upper bound is based on the U.S. Small Business Administration's definition of a small business; the Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total due to rounding. Industry classification is based on the dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2010).

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Appendix table 4-18

Domestic R&D paid for by others and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
All industries	21–23, 31–33, 42–81	55,324	11,124	7,438	4,569	31,309 i	321	63	369	129
Manufacturing industries	31–33	38,021	4,196	5,871	2,999	24,698 i	55	46	103	54
Food	311	196	21	D	D	17	0	0	D	0
Beverage and tobacco products	312	D	*	D	D	D	0	0	0	0
Textile, apparel, and leather products	313–16	34	D	D	*	D	0	0	0	0
Wood products	321	9	D	3	D	0	0	0	*	0
Paper manufacturing	322	23	D	D	D	D	*	0	0	0
Printing and related support activities	323	1	*	0	*	1	0	0	0	0
Petroleum and coal products	324	D	D	0	0	D	*	0	0	0
Chemicals	325	5,337	1,320	2,209	1,658	110	19	0	14	8
Basic chemicals	3251	D	20	D	26	D	13	0	*	0
Resin, synthetic rubber, fiber, and filament	3252	12	D	D	6	D	*	0	*	0
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	D	D	0	D	0	0	0	0
Pharmaceuticals and medicines	3254	4,838	1,285	1,848	1,626	52	6	0	14	8
Soap, cleaning compound, and toilet preparation	3256	6	D	D	D	*	*	0	*	0
Paint, coating, adhesive, and other chemical manufacturing	3255, 3259	40	D	D	D	D	0	0	0	0
Plastic and rubber products	326	307 i	31	265 i	1	8	*	0	2	*
Nonmetallic mineral products	327	33	D	*	1	25	2	0	0	D
Primary metals	331	64	D	43	D	D	3 i	0	*	0
Fabricated metal products	332	115	D	D	D	D	2	0	17	0
Machinery	333	1,131	423	D	D	522	7	D	D	1
Agricultural implement manufacturing	33311	22	7	15	0	*	0	0	0	0
Semiconductor machinery manufacturing	333295	139	77	D	D	4	D	0	D	0
Engine, turbine, and power transmission equipment manufacturing	3336	693	182	D	D	D	D	0	D	0
Other machinery manufacturing	other 333	278	157	D	D	D	D	D	D	1
Computer and electronic products	334	9,040	1,087	1,735	991	5,161	15	D	D	D
Communication equipment	3342	1,858 i	171 i	619	283	784 i	0	1	*	0
Semiconductor and other electronic components	3344	1,245	184	802	D	89	D	0	D	0
Navigational, measuring, electromedical, and control instruments	3345	5,451	636	D	D	4,276	D	D	4 i	D

Appendix table 4-18

Domestic R&D paid for by others and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	334510, 334517	243	43	D	D	41	D	0	1	0
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	334511	5,111	566	D	D	4,182	1	D	0	0
Other measuring and controlling device manufacturing	other 3345	97	26	D	D	52	D	0	3 i	D
Other computer and electronic products	other 334	485	97 i	D	D	12	0	0	D	D
Electrical equipment, appliances, and components	335	178	24	73	1	76	3	0	*	0
Transportation equipment	336	20,605 i	1,086	D	D	D	1	D	D	7
Automobiles, bodies, trailers, and parts	3361, 3362, 3363	D	D	D	D	D	1	0	D	1
Aerospace products and parts	3364	18,469 i	592	D	D	17,806 i	0	D	D	6
Aircraft, aircraft engine, and aircraft parts manufacturing	336411–13	17,480 i	590	D	D	16,820 i	0	D	D	6
Guided missile, space vehicle, and related parts manufacturing	336414–15, 336419	989	2	0	0	987	0	0	0	0
Military armored vehicle, tank, and tank component manufacturing	336992	2	1	0	0	1	0	0	0	0
Other transportation	other 336	D	D	D	D	D	0	0	D	0
Furniture and related products	337	2	2	0	0	*	*	0	0	0
Miscellaneous manufacturing	339	D	D	D	D	60	2	0	14	D
Medical equipment and supply manufacturing	3391	406	D	280	D	18	1	0	13	D
Other miscellaneous manufacturing	3399	D	D	D	D	42	1	0	1	0
Nonmanufacturing industries	21–23, 42–81	17,303	6,928	1,568	1,570	6,611	267	17	266	76
Mining, extraction, and support activities	21	307	D	0	D	11	0	0	0	0
Utilities	22	84	D	0	D	60	19	0	2	0
Wholesale trade	42	248	21	100	92 i	18	*	0	1	18 i
Electronic shopping and electronic auctions	454111–12	0	0	0	0	0	0	0	0	0
Transportation and warehousing	48–49	*	*	0	0	*	0	0	0	0
Information	51	851	321	D	D	D	D	D	D	*
Publishing	511	687	D	334	D	136	D	D	D	*
Newspaper, periodical, book, and directory publishers	5111	1	0	0	0	0	0	0	1	0
Software publishers	5112	685	D	334	D	136	D	D	D	*
Telecommunications	517	117	D	D	D	D	0	0	0	0

Appendix table 4-18

Domestic R&D paid for by others and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
Data processing, hosting, and related services	518	28	27	0	D	D	*	0	D	0
Other information	other 51	19	D	D	0	0	0	0	0	0
Finance and insurance	52	146	145	0	1	0	0	0	0	0
Real estate, rental, and leasing	53	0	0	0	0	0	0	0	0	0
Lessors of nonfinancial intangible assets (except copyrighted works)	533	0	0	0	0	0	0	0	0	0
Other real estate, rental, and leasing	other 53	0	0	0	0	0	0	0	0	0
Professional, scientific, and technical services	54	14,851	6,227	1,038	1,175	5,848	229	17	258	58
Architectural, engineering, and related services	5413	1,966	557	18	78	1,123 i	130	14	46	0
Computer system design and related services	5415	1,553	626	156	53	598	38	0	51	31
Scientific research and development services	5417	9,131	3,834	809	1,024	3,226	57	2	151	27
Biotechnology research and development	541711	1,735	501	212	572	406	7	*	33	3
Physical, engineering, and life sciences (except biotechnology) research and development	541712	6,797	3,313	597	451	2,280	38	2	91	24
Social sciences and humanities research and development	541720	599	21	*	* i	540	12	0	27	0
Other professional, scientific, and technical services	other 54	2,202	1,210	55	20	902	4	1	10	0
Health care services	621–23	183	156	D	D	5	D	D	D	* i
Other nonmanufacturing	23, 44–45 (excluding 454111–12), 55–56, 624, 71–72, 81	632	D	D	D	D	D	0	D	0
All companies	–	55,324	11,124	7,438	4,569	31,309 i	321	63	369	129
Small companies (number of domestic employees)[a]										
5–499	–	10,283	3,316	1,916	480	3,938	247	17	252	118
5–99	–	6,382	2,066	883	265	2,766	147	D	191	D
5–49	–	4,525	1,581	352	200	2,065	115	D	158	D
5–9	–	1,221	496	41	61 i	533	23	0	64	3
10–24	–	1,872	719	124	62	795	70	D	60	D
25–49	–	1,432	367	186	77	738	23	3	33 i	6 i

Appendix table 4-18

Domestic R&D paid for by others and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies in United States	Companies outside United States: Foreign parent companies	Companies outside United States: Unaffiliated companies	U.S. federal government agencies	U.S. state government agencies	Foreign government agencies	All other, in United States	All other, outside United States
50–99	–	1,857	485	531	65	701	31	D	33	D
100–249	–	2,095	639	322	133	814	75	D	51	D
250–499	–	1,806	611	712	82	358	25	*	10	8
Medium and large companies (number of domestic employees)										
500–999	–	1,288	382	D	D	377	4 i	D	11	D
1,000–4,999	–	7,579	1,154	1,760	2,884	1,702	33	1	39	5
5,000–9,999	–	6,292	3,513	1,866	419	476	13	0	1	4
10,000–24,999	–	6,630	1,267	1,170	D	3,577	18	D	45	D
25,000 or more	–	23,253 i	1,492	D	189	21,240 i	6	D	21	D

* = < $500,000; D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2007 North American Industry Classification System.

[a] Upper bound is based on the U.S. Small Business Administration's definition of a small business; the Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total due to rounding. Industry classification is based on the dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Statistics pertain to companies located in the United States that performed or funded R&D.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2011).

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Appendix table 4-19

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
All industries	21–23, 31–33, 42–81	15,543	3,342	7,438	4,569	63	129
Manufacturing industries	31–33	11,497	2,527	5,871	2,999	46	54
Food	311	158 i	D	D	D	0	0
Beverage and tobacco products	312	D	D	D	D	0	0
Textile, apparel, and leather products	313–16	D	0	D	*	0	0
Wood products	321	D	0	3	D	0	0
Paper manufacturing	322	D	0	D	D	0	0
Printing and related support activities	323	D	D	0	*	0	0
Petroleum and coal products	324	D	D	0	0	0	0
Chemicals	325	5,229	1,354	2,209	1,658	0	8
Basic chemicals	3251	143	D	D	26	0	0
Resin, synthetic rubber, fiber, and filament	3252	D	D	D	6	0	0
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	D	D	0	0	0
Pharmaceuticals and medicines	3254	4,717	1,235	1,848	1,626	0	8
Soap, cleaning compound, and toilet preparation	3256	D	D	D	D	0	0
Paint, coating, adhesive, and other chemical manufacturing	3255, 3259	D	D	D	D	0	0
Plastic and rubber products	326	266	0	265 i	1	0	*
Nonmetallic mineral products	327	D	D	*	1	0	D
Primary metals	331	D	0	43	D	0	0
Fabricated metal products	332	D	0	D	D	0	0
Machinery	333	254	D	D	D	D	1
Agricultural implement manufacturing	33311	19	3	15	0	0	0
Semiconductor machinery manufacturing	333295	158	D	D	D	0	0
Engine, turbine, and power transmission equipment manufacturing	3336	D	*	D	D	0	0
Other machinery manufacturing	other 333	D	D	D	D	D	1
Computer and electronic products	334	3,291	521	1,735	991	D	D
Communication equipment	3342	1,000	97	619	283	1	0
Semiconductor and other electronic components	3344	1,299	D	802	D	0	0
Navigational, measuring, electromedical, and control instruments	3345	573	D	D	D	D	D
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	334510, 334517	198	D	D	D	0	0

Appendix table 4-19

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	334511	363	D	D	D	D	0
Other measuring and controlling device manufacturing	other 3345	12	0	D	D	0	D
Other computer and electronic products	other 334	419	D	D	D	0	D
Electrical equipment, appliances, and components	335	75	0	73	1	0	0
Transportation equipment	336	857	D	D	D	D	7
Automobiles, bodies, trailers, and parts	3361, 3362, 3363	787	D	D	D	0	1
Aerospace products and parts	3364	66	D	D	D	D	6
Aircraft, aircraft engine, and aircraft part manufacturing	336411–13	66	D	D	D	D	6
Guided missile, space vehicle, and related part manufacturing	336414–15, 336419	0	0	0	0	0	0
Military armored vehicle, tank, and tank component manufacturing	336992	D	D	0	0	0	0
Other transportation	other 336	D	0	D	D	0	0
Furniture and related products	337	0	0	0	0	0	0
Miscellaneous	339	706	D	D	D	0	D
Medical equipment and supply manufacturing	3391	373	D	280	D	0	D
Other miscellaneous manufacturing	3399	333	D	D	D	0	0
Nonmanufacturing industries	21–23, 42–81	4,046	815	1,568	1,570	17	76
Mining, extraction, and support activities	21	D	D	0	D	0	0
Utilities	22	D	0	0	D	0	0
Wholesale trade	42	209 i	0	100	92 i	0	18 i
Electronic shopping and electronic auctions	454111–12	0	0	0	0	0	0
Transportation and warehousing	48–49	0	0	0	0	0	0
Information	51	565 i	D	D	D	D	*
Publishing	511	394	D	334	D	D	*
Newspaper, periodical, book, and directory publishers	5111	0	0	0	0	0	0
Software publishers	5112	394	D	334	D	D	*
Telecommunications	517	34	D	D	D	0	0
Data processing, hosting, and related services	518	D	D	0	D	0	0
Other information	other 51	D	D	D	0	0	0

Appendix table 4-19

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
Finance and insurance	52	1	0	0	1	0	0
Real estate, rental, and leasing	53	0	0	0	0	0	0
Lessors of nonfinancial intangible assets (except copyrighted works)	533	0	0	0	0	0	0
Other real estate, rental, and leasing	other 53	0	0	0	0	0	0
Professional, scientific, and technical services	54	2,489	201	1,038	1,175	17	58
Architectural, engineering, and related services	5413	110	*	18	78	14	0
Computer system design and related services	5415	440	201	156	53	0	31
Scientific research and development services	5417	1,862	0	809	1,024	2	27
Biotechnology research and development	541711	788	0	212	572	*	3
Physical, engineering, and life sciences (except biotechnology) research and development	541712	1,075	0	597	451	2	24
Social sciences and humanities research and development	541720	* i	0	*	* i	0	0
Other professional, scientific, and technical services	other 54	77	1	55	20	1	0
Health care services	621–23	D	0	D	D	D	* i
Other nonmanufacturing	23, 44–45 (excluding 454111–12), 55–56, 624, 71–72, 81	D	0	D	D	0	0
All companies	–	15,543	3,342	7,438	4,569	63	129
Small companies (number of domestic employees)[b]							
5–499	–	2,655	124	1,916	480	17	118
5–99	–	1,220	D	883	265	D	D
5–49	–	606	D	352	200	D	D
5–9	–	105 i	0	41	61 i	0	3
10–24	–	229	D	124	62	D	D
25–49	–	271	0	186	77	3	6 i
50–99	–	614	D	531	65	D	D
100–249	–	549	D	322	133	D	D
250–499	–	886	85	712	82	*	8
Medium and large companies (number of domestic employees)							

Appendix table 4-19

Domestic R&D paid for by sources located outside the United States and performed by the company, by source of funds, industry, and company size: 2011

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Companies outside United States			Foreign governments	All other
			Subsidiaries[a]	Foreign parent companies	Unaffiliated companies		
500–999	–	615	102	D	D	D	D
1,000–4,999	–	5,421	771	1,760	2,884	1	5
5,000–9,999	–	2,369	81	1,866	419	0	4
10,000–24,999	–	2,289	566	1,170	D	D	D
25,000 or more	–	2,192	1,699	D	189	D	D

* = < $500,000; D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2007 North American Industry Classification System.

[a] Subsidiaries are company-owned units outside the United States. Although all estimates include an adjustment to the weight to account for unit nonresponse, the estimates for domestic R&D paid for by foreign subsidiaries do not include item imputation. Caution should be used when comparing the subsidiaries estimates to other estimates presented in the table.
[b] Upper bound is based on the U.S. Small Business Administration's definition of a small business; the Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total due to rounding. Industry classification is based on the dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Statistics pertain to companies located in the United States that performed or funded R&D.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2011).

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Appendix table 4-20

Domestic R&D paid for by the company and others and performed by the company, by business activity: 2011

(Millions of U.S. dollars)

Business activity[a]	Business code[b]	Paid for by the company	Paid for by others
All business activities	21100–81000	238,768	55,324
Oil and gas extraction	21100	871	D
Mining	21200	207	*
Support activities for mining, including oil and gas	21300	1,223	D
Utilities	22100	280	42
Construction	23000	270	505
Food manufacturing	31100	3,631	142
Beverage manufacturing	31210	455	D
Tobacco manufacturing	31220	138	D
Textiles, apparel, and leather products manufacturing	31990	597	16
Wood products manufacturing	32100	197	5
Paper manufacturing	32200	732	2
Printing and related support activities	32300	237	0
Petroleum refineries	32401	449	D
Asphalt paving, roofing, and saturated materials manufacturing	32402	36	0
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	284	*
Basic chemicals manufacturing	32510	2,606	118
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	807	8
Pesticide, fertilizer, and other agricultural chemical manufacturing	32530	970	D
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic) manufacturing	32541	37,470	4,577
In vitro diagnostic substances manufacturing	32542	1,064	19
Soap, cleaning compound, and toilet preparations manufacturing	32591	2,295	14
Paint, adhesive, and other chemical manufacturing	32592	1,540	7
Plastics and rubber products manufacturing	32600	2,652	19
Clay and glass products manufacturing	32710	774 i	22
Cement, concrete, lime, gypsum, and other nonmetallic mineral product manufacturing	32790	299	3
Primary metal manufacturing	33100	526	9
Fabricated metal products manufacturing	33200	1,944	D
Agricultural machinery and equipment manufacturing	33311	972	17
Construction machinery manufacturing	33312	656	3
Mining, oil, and gas field machinery and equipment manufacturing	33319	1,732	6
Semiconductor machinery manufacturing	33321	2,188	28
Industrial machinery manufacturing (except semiconductor machinery)	33322	890	32
Photographic and photocopying equipment manufacturing	33331	628	30
Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	756	D
Engine, turbine, and power transmission equipment manufacturing	33360	2,867	272
Metalworking and other general purpose machinery manufacturing	33390	1,650	104
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	9,802	501
Telephone apparatus manufacturing, including routers, modems, and gateways	33421	7,662	6
Radio, TV, and wireless communication equipment manufacturing	33422	2,879	722
Other communication equipment manufacturing (except radio, TV, and wireless communication equipment)	33429	854	51
Audio and video equipment manufacturing	33430	774	24

Appendix table 4-20

Domestic R&D paid for by the company and others and performed by the company, by business activity: 2011

(Millions of U.S. dollars)

Business activity[a]	Business code[b]	Paid for by the company	Paid for by others
Semiconductor and other electronic components manufacturing	33440	23,313	1,110
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	2,482	82
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments manufacturing	33452	1,853	3,706
Measuring and control instruments manufacturing (not listed elsewhere)	33459	3,044	38
Electrical equipment, appliances, and components manufacturing	33500	2,873	87
Motor vehicles manufacturing	33610	8,606	703
Motor vehicle body and trailer manufacturing	33620	69	0
Motor vehicle parts manufacturing	33630	2,760	243
Aircraft manufacturing	33641	4,290	1,563
Aircraft engine and engine parts manufacturing	33642	1,060	576
Other aircraft parts and auxiliary equipment manufacturing	33643	1,262	600
Guided missiles, space vehicles, and parts manufacturing	33644	953	2,572
Railroad rolling stock manufacturing	33651	130	0
Ship and boat building	33660	90 i	D
Motorcycle, bicycle, and parts manufacturing	33691	210	0
Military armored vehicle, tank, and tank components manufacturing	33692	99	D
All other transportation equipment manufacturing	33699	263	144
Furniture and related products manufacturing	33700	300	*
Medical equipment and supplies manufacturing	33910	9,682	358
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	2,219	394
Merchant wholesalers, durable goods	42300	484	10 i
Merchant wholesalers, nondurable goods	42400	416	3
Wholesale electronic markets and agents and brokers (business to business)	42500	52	0
Retail trade (except electronic shopping and electronic auctions)	44000	52	0
Electronic shopping and electronic auctions	45411	940 i	0
Transportation	48000	109	14
Couriers, messengers, and express delivery services	49200	1	0
Warehousing and storage	49300	12	3
Newspaper, periodical, book, and directory publishers (except Internet)	51110	430 i	0
Software publishers (except Internet)	51120	21,891	320
Motion picture and sound recording (except Internet)	51200	61	0
Broadcasting (except Internet)	51500	94	0
Wired telecommunications carriers	51710	571	0
Wireless telecommunications carriers (except satellite)	51720	138	0
Satellite telecommunications	51740	92	D
Other telecommunications (not listed elsewhere)	51790	373	104
Data processing, hosting, and related services	51800	4,069	6
Other information services, including Internet publishing, broadcasting, and Web search portals	51910	7,979	D
Finance, banking and credit intermediation	52200	1,365	0
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	1,119	3
Insurance carriers and related activities	52400	735	D
Real estate	53100	10	0
Rental and leasing services	53200	83	0
Lessors of nonfinancial intangible assets, including patent licensing	53300	301	0

Appendix table 4-20

Domestic R&D paid for by the company and others and performed by the company, by business activity: 2011

(Millions of U.S. dollars)

Business activity[a]	Business code[b]	Paid for by the company	Paid for by others
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	306	0
Architectural, engineering, and related services	54130	1,345	576
Specialized design services	54140	228	40
Computer systems design and related services	54150	12,511	794
Management, scientific, and technical consulting services	54160	1,197	532
Research and development services in social sciences and humanities	54172	17 i	D
Research and development services in biotechnology	54173	4,357	1,863
Research and development services in physical, engineering, and life sciences (except biotechnology)	54174	2,089	4,645
Advertising and related services	54180	1,398	1
Professional, scientific, and technical services (not listed elsewhere)	54190	618	532
Management of companies and enterprises	55100	31	0
Administrative and support services	56100	311	21
Waste management and remediation services	56200	19 i	0
Offices of physicians	62110	23	1
Medical and diagnostic laboratories	62150	418	482
Other ambulatory health care services (ambulance, dental, home health care)	62199	64	1
Hospitals and nursing care facilities	62200	4	0
Social assistance services	62400	7	0
Arts, entertainment, and recreation	71000	71	41
Accommodation and food services	72000	74	0
Other services (not listed elsewhere)	81000	358	70
Undistributed	–	9,522 i	23,555 i

* = < $500,000; D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

[a] Data were tabulated independently of the industry classification of the company. Companies were asked to report their sales and R&D activity in one or more business activity codes.

[b] Business codes and descriptions are based on 2007 North American Industry Classification System industry definitions.

NOTES: Detail may not add to total due to rounding. Statistics pertain to companies located in the United States that performed or funded R&D.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey (2011).

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Appendix table 4-21

Federal research and experimentation tax credit claims, by NAICS industry: 2001–09

(Thousands of current U.S. dollars)

Industry	NAICS code	2001	2002	2003	2004	2005	2006	2007	2008	2009
All industries	na	6,355,803	5,655,666	5,488,337	5,554,011	6,363,476	7,311,124	8,259,753	8,303,369	7,773,979
Manufacturing	31–33	4,208,607	3,787,025	3,797,439	3,845,792	4,529,302	5,242,803	5,685,322	5,758,082	5,394,673
Food	311	33,716	30,971	49,120	50,836	71,132	82,879	76,498	80,719	74,767
Beverage and tobacco products	312	12,115	19,204	3,114	5,129	9,952	8,971	25,197	12,844	11,471
Textile mills and textile product mills	313–14	6,315	11,105	10,160	9,024	5,722	6,025	5,123	5,249	4,919
Apparel	315	722	283	348	347	417	1,494	1,312	2,315	5,862
Leather and allied products	316	750	898	1,583	1,807	1,805	1,455	1,272	1,478	1,199
Wood products	321	1,974	2,073	1,735	1,736	2,163	7,113	7,997	5,016	4,814
Paper manufacturing	322	54,452	59,862	66,653	52,836	47,380	50,317	65,636	64,226	62,408
Printing and related support activities	323	5,011	4,427	2,274	2,639	2,484	3,727	2,549	4,417	5,746
Petroleum and coal products	324	34,959	36,257	39,400	21,545	28,506	25,700	92,216	99,858	160,916
Chemicals	325	999,405	949,115	1,001,644	989,278	1,147,292	1,136,754	1,492,231	1,489,383	1,439,465
Plastic and rubber products	326	18,884	24,218	21,245	22,596	24,796	23,517	30,419	31,366	27,751
Nonmetallic mineral products	327	9,735	9,516	9,670	8,587	9,770	9,051	10,285	12,283	17,022
Primary metals	331	6,010	8,096	8,077	7,756	10,282	19,989	36,863	32,098	24,947
Fabricated metal products	332	24,243	27,912	59,387	66,597	66,794	72,969	83,261	74,863	65,946
Machinery	333	154,210	148,668	134,808	182,417	194,382	662,624	292,349	339,851	275,046
Computer and electronic products	334	1,677,194	1,152,788	1,168,467	1,490,633	1,647,471	1,746,744	1,889,734	1,812,225	1,584,938
Electrical equipment, appliances, and components	335	180,985	163,536	117,260	122,723	188,450	229,079	168,715	217,724	254,081
Transportation equipment	336	785,699	957,277	896,992	581,824	825,671	906,354	1,107,105	1,180,968	1,071,484
Furniture and related products	337	8,899	10,374	6,610	10,788	18,593	19,622	14,705	11,240	10,178
Miscellaneous manufacturing	339	193,330	170,444	198,891	216,693	226,240	228,420	281,857	279,958	291,715
Nonmanufacturing	na	2,147,197	1,868,640	1,690,897	1,708,219	1,834,176	2,068,322	2,574,431	2,545,288	2,379,306
Agriculture, forestry, fishing, and hunting	11	3,024	3,491	4,499	4,220	4,183	4,205	3,934	5,054	7,072
Mining	21	9,669	7,199	18,137	6,937	5,408	13,583	29,589	29,997	19,841
Utilities	22	8,546	6,307	4,496	10,241	20,454	32,508	54,410	48,855	52,168
Construction	23	9,360	11,060	11,002	4,884	3,424	7,353	15,000	10,278	11,060
Wholesale and retail trade	42, 44, 45	186,162	193,814	198,050	211,484	235,402	284,845	387,167	430,098	424,531
Transportation and warehousing	48, 49	16,186	13,722	12,681	11,515	9,040	8,473	12,334	10,593	10,838
Information	51	1,001,296	801,073	633,275	599,795	636,462	733,840	912,435	944,284	854,675
Finance and insurance	52	122,507	94,347	96,757	111,678	124,607	131,405	157,050	142,599	149,219
Real estate, rental, and leasing	53	3,518	1,903	2,750	1,120	4,445	5,666	7,819	7,453	10,312
Professional, scientific, and technical services	54	649,801	576,581	549,141	609,019	651,093	725,855	853,119	787,671	733,531
Management of companies and enterprises	55	82,295	100,337	94,894	92,007	94,833	76,846	90,557	62,091	47,877

Appendix table 4-21

Federal research and experimentation tax credit claims, by NAICS industry: 2001–09

(Thousands of current U.S. dollars)

Industry	NAICS code	2001	2002	2003	2004	2005	2006	2007	2008	2009
Administrative/support and waste management services	56	26,060	25,914	30,788	18,956	11,859	12,405	13,291	22,373	26,847
Other services	61, 62, 71, 72, 81	28,773	32,892	34,427	26,363	32,966	31,338	37,728	43,942	31,335

NAICS = North American Industry Classification System.

NOTES: Estimates are based on a stratified probability sample of unaudited active returns and are subject to sampling and nonsampling errors. Data are for tax years, which cover accounting periods ending any month between July of the calendar year of reference through June of the following calendar year. Data include returns of active corporations, other than forms 1120S (S corporations), 1120-REIT (Real Estate Investment Trusts), and 1120-RIC (Regulated Investment Companies). Active returns are corporate returns reporting any income or deduction items, including tax-exempt interest.

SOURCE: Internal Revenue Service Statistics of Income, http://www.irs.gov/uac/SOI-Tax-Stats-Corporation-Research-Credit, accessed 29 January, 2013.

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Appendix table 4-22

Corporate tax returns claiming the federal research and experimentation tax credit, by NAICS industry: 2001–09

(Number)

Industry	NAICS code	2001	2002	2003	2004	2005	2006	2007	2008	2009
All industries	na	10,389	10,254	10,369	10,244	11,290	10,788	12,548	12,736	12,359
Manufacturing	31–33	4,766	4,750	4,623	4,686	4,921	5,106	5,636	5,420	5,197
Food	311	132	135	121	135	162	132	166	163	171
Beverage and tobacco products	312	10	10	10	10	10	8	12	18	17
Textile mills and textile product mills	313–14	19	17	21	23	15	15	17	22	17
Apparel	315	8	8	10	8	9	47	44	55	25
Leather and allied products	316	4	5	8	7	6	5	4	6	7
Wood products	321	31	23	16	14	15	45	40	14	14
Paper manufacturing	322	31	34	32	28	38	51	58	58	58
Printing and related support activities	323	47	63	54	57	65	64	39	38	55
Petroleum and coal products	324	30	28	29	27	19	21	33	40	43
Chemicals	325	650	634	593	600	536	648	700	701	715
Plastic and rubber products	326	118	97	116	123	168	189	183	202	233
Nonmetallic mineral products	327	27	29	42	39	58	49	54	70	59
Primary metals	331	43	43	44	37	78	79	101	116	103
Fabricated metal products	332	260	220	273	287	338	336	462	457	450
Machinery	333	425	388	344	505	474	501	591	651	640
Computer and electronic products	334	1,604	1,663	1,565	1,429	1,343	1,266	1,394	1,319	1,178
Electrical equipment, appliances, and components	335	411	536	516	497	768	622	726	555	494
Transportation equipment	336	186	191	201	192	242	269	289	291	315
Furniture and related products	337	32	60	20	21	39	74	78	70	42
Miscellaneous manufacturing	339	699	566	608	645	538	685	646	575	560
Nonmanufacturing	na	5,622	5,504	5,746	5,558	6,370	5,682	6,912	7,316	7,162
Agriculture, forestry, fishing, and hunting	11	35	51	60	40	61	72	100	83	81
Mining	21	44	20	21	22	19	17	36	36	41
Utilities	22	23	18	18	17	37	47	78	129	81
Construction	23	15	31	20	21	18	29	59	56	124
Wholesale and retail trade	42, 44, 45	693	616	594	812	718	832	829	865	1,003
Transportation and warehousing	48, 49	19	17	17	23	43	39	33	58	56
Information	51	1,502	1,242	1,149	977	1,076	1,025	1,257	1,132	887
Finance and insurance	52	106	191	196	142	143	174	182	237	293
Real estate, rental, and leasing	53	18	17	10	8	14	15	45	30	57
Professional, scientific, and technical services	54	2,887	2,900	3,446	3,304	3,335	2,961	3,699	3,932	3,913

Appendix table 4-22

Corporate tax returns claiming the federal research and experimentation tax credit, by NAICS industry: 2001–09

(Number)

Industry	NAICS code	2001	2002	2003	2004	2005	2006	2007	2008	2009
Management of companies and enterprises	55	52	55	50	70	326	137	178	276	242
Administrative/support and waste management services	56	47	31	82	23	420	183	197	288	252
Other services	61, 62, 71, 72, 81	181	315	83	99	160	151	220	194	132

na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Estimates are based on a stratified probability sample of unaudited active returns and are subject to sampling and nonsampling errors. Data are for tax years, which cover accounting periods ending any month between July of the calendar year of reference through June of the following calendar year. Data include returns of active corporations, other than forms 1120S (S corporations), 1120-REIT (Real Estate Investment Trusts), and 1120-RIC (Regulated Investment Companies). Active returns are corporate returns reporting any income or deduction items, including tax-exempt interest.

SOURCE: Internal Revenue Service Statistics of Income, http://www.irs.gov/uac/SOI-Tax-Stats-Corporation-Research-Credit, accessed 29 January, 2013.

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Appendix table 4-23

R&D performed by majority-owned affiliates of foreign companies in the United States, by region/country/economy of ultimate beneficial owner: 1997–2010

(Millions of current U.S. dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total	17,216	22,375	24,027	26,180	26,463	27,507	29,803	30,083	31,099	34,625	40,967	40,727	40,425	41,272
Canada	1,668	2,352	2,385	3,693	2,136	1,599	1,380	1,459	1,553	1,581	1,574	1,294	1,120	575
Europe	12,327	16,425	18,055	18,634	19,973	20,532	22,518	22,825	23,389	26,100	31,330	30,273	29,947	31,282
Belgium	D	D	175	167	108	87	117	137	136	288	353	506	440	237
Denmark	97	127	D	D	D	114	100	160	319	371	368	377	363	405
Finland	D	D	166	157	601	544	D	D	D	D	371	588	514	643
France	1,783	1,881	2,434	2,596	2,662	2,860	3,777	3,800	3,099	3,289	5,589	5,802	5,020	5,248
Germany	2,923	5,381	6,135	5,603	5,686	5,863	5,976	5,916	6,519	6,857	5,893	5,696	5,529	5,679
Ireland	D	56	D	D	D	369	D	266	247	207	257	324	899	907
Italy	D	D	294	D	D	261	225	230	262	344	358	370	386	425
Netherlands	990	964	1,296	1,421	1,660	1,696	1,612	1,319	1,470	1,678	1,729	1,821	1,774	1,910
Spain	D	D	D	D	26	D	44	D	D	D	40	67	108	104
Sweden	687	713	428	373	465	270	261	270	272	344	388	345	504	440
Switzerland	2,369	3,076	3,008	2,922	3,107	2,920	3,791	4,185	4,289	5,014	6,395	6,940	8,889	9,086
United Kingdom	2,984	3,720	3,678	4,632	4,819	5,427	5,723	5,807	5,994	6,924	9,470	7,247	5,304	5,975
Other	*	1	1	3	3	5	6	6	D	32	119	191	218	222
Latin America and OWH	373	396	564	735	1,126	1,066	D	D	D	D	1,666	1,773	1,656	1,521
South and Central America	D	D	92	D	112	D	D	D	D	D	D	23	119	73
Brazil	*	*	*	*	*	0	0	0	0	* e	*	*	*	4
Mexico	D	55	D	D	D	45	14 e	17 e	18 e	16 e	6	D	5	D
Venezuela	3	0	0	0	0	0	0	*	*	0	0	0	0	0
Other	*	*	*	*	*	2	*	3	3	3	D	D	113	D
OWH	D	D	472	D	1,014	D	1,180	1,069	1,121	1,249	D	1,750	1,537	1,448
Bermuda	D	D	D	D	D	D	853	873	909	950	D	1,224	D	498
United Kingdom Islands, Caribbean	1	1	1	D	D	D	D	D	D	D	D	D	D	D
Other	0	0	0	0	0	*	* e	D	D	D	D	D	D	D
Africa	D	D	D	D	36	33	31	36	35	35	D	9	7	D
South Africa	D	D	D	D	36	33	31	36	35	35	D	9	7	D
Other	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Middle East	103	132	D	D	177	175	D	D	D	D	306	358	465	0
Israel	95	117	D	102	99	89	106	123	135	147	149	204	306	524
Saudi Arabia	1	7	9	10	11	D	D	D	D	D	108	104	98	D
United Arab Emirates	*	0	0	0	0	0	0	0	0	0	0	0	9	88
Other	7	8	7	D	66	D	71 e	41	42	28	49	50	52	6
Asia and Pacific	2,642	2,961	2,820	2,864	2,946	3,413	3,763	3,763	4,067	4,698	5,069	5,689	6,047	6,183
Australia	D	D	32	34	33	36	43 e	42	90	174	170	155	65	91
China	D	9	D	D	D	18	5	14	D	D	0	17	26	58
Hong Kong	4	1	1	*	D	D	D	D	62	75	D	147	121	114
India	NA	NA	NA	NA	NA	0	* e	0	0	0	6	23	29	39
Japan	2,036	2,584	2,535	2,644	2,719	3,159	3,470	3,414	3,576	4,056	4,416	4,781	5,124	5,112

Appendix table 4-23

R&D performed by majority-owned affiliates of foreign companies in the United States, by region/country/economy of ultimate beneficial owner: 1997–2010

(Millions of current U.S. dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Singapore	D	16	13	9	1	D	18	20 e	25	42 e	69	139	253	273
South Korea	D	D	D	D	D	D	D	D	D	D	215	259	280	350
Taiwan	78	73	68	47	43	83	102 e	102 e	122	113 e	110	118	119	116
Other	*	*	0	0	0	0	1	1	*	D	D	50	29	31
United States	D	D	55	62	69	689	D	D	692	721 e	D	1,330	1,184	D
Addenda:														
European Union[a]	9,902	13,326	14,980	15,659	16,787	17,554	18,676	18,570	18,991	21,041	24,854	23,210	20,921	22,061
OPEC	10	16	19	17	18	18	D	D	D	D	108	105	107	94

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; e = > 50% of value for data cell estimated to account for data not reported by respondents; NA = not available.

OPEC = Organization of the Petroleum Exporting Countries; OWH = other Western Hemisphere.

[a] Reflects the country composition of the European Union for the given year.

NOTES: Data for 2010 are preliminary estimates. Data are for R&D performance of majority-owned (> 50%) U.S. affiliates of foreign parent companies. Nonbank U.S. affiliates for 1997–2006; bank and nonbank U.S. affiliates for 2007 and forward. Total R&D performed refers to R&D expenditures according to who conducts R&D activity, whether for themselves or for others under contract, and excludes R&D expenditures conducted by others under contract. The ultimate beneficial owner is the person proceeding up the U.S. affiliate's ownership chain beginning with and including a foreign parent not owned > 50% by another person. Detail may not add to total due to rounding.

SOURCE: Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (annual series), http://www.bea.gov/international, accessed 26 January 2013.

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Appendix table 4-24

R&D performed by majority-owned affiliates of foreign companies in the United States, by NAICS industry of affiliate: 2002–06

(Millions of current U.S. dollars)

Industry	NAICS code	2002	2003	2004	2005	2006
All industries	na	27,507	29,803	30,083	31,099	34,625
Manufacturing	31–33	20,128	20,988	20,587	21,506	25,114
Food	311	368	166	440	498	462
Beverage and tobacco products	312	80	D	61	43	53
Textiles, apparel, and leather products	313–16	D	30	27	37	39 e
Paper manufacturing	322	75	67	64	64	57
Printing and related support activities	323	39	50	2 e	2	3 e
Petroleum and coal products	324	D	D	D	D	D
Chemicals	325	7,610	9,957	9,922	9,888	12,866
Basic chemicals	3251	608	589	655	513	604
Resin, synthetic rubber, fiber, and filament	3252	331	311	131	78	65
Pharmaceuticals and medicines	3254	6,373	8,505	8,678	8,710	11,638
Soap, cleaning compound, and toilet preparation	3256	74	304	96	99	108
Other	na	224	248	361	489	451
Plastic and rubber products	326	275	423	374	342	490
Nonmetallic mineral products	327	204	198	207	219	219
Primary and fabricated metals	na	254	194	247	270	258
Primary metals	331	46	28	80	90	60
Fabricated metal products	332	208	165	167	181	198
Machinery	333	1,681	1,572	1,638	1,552	1,752
Agriculture, construction, and mining machinery	3331	387	361	258	243	348
Industrial machinery	3332	192	223 e	322	114	124
Other	na	1,103	988	1,058	1,195	1,279
Computer and electronic products	334	4,985	3,340	2,690	2,847	3,055
Computer and peripheral equipment	3341	D	145	159 e	D	D
Communication equipment	3342	2,055	1,403	630	570	600
Semiconductor and other electronic components	3344	D	444	495	547	409
Navigational, measuring, and other instruments	3345	1,734	1,278	1,307 e	1,453	1,760
Other	na	42	70	99 e	D	D
Electrical equipment, appliances, and components	335	380	336	D	D	385
Transportation equipment	336	3,302	3,669	3,707	4,244	4,052
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	3,041	3,386	3,279	3,663	3,416
Other	na	261	283	428	581	636
Other	na	708	681	798	855	D
Wholesale trade	42	4,855	6,030	6,674	6,529	5,955
Motor vehicles and motor vehicle parts and supplies	4231	337	466	533	347	383
Electrical goods	4236	1,079	1,554	2,191	2,128	2,210
Petroleum and petroleum products	4247	D	D	D	D	D
Other	na	D	D	D	D	D
Retail trade	44–45	D	D	D	D	16
Food and beverage stores	445	*	* e	0	*	0
Other	na	D	D	D	D	16
Information	51	803	852	986	1,009	996
Publishing	511	763	632	692	645	640
Motion picture and sound recording industries	512	3	1	* e	* e	* e
Telecommunications	517	11	9	D	D	D
Other	na	26	210	D	D	D
Finance (except depository institutions) and insurance	52	D	13 e	9 e	6 e	5 e
Finance (except depository institutions)	na	D	12 e	9 e	6 e	5 e
Insurance carriers and related activities	524	6	1	0	*	* e
Real estate, rental, and leasing	53	9	9	6	11	D
Real estate	531	1	* e	* e	* e	* e
Rental and leasing (except real estate)	532	8	8	6	11	D
Professional, scientific, and technical services	54	1,119	1,379	1,436	1,590	1,954
Architectural, engineering, and related services	5413	86	75	80	166	254

Appendix table 4-24

R&D performed by majority-owned affiliates of foreign companies in the United States, by NAICS industry of affiliate: 2002–06

(Millions of current U.S. dollars)

Industry	NAICS code	2002	2003	2004	2005	2006
Computer system design and related services	5415	171	278	219	153	252
Management, scientific, and technical consulting	5416	3	3 e	0	*	0
Other	na	859	1,023	1,137	1,271	1,447
Other industries	na	D	D	D	D	D
Agriculture, forestry, fishing, and hunting	11	82	82	41	62	41
Mining	21	D	333	199	208	414
Utilities	22	3	5	0	0	*
Construction	23	D	7	6	5 e	11
Transportation and warehousing	48–49	3	0	D	D	D
Management of nonbank companies and enterprises	55	*	* e	1	1	1
Administration, support, and waste management	56	3	4	*	*	* e
Health care and social assistance	62	D	D	33	51	21
Accommodation and food services	72	*	0	*	0	0
Miscellaneous services	na	D	*	D	D	D

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; e = > 50% of value for data cell estimated to account for data not reported by respondents; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data are for R&D performance of majority-owned (> 50%) nonbank U.S. affiliates of foreign parent companies. Total R&D performed refers to R&D expenditures according to who conducts R&D activity, whether for a performer or for others under contract, and excludes R&D expenditures conducted by others under contract. Industry data are classified by the Bureau of Economic Analysis using the International Survey Industry classification system based on the NAICS. Data for 2002–06 are based on the 2002 NAICS. The ultimate beneficial owner is the person proceeding up the U.S. affiliate's ownership chain beginning with and including a foreign parent company not owned > 50% by another person. Detail may not add to total due to rounding.

SOURCE: Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (annual series), http://www.bea.gov/international/index.htm#omc, accessed 15 February 2011.

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Appendix table 4-25

R&D performed by majority-owned affiliates of foreign companies in the United States, by NAICS industry of affiliate: 2007–10

(Millions of current U.S. dollars)

Industry	NAICS code	2007	2008	2009	2010
All industries	na	40,967	40,727	40,425	41,272
Manufacturing	31–33	30,615	28,617	28,501	29,894
Food	311	D	538	518	486
Beverage and tobacco products	312	54	47	29	27
Paper manufacturing	322	52	43	42	55
Petroleum and coal products	324	D	D	D	D
Chemicals	325	15,908	14,271	16,075	16,638
Basic chemicals	3251	603	705	626	631
Pharmaceuticals and medicines	3254	14,331	12,650	14,545	15,145
Other	na	974	916	904	862
Plastic and rubber products	326	421	417	385	396
Nonmetallic mineral products	327	277	244	223	239
Primary and fabricated metals	na	292	372	369	316
Primary metals	331	67	114	84	75
Fabricated metal products	332	225	259	284	241
Machinery	333	1,939	2,568	2,376	2,509
Computer and electronic products	334	3,838	4,240	4,353	4,731
Semiconductor and other electronic components	3344	683	802	1,134	1,131
Navigational, measuring, and other instruments	3345	351	410	1,034	1,091
Other	na	2,804	3,028	2,185	2,509
Electrical equipment, appliances, and components	335	446	487	570	621
Transportation equipment	336	5,778	4,109	2,313	2,306
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	2,441	1,509	1,596	1,559
Other	na	3,336	2,600	717	748
Other	na	651	D	D	D
Wholesale trade	42	6,635	7,165	6,642	6,035
Motor vehicles and motor vehicle parts and supplies	4231	464	359	363	274
Electrical goods	4236	2,146	2,293	1,593	1,292
Petroleum and petroleum products	4247	D	124	D	D
Other	na	D	4,388	D	D
Retail trade	44–45	D	8	11	11
Food and beverage stores	445	0	0	0	0
Other	na	D	8	11	11
Information	51	1,252	1,586	1,681	1,870
Publishing	511	907	1,332	1,475	1,666
Telecommunications	517	D	38	D	D
Other	na	D	216	D	D
Finance and insurance	52	10	7	28	64
Depository credit intermediation (banking)	5221	0	*	*	D
Finance (except depository institutions)	na	10	6	D	D
Insurance carriers and related activities	524	*	1	D	D
Real estate, rental, and leasing	53	D	44	D	D
Real estate	531	1	D	*	*
Rental and leasing (except real estate)	532	D	D	D	D
Professional, scientific, and technical services	54	2,021	2,872	3,051	2,843
Architectural, engineering, and related services	5413	322	261	92	78
Computer system design and related services	5415	390	346	583	538
Management, scientific, and technical consulting	5416	5	34	44	37
Other	na	1,305	2,231	2,332	2,190
Other industries	na	387	427	D	D
Mining	21	132	174	161	168
Utilities	22	1	8	14	7
Construction	23	D	18	13	15
Transportation and warehousing	48–49	D	D	D	D
Administration, support, and waste management	56	D	D	D	D

Appendix table 4-25

R&D performed by majority-owned affiliates of foreign companies in the United States, by NAICS industry of affiliate: 2007–10

(Millions of current U.S. dollars)

Industry	NAICS code	2007	2008	2009	2010
Health care and social assistance	62	D	D	D	D
Accommodation and food services	72	*	*	*	*
Miscellaneous services	na	89	90	89	103

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data for 2010 are preliminary estimates. Data are for R&D performance of majority-owned (> 50%) nonbank U.S. affiliates of foreign parent companies. Total R&D performed refers to R&D expenditures according to who conducts R&D activity, whether for a performer or for others under contract, and excludes R&D expenditures conducted by others under contract. Industry data are classified by the Bureau of Economic Analysis using the International Survey Industry classification system based on the NAICS. Data for 2007–08 are based on the 2002 NAICS. The ultimate beneficial owner is the person proceeding up the U.S. affiliate's ownership chain beginning with and including a foreign parent company not owned > 50% by another person. Detail may not add to total due to rounding.

SOURCE: Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (annual series), http://www.bea.gov/international/index.htm#omc, accessed February 2013.

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Appendix table 4-26

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by region/country/economy: 1997–2010

(Millions of current U.S. dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total	14,593	14,664	18,144	20,457	19,702	21,063	22,793	25,840	27,653	29,583	34,446	41,699	39,205	39,470
Canada	1,823	1,750	1,681	2,332	2,131	2,274	2,444	2,729	2,433	2,439	2,712	3,194	2,920	2,749
Europe	10,003	10,387	12,217	12,870	12,060	13,453	14,890	16,874	18,805	19,326	22,730	26,503	25,044	24,406
Austria	77	85	82	D	62	52	34	131	191	313	459	488	296	277
Belgium	310	320	375	412	407	502	463	373	920	961	1,191	1,199	2,378	2,116
Czech Republic	NA	NA	6	18	3	11	18	19	65	71	59	86	81	68
Denmark	D	D	57	65	D	D	60	147	140	148	145	292	185	196
Finland	51	61	59	78	77	72	102	118	187	113	169	196	145	221
France	1,281	1,328	1,452	1,465	1,411	1,690	1,777	1,821	2,248	1,518	1,557	2,392	1,943	1,984
Germany	2,940	3,022	3,377	3,115	3,280	3,598	3,907	4,184	4,609	4,947	6,403	8,139	7,528	6,713
Greece	7	7	6	11	12	15	16	8	29	41	36	37	32	27
Hungary	NA	NA	13	35	17	19	15	38	31	36	39	49	45	65
Ireland	320	363	251	465	537	D	583	815	820	1,074	1,510	1,137	1,046	1,431
Italy	569	584	504	592	541	548	625	707	580	702	619	682	788	589
Luxembourg	D	D	D	D	D	D	91	D	D	268	304	D	D	D
Netherlands	480	384	374	369	475	419	513	442	392	536	752	1,495	1,022	1,290
Norway	23	18	26	19	38	35	21	32	100	41	46	51	53	137
Poland	NA	NA	34	22	13	29	37	D	54	74	73	109	140	136
Portugal	30	34	14	20	19	29	21	9	16	23	80	43	36	56
Russia	NA	NA	1	1	*	2	1	17	28	82	100	117	68	65
Spain	181	184	D	213	181	209	290	344	257	278	355	604	570	607
Sweden	405	445	1,036	1,341	813	1,317	1,398	1,451	1,652	1,524	1,584	1,654	1,133	520
Switzerland	230	223	231	286	392	392	523	760	878	947	1,162	1,143	1,436	1,558
Turkey	6	6	6	9	11	13	17	15	27	36	54	61	39	53
United Kingdom	2,843	3,065	4,000	4,111	3,642	3,856	4,368	5,361	5,406	5,551	6,000	6,173	5,792	5,905
Other	54	81	1	7	7	9	8	16	D	41	35	D	D	D
Latin America and OWH	663	748	613	663	562	785	680	726	841	1,046	1,169	1,457	1,465	1,949
South America	523	547	366	335	288	389	370	405	453	636	776	976	1,144	1,571
Argentina	43	56	26	38	43	24	22	25	21	31	64	87	92	115
Brazil	437	446	288	253	199	305	316	350	405	574	607	784	955	1,372
Chile	7	6	4	11	8	6	9	11	7	7	48	D	20	22
Colombia	12	11	6	10	11	10	7	5	6	7	16	18	26	26
Ecuador	1	1	*	*	*	*	*	*	1	*	3	4	1	1
Peru	11	11	2	2	2	2	2	2	4	3	D	33	22	7
Venezuela	11	14	40	22	24	42	12	12	7	12	20	19	25	24
Other	1	2	*	*	2	1	1	1	1	0	D	D	3	4
Central America	131	198	240	321	252	287	D	320	D	D	D	363	314	366
Costa Rica	4	6	2	D	4	7	6	8	9	8	7	D	8	20
Honduras	*	0	0	0	0	0	0	1	0	0	0	4	D	3
Mexico	126	191	238	303	248	280	D	D	D	D	303	329	281	338
Panama	1	1	*	*	*	*	*	*	*	*	D	1	2	2

Appendix table 4-26

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by region/country/economy: 1997–2010

(Millions of current U.S. dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Other	*	*	*	D	*	*	*	D	*	*	D	D	D	2
OWH	8	4	6	6	22	108	D	1	D	D	D	118	8	13
Barbados	0	0	*	*	0	D	D	0	0	0	*	*	*	*
Bermuda	*	*	1	1	2	2	0	0	0	2	D	D	5	9
Dominican Republic	0	*	1	1	1	D	1	*	*	*	*	1	2	2
United Kingdom Islands, Caribbean	8	3	4	4	D	D	D	0	D	D	*	1	1	1
Other	0	0	0	*	D	2	1	1	D	D	8	D	1	1
Africa	26	35	18	25	29	29	31	28	40	67	59	57	94	88
Egypt	1	2	3	3	4	5	4	2	4	4	3	5	6	6
Nigeria	*	*	0	1	*	*	0	*	0	2	3	4	*	2
South Africa	22	30	14	21	24	D	24	23	31	53	47	43	83	74
Other	2	3	1	*	1	D	3	2	4	7	5	6	5	6
Middle East	208	141	389	630	726	736	687	875	770	840	1,027	1,993	1,856	1,965
Israel	208	141	389	630	726	736	687	872	767	839	1,025	1,988	1,845	1,948
Saudi Arabia	*	*	*	*	*	0	0	*	*	*	*	*	*	1
United Arab Emirates	*	*	0	0	0	0	*	2	3	1	2	5	11	15
Other	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Asia and Pacific	1,869	1,603	3,226	3,936	4,194	3,786	4,062	4,608	4,764	5,864	6,750	8,494	7,826	8,313
Australia	369	290	294	349	286	310	420	474	556	718	1,072	940	751	767
China	35	52	319	506	D	645	565	575	668	759	1,173	1,671	1,579	1,452
Hong Kong	82	66	214	D	289	D	227	213	98	108	93	102	70	153
India	22	23	20	D	D	75	81	113	327	337	382	1,342	1,377	1,644
Indonesia	5	4	1	2	3	3	4	5	4	11	13	15	23	28
Japan	1,089	962	1,523	1,630	1,507	1,541	1,649	1,627	1,717	1,862	1,919	2,001	1,835	1,885
Malaysia	32	30	161	218	D	D	251	161	201	252	390	395	376	376
New Zealand	18	15	9	8	10	6	9	25	35	38	30	27	21	21
Philippines	12	10	31	40	48	50	52	44	27	22	45	56	51	55
Singapore	73	62	426	551	755	398	514	704	576	845	549	736	706	753
South Korea	41	29	101	143	157	169	202	277	456	742	928	980	746	835
Taiwan	84	55	122	143	139	69	64	365	68	123	97	128	196	235
Thailand	5	4	7	13	18	19	24	24	31	47	54	96	93	106
Other	1	1	*	*	*	1	*	*	*	1	3	4	2	2

Appendix table 4-26

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by region/country/economy: 1997–2010

(Millions of current U.S. dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Addenda:														
European Union[a]	9,691	10,058	11,900	12,472	11,578	12,941	14,249	16,048	17,768	18,209	21,365	25,130	23,435	22,579
OPEC	18	19	42	25	27	45	17	20	14	26	38	48	37	45

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; NA = not available.

OPEC = Organization of the Petroleum Exporting Countries; OWH = other Western Hemisphere.

[a] Reflects the country composition of the European Union for the given year.

NOTES: Data for 2010 are preliminary estimates. Data are for majority-owned (> 50%) foreign affiliates of U.S. parent companies. Data include R&D expenditures performed by affiliates, whether for themselves or for others under contract. Data exclude R&D expenditures by others for affiliates under contract. Detail may not add to total due to rounding.

SOURCE: Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), http://www.bea.gov/international/index.htm#omc, accessed 26 January 2013.

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Appendix table 4-27

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by selected NAICS industry of affiliate: 2004–08

(Millions of current U.S. dollars)

Industry	NAICS code	2004	2005	2006	2007	2008
All industries	na	25,840	27,653	29,583	34,446	41,699
Mining	21	12	13	23	63	105
Oil and gas extraction	211	4	3	13	38	51
Other	na	8	9	10	25	54
Utilities	22	4	5	7	*	*
Manufacturing	31–33	22,400	23,508	24,172	27,825	31,553
Food	311	627	358	428	517	570
Beverage and tobacco products	312	23	18	18	37	41
Textiles, apparel, and leather products	313–16	68	44	69	89	62
Wood products	321	5	6	5	5	3
Paper manufacturing	322	88	63	66	50	63
Printing and related support activities	323	11	12	6	9	8
Petroleum and coal products	324	45	25	27	26	22
Chemicals	325	5,629	6,589	6,442	8,670	8,821
Basic chemicals	3251	135	142	163	165	206
Resin, synthetic rubber, fiber, and filament	3252	235	237	254	253	247
Pharmaceuticals and medicines	3254	4,770	5,665	5,442	7,502	7,563
Soap, cleaning compound, and toilet preparation	3256	106	151	139	248	222
Other	na	382	393	444	501	584
Plastic and rubber products	326	201	358	388	455	494
Nonmetallic mineral products	327	378	50	43	47	78
Primary and fabricated metals	na	167	303	327	347	356
Primary metals	331	41	53	60	48	72
Fabricated metal products	332	127	250	267	299	283
Machinery	333	781	938	1,120	1,260	1,443
Agriculture, construction, and mining machinery	3331	245	315	330	355	481
Industrial machinery	3332	93	108	256	312	334
Other	na	443	515	533	593	628
Computer and electronic products	334	5,076	4,822	4,954	4,897	7,582
Computer and peripheral equipment	3341	472	211	154	223	1,206
Communication equipment	3342	2,757	1,961	2,005	1,767	1,965
Audio and video equipment	3343	D	D	D	D	D
Semiconductor and other electronic components	3344	1,271	1,928	2,014	1,917	3,115
Navigational, measuring, and other instruments	3345	517	546	589	676	D
Magnetic and optical media	3346	D	D	D	D	8
Electrical equipment, appliances, and components	335	533	623	652	474	515
Transportation equipment	336	7,926	8,021	8,505	9,663	10,035
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	7,362	7,471	7,911	9,067	9,412
Other	na	564	550	595	596	623
Furniture and related products	337	43	18	17	7	8
Miscellaneous manufacturing	339	798	1,261	1,102	1,275	1,451
Wholesale trade	42	796	931	1,131	1,365	2,087
Professional and commercial equipment and supplies	4234	312	327	466	473	1,291
Petroleum and petroleum products	4247	2	2	3	3	2
Drugs and druggists' sundries	4242	57	65	148	351	529
Other	na	426	536	515	538	266
Information	51	576	689	1,053	1,618	1,800
Publishing	511	547	612	980	D	1,602
Motion picture and sound recording industries	512	0	*	*	0	0
Broadcasting (except Internet) and telecommunications	na	5	D	5	D	D
Broadcasting (except Internet)	515	1	D	1	D	1
Telecommunications	517	4	D	3	5	D
Internet, data processing, and other information services	516, 518, 519	23	D	68	D	D
Finance (except depository institutions) and insurance	52	2	5	1	*	3
Finance (except depository institutions)	na	2	4	1	*	3

Appendix table 4-27

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by selected NAICS industry of affiliate: 2004–08

(Millions of current U.S. dollars)

Industry	NAICS code	2004	2005	2006	2007	2008
Securities, commodity contracts, and other intermediation and related activities	523	2	4	1	*	3
Other finance (except depository institutions)	na	0	*	*	0	0
Insurance carriers and related activities	524	*	1	*	*	*
Professional, scientific, and technical services	54	1,986	2,371	3,098	3,439	6,019
Architectural, engineering, and related services	5413	D	61	73	D	183
Computer systems design and related services	5415	731	1,218	1,290	987	1,965
Management, scientific, and technical consulting	5416	D	14	D	D	396
Advertising and related services	5418	2	2	2	3	3
Other	na	1,114	1,076	D	2,133	3,472
Other industries	na	65	132	98	135	132
Agriculture, forestry, fishing, and hunting	11	D	9	9	10	11
Construction	23	7	2	7	1	1
Retail trade	44–45	4	16	18	60	D
Transportation and warehousing	48–49	0	*	3	1	1
Real estate, rental, and leasing	53	*	1	1	2	2
Real estate	531	0	0	0	0	0
Rental and leasing (except real estate)	532	*	1	1	2	2
Management of nonbank companies and enterprises	55	D	60	8	10	31
Administration, support, and waste management	56	6	33	41	46	D
Health care and social assistance	62	0	0	0	0	0
Accommodation and food services	72	*	3	3	3	3
Accommodation	721	0	0	0	0	*
Food services and drinking places	722	*	3	3	3	3
Miscellaneous services	na	7	7	8	2	12

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data for 2008 are revised. Data are for majority-owned (> 50%) nonbank foreign affiliates of nonbank U.S. parent companies. Nonbank U.S. Affiliates for 1997–2006; bank and nonbank U.S. Affiliates for 2007 and forward. Data include R&D expenditures performed by affiliates, whether for themselves or for others under contract. Data exclude R&D expenditures by others for affiliates under contract. Industries are classified by the Bureau of Economic Analysis using the International Survey Industry classification system based on the NAICS. Data for 2004–08 are based on the 2002 NAICS.

SOURCE: Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), http://www.bea.gov/international/index.htm#omc, accessed 14 January 2013.

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Appendix table 4-28

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by selected NAICS industry of affiliate: 2009 and 2010

(Millions of current U.S. dollars)

Industry	NAICS code	2009	2010
All industries	na	39,205	39,470
Mining	21	119	38
Oil and gas extraction	211	D	10
Other	na	D	27
Manufacturing	31–33	27,141	27,571
Food	311	514	464
Beverage and tobacco products	312	71	77
Textile, apparel, and leather products	313–16	68	70
Wood products	321	2	2
Paper manufacturing	322	66	68
Printing and related support activities	323	9	23
Petroleum and coal products	324	D	D
Chemicals	325	8,757	8,532
Basic chemicals	3251	174	212
Resin, synthetic rubber, fiber, and filament	3252	295	290
Pharmaceuticals and medicines	3254	7,436	7,262
Soap, cleaning compound, and toilet preparation	3256	222	208
Other	na	630	561
Plastic and rubber products	326	329	386
Nonmetallic mineral products	327	93	109
Primary and fabricated metals	na	245	281
Primary metals	331	61	108
Fabricated metal products	332	184	173
Machinery	333	1,361	1,448
Agriculture, construction, and mining machinery	3331	421	477
Industrial machinery	3332	280	295
Other	na	661	676
Computer and electronic products	334	6,108	6,030
Computer and peripheral equipment	3341	963	1,068
Communication equipment	3342	D	D
Audio and video equipment	3343	D	D
Semiconductor and other electronic components	3344	2,590	2,808
Navigational, measuring, and other instruments	3345	870	879
Magnetic and optical media	3346	*	*
Electrical equipment, appliances, and components	335	532	703
Transportation equipment	336	7,837	7,584
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	7,276	7,036
Other	na	561	547
Furniture and related products	337	7	29
Miscellaneous manufacturing	339	D	D
Wholesale trade	42	2,074	1,975
Professional and commercial equipment and supplies	4234	1,165	1,296
Petroleum and petroleum products	4247	2	2
Drugs and druggists' sundries	4242	514	D
Other	na	393	D
Retail trade	44–45	D	26
General merchandise stores	452	D	1
Clothing and clothing accessories stores	448	0	0
Other	–	D	25
Information	51	1,698	2,018
Publishing	511	1,407	D
Motion picture and sound recording industries	512	0	0
Broadcasting (except Internet) and telecommunications	na	D	5
Broadcasting (except Internet)	515	*	1

Appendix table 4-28

R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by selected NAICS industry of affiliate: 2009 and 2010

(Millions of current U.S. dollars)

Industry	NAICS code	2009	2010
Telecommunications	517	D	4
Data processing, hosting, and related services	518	D	14
Other information services	519	252	D
Finance and insurance	52	1	8
Depository credit intermediation (banking)	5221, 551111	0	*
Finance (except depository institutions)	other 522, 523, 525	1	7
Insurance carriers and related activities	524	0	0
Professional, scientific, and technical services	54	8,080	7,759
Architectural, engineering, and related services	5413	107	102
Computer systems design and related services	5415	2,270	2,097
Management, scientific, and technical consulting	5416	418	344
Advertising and related services	5418	3	1
Other	na	5,284	5,215
Other industries	na	D	76
Agriculture, forestry, fishing, and hunting	11	4	D
Construction	23	1	2
Utilities	22	1	5
Transportation and warehousing	48–49	3	3
Real estate, rental, and leasing	53	1	1
Management of nonbank companies and enterprises	55 (except 551111)	4	4
Administration, support, and waste management	56	23	27
Health care and social assistance	62	0	0
Accommodation and food services	72	4	D
Miscellaneous services	na	D	10

* = ≤ $500,000; D = suppressed to avoid disclosure of confidential information; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data for 2010 are preliminary estimates. Data are for majority-owned (> 50%) foreign affiliates of U.S. parent companies. Data include R&D expenditures performed by affiliates, whether for themselves or for others under contract. Data exclude R&D expenditures by others for affiliates under contract. Industries are classified by the Bureau of Economic Analysis using the International Survey Industry classification system based on the NAICS. Data for 2009–10 are based on the 2007 NAICS.

SOURCE: Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), http://www.bea.gov/international/index.htm#omc, accessed 14 January 2013.

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Appendix table 4-29

R&D performed in the United States by U.S. multinational company parent companies, by NAICS industry: 2004–08

(Millions of current U.S. dollars)

Industry	NAICS code	2004	2005	2006	2007	2008
All industries	na	164,189	177,598	184,428	203,678	198,762
Mining	21	D	403	538	644	685
Oil and gas extraction	211	D	D	8	14	16
Other	na	418	D	530	631	669
Utilities	22	26	31	28	29	17
Manufacturing	31–33	129,246	143,335	146,435	159,182	150,405
Food	311	1,636	1,311	1,739	1,862	1,838
Beverage and tobacco products	312	125	502	497	336	368
Textiles, apparel, and leather products	313–16	85	195	216	152	131
Wood products	321	96	113	121	46	74
Paper manufacturing	322	1,375	1,408	1,596	1,474	1,152
Printing and related support activities	323	132	96	52	45	92
Petroleum and coal products	324	1,327	2,155	2,289	2,583	2,642
Chemicals	325	41,459	45,004	44,832	51,033	46,377
Basic chemicals	3251	1,464	1,381	1,420	1,601	1,719
Resin, synthetic rubber, fiber, and filament	3252	2,557	2,510	2,417	2,541	2,571
Pharmaceuticals and medicines	3254	32,507	36,352	36,698	41,962	37,803
Soap, cleaning compound, and toilet preparation	3256	2,612	2,510	2,200	2,780	1,931
Other	na	2,318	2,252	2,097	2,149	2,352
Plastic and rubber products	326	870	1,079	1,287	1,304	1,290
Nonmetallic mineral products	327	377	389	397	406	361
Primary and fabricated metals	na	1,513	1,165	1,082	991	1,133
Primary metals	331	487	544	444	439	474
Fabricated metal products	332	1,026	621	638	553	660
Machinery	333	4,968	5,492	5,892	7,398	8,017
Agriculture, construction, and mining machinery	3331	1,770	1,955	2,359	2,429	2,620
Industrial machinery	3332	1,066	1,210	2,024	2,155	1,907
Other	na	2,132	2,327	1,509	2,815	3,490
Computer and electronic products	334	34,187	36,560	40,124	41,169	36,870
Computer and peripheral equipment	3341	7,176	7,015	8,081	8,027	6,958
Communication equipment	3342	9,253	9,255	9,336	12,043	9,213
Audio and video equipment	3343	315	360	D	D	D
Semiconductor and other electronic components	3344	13,021	15,020	16,748	15,374	14,234
Navigational, measuring, and other instruments	3345	D	4,807	5,478	5,202	5,934
Magnetic and optical media	3346	D	103	D	D	D
Electrical equipment, appliances, and components	335	1,679	1,618	2,748	2,056	2,605
Transportation equipment	336	35,580	41,692	38,809	43,543	42,438
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	15,264	18,687	14,840	15,610	13,329
Other	na	20,316	23,005	23,969	27,933	29,109
Furniture and related products	337	133	217	226	244	248
Miscellaneous manufacturing	339	3,703	4,341	4,528	4,540	4,768
Wholesale trade	42	D	5,072	5,428	5,876	7,505
Professional and commercial equipment and supplies	4234	D	1,650	1,621	1,625	3,110
Petroleum and petroleum products	4247	D	D	D	D	D
Drugs and druggists' sundries	4242	287	D	D	D	D
Other	na	3,028	2,889	3,289	3,653	3,633
Information	51	14,657	13,161	15,047	17,981	18,621
Publishing	511	11,029	9,504	10,995	12,267	13,595
Motion picture and sound recording industries	512	18	D	D	D	D
Broadcasting (except Internet) and telecommunications	na	587	D	D	D	D
Broadcasting (except Internet)	515	88	D	D	D	D
Telecommunications	517	499	D	236	1,262	D
Internet, data processing, and other information services	516, 518, 519	3,023	3,197	3,762	4,277	3,581
Finance (except depository institutions) and insurance	52	221	228	260	180	200
Finance (except depository institutions)	na	103	146	166	D	142

Appendix table 4-29

R&D performed in the United States by U.S. multinational company parent companies, by NAICS industry: 2004–08

(Millions of current U.S. dollars)

Industry	NAICS code	2004	2005	2006	2007	2008
Securities, commodity contracts, and other intermediation and related activities	523	D	D	D	D	140
Other finance (except depository institutions)	na	D	D	D	D	3
Insurance carriers and related activities	524	118	82	94	D	58
Professional, scientific, and technical services	54	13,216	13,750	15,007	16,162	16,976
Architectural, engineering, and related services	5413	154	D	149	149	130
Computer systems design and related services	5415	8,983	9,133	9,246	10,081	10,821
Management, scientific, and technical consulting	5416	132	115	D	D	24
Advertising and related services	5418	D	D	D	D	1
Other	na	D	4,323	5,537	5,852	6,000
Other industries	na	1,523	1,617	1,684	3,623	4,354
Agriculture, forestry, fishing, and hunting	11	39	46	12	13	8
Construction	23	3	4	4	D	D
Retail trade	44–45	D	D	D	D	D
Transportation and warehousing	48–49	1	D	D	D	D
Real estate, rental, and leasing	53	D	D	D	D	D
Real estate	531	0	0	0	0	0
Rental and leasing (except real estate)	532	D	D	D	D	D
Management of nonbank companies and enterprises	55	D	0	0	0	1
Administration, support, and waste management	56	D	D	D	D	D
Health care and social assistance	62	24	D	D	D	D
Accommodation and food services	72	9	D	D	D	57
Accommodation	721	0	0	0	0	0
Food services and drinking places	722	9	D	D	D	57
Miscellaneous services	na	174	189	248	265	298

D = suppressed to avoid disclosure of confidential information; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data for 2008 are revised. Industries are classified using Bureau of Economic Analysis International Survey Industry classification system based on the NAICS. Data for 2004–08 are based on the 2002 NAICS and are not fully comparable with earlier data. Data include R&D performed by nonbank parent companies of U.S. multinational companies (MNCs), regardless of funding source, whether for the performer itself or others, including R&D performed for federal government; data exclude R&D conducted by others under contract. A U.S. MNC parent company is a company that resides in the United States and owns or controls at least 10% of voting securities or the equivalent of foreign business enterprise.

SOURCE: Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), http://www.bea.gov/international/index.htm#omc, accessed January 2013.

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Appendix table 4-30

R&D performed in the United States by U.S. multinational company parent companies, by NAICS industry: 2009–10

(Millions of current U.S. dollars)

Industry	NAICS code	2009	2010
All industries	na	207,297	212,513
Mining	21	560	554
Oil and gas extraction	211	D	8
Other mining	na	D	546
Manufacturing	31–33	157,731	161,230
Food	311	1,927	2,219
Beverage and tobacco products	312	338	313
Textiles, apparel, and leather products	313–16	182	217
Wood products	321	80	87
Paper manufacturing	322	1,069	1,176
Printing and related support activities	323	133	74
Petroleum and coal products	324	2,924	3,431
Chemicals	325	47,244	49,866
Basic chemicals	3251	913	1,000
Resins and synthetic rubber, fiber, and filament	3252	2,721	3,233
Pharmaceuticals and medicines	3254	39,576	41,616
Soap, cleaning compound, and toilet preparation	3256	D	1,936
Other	na	D	2,081
Plastic and rubber products	326	1,109	1,250
Nonmetallic mineral products	327	388	383
Primary and fabricated metals	na	1,217	1,165
Primary metals	331	453	481
Fabricated metal products	332	764	684
Machinery	333	6,743	7,730
Agriculture, construction, and mining machinery	3331	2,330	2,814
Industrial machinery	3332	1,690	1,999
Other machinery	na	2,724	2,917
Computer and electronic products	334	35,823	34,451
Computer and peripheral equipment	3341	6,717	4,919
Communication equipment	3342	7,991	7,876
Audio and video equipment	3343	D	D
Semiconductor and other electronic components	3344	12,893	13,642
Navigational, measuring, and other instruments	3345	7,557	7,309
Magnetic and optical media	3346	D	D
Electrical equipment, appliances, and components	335	3,040	2,999
Transportation equipment	336	48,960	48,622
Motor vehicles, bodies and trailers, and parts	3361, 3362, 3363	10,316	12,385
Other	na	38,643	36,237
Furniture and related products	337	237	217
Miscellaneous manufacturing	339	6,317	7,029
Wholesale trade	42	6,440	6,056
Professional and commercial equipment and supplies	4234	1,173	1,632
Petroleum and petroleum products	4247	D	D
Drugs and druggists' sundries	4242	1,322	1,356
Other	na	D	D
Retail trade	44–45	D	D
Clothing and clothing accessories stores	448	8	11
General merchandise stores	452	0	0
Other	na	D	D
Information	51	21,035	22,165
Publishing	511	14,456	14,522
Motion picture and sound recording industries	512	D	D
Broadcasting (except Internet) and telecommunications	na	1,128	1,157
Broadcasting (except Internet)	515	D	D
Telecommunications	517	D	D

Appendix table 4-30

R&D performed in the United States by U.S. multinational company parent companies, by NAICS industry: 2009–10

(Millions of current U.S. dollars)

Industry	NAICS code	2009	2010
Data processing, hosting, and related services	518	750	806
Other	na	D	D
Finance and insurance	52	186	190
Depository credit intermediation (banking)	5221	0	0
Finance (except depository institutions)	na	D	D
Insurance carriers and related activities	524	D	D
Professional, scientific, and technical services	54	15,931	17,557
Architectural, engineering, and related services	5413	42	118
Computer systems design and related services	5415	10,134	11,142
Management, scientific, and technical consulting	5416	71	D
Advertising and related services	5418	1	D
Other	na	5,683	6,208
Other industries	na	D	D
Agriculture, forestry, fishing, and hunting	11	D	D
Construction	23	4	D
Utilities	22	6	12
Transportation and warehousing	48–49	68	56
Real estate, rental, and leasing	53	D	D
Management of nonbank companies and enterprises	55	0	*
Administration, support, and waste management	56	D	988
Health care and social assistance	62	D	D
Accommodation and food services	72	37	51
Miscellaneous services	na	344	159

* = < $500,000; D = suppressed to avoid disclosure of confidential information; na = not applicable.

NAICS = North American Industry Classification System.

NOTES: Data are for all parent companies of U.S. multinational companies (MNCs). (Before 2009, data were for nonbank U.S. MNC parent companies.) A U.S. MNC parent company is defined as a company that resides in the United States and owns or controls at least 10% of voting securities or the equivalent of foreign business enterprise. Industries are classified by the Bureau of Economic Analysis using the International Survey Industry classification system based on the NAICS. Data are for R&D performed regardless of funding source, whether for the performer itself or others, including R&D performed for the federal government; data exclude R&D conducted by others under contract.

SOURCE: Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), http://www.bea.gov/international/index.htm#omc, accessed January 2013.

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Appendix table 4-31

Business expenditures for R&D, by industry and selected country/economy: 2010 or most recent year

(Millions of current PPP dollars)

Industry	ISIC, Revision 3.1	United States (2009)	China (2009)	Japan (2010)	Germany (2008)	France (2007)	South Korea (2010)	United Kingdom (2009)
Total business enterprise	01–99	282,393	112,785	107,853	56,765	27,718	39,826	23,688
Total manufacturing	15–37	195,824	94,790	93,985	50,516	23,163	34,926	17,511
Food products, beverages, and tobacco	15, 16	4,669	4,005	2,133	349	580	369	446
Textiles, textile products, leather, and footwear	17–19	428	2,865	1,094	246	190	203	16
Wood, paper, printing, and publishing	20–22	2,639	1,543	765	270	113	94	39
Paper and paper products	21	1,249	977	NA	NA	57	43	NA
Publishing, printing, and reproduction of recorded media	22	878	291	NA	NA	23	43	NA
Coke, refined petroleum products, and nuclear fuel	23	606	985	469	116	257	280	428
Chemicals and chemical products	24	53,328	11,590	18,139	8,188	5,555	3,001	7,655
Chemicals (except pharmaceuticals)	24, except 2423	8,392	8,019	6,680	3,981	1,586	2,105	935
Pharmaceuticals	2423	44,936	3,572	11,459	4,207	3,969	896	6,720
Rubber and plastic products	25	2,468	2,273	2,459	1,112	850	615	88
Other nonmetallic mineral products	26	1,100	2,165	1,293	341	318	253	75
Basic metals	27	837	11,332	2,811	532	336	678	71
Fabricated metal products (except machinery and equipment)	28	2,040	1,748	703	741	272	314	141
Machinery and equipment nec	29	9,138	13,864	9,308	6,212	1,271	2,239	1,351
Office, accounting, and computing machinery	30	8,095	NA	3,740	876	192	295	161
Electrical machinery and apparatus nec	31	3,334	10,627	8,910	1,759	1,211	901	893
Radio, TV, and communication equipment	32	33,482	NA	16,451	4,021	2,883	19,025	975
Electronic valves, tubes, and components	321	19,983	NA	NA	NA	1,481	14,827	NA
Radio, TV, and communication equipment nec	32, except 321	13,499	NA	NA	NA	1,402	4,198	NA
Instruments, watches, and clocks	33	22,556	NA	5,277	4,042	1,737	974	762
Motor vehicles	34	11,397	NA	18,484	18,629	3,871	4,856	1,726
Other transportation equipment	35	36,940	NA	795	2,880	3,299	705	2,528
Aircraft and spacecraft	353	34,554	NA	390	NA	2,993	85	2,226
Railroad and other transportation equipment nec	352, 359	NA	NA	283	NA	207	95	41
Furniture, manufacturing nec	36	2,767	NA	1,140	198	213	97	148
Furniture	361	396	184	94	NA	146	54	NA
Manufacturing nec	369	2,371	NA	1,047	NA	67	43	NA
Recycling	37	NA	NA	NA	5	14	25	8
Total nonmanufacturing		86,569	17,995	13,868	6,249	4,555	4,900	6,177
Agriculture, hunting, forestry, and fishing	01–14, 40–99	NA	897	41	123	392	32	169
Mining and quarrying	10–14	1,489	4,520	90	34	203	23	169
Electricity, gas, and water	40, 41	246	2,853	597	162	450	357	114
Construction	45	115	1,436	1,026	70	110	905	27
Total services	50–99	84,719	8,288	12,114	5,860	3,401	3,583	5,698
Wholesale and retail trade, repairs	50–52	3,115	NA	362	NA	NA	655	116
Hotels and restaurants	55	NA	NA	NA	NA	NA	1	NA
Transport, storage, and communications	60–64	1,674	NA	2,712	307	906	511	1,690

Appendix table 4-31

Business expenditures for R&D, by industry and selected country/economy: 2010 or most recent year

(Millions of current PPP dollars)

Industry	ISIC, Revision 3.1	United States (2009)	China (2009)	Japan (2010)	Germany (2008)	France (2007)	South Korea (2010)	United Kingdom (2009)
Telecommunications	642	1,496	NA	NA	NA	878	421	1,658
Financial intermediation	65–67	1,911	NA	23	NA	NA	2	906
Computer and related activities	72	44,186	NA	2,445	NA	1,928	1,395	2,205
Software consultancy and supply	722	38,954	NA	NA	NA	1,322	1,106	NA
Other computer and related activities nec	72, except 722	5,232	NA	NA	NA	606	289	NA
Research and development	73	17,270	NA	6,123	1,515	52	207	666
Other business activities	74	15,117	NA	450	1,451	458	647	NA
Community, social, and personal services	75–99	1,182	NA	NA	NA	56	70	116

NA = not available; nec = not elsewhere classified.

ISIC = International Standard Industrial Classification, Revision 3.1; PPP = purchasing power parity.

NOTES: U.S. business R&D data in ANBERD are for 2009; U.S. Business R&D and Innovation Survey 2010 statistics were used elsewhere in this chapter. Detail may not add to total. Industry classifications for France and South Korea are based on product field. For all other countries, data are based on main activity.

SOURCE: Organisation for Economic Co-operation and Development (ANBERD), Statistical Analysis Database (STAN), R&D Expenditures in Industry, http://stats.oecd.org/Index.aspx?DataSetCode=ANBERD2011_REV3, accessed 7 February, 2013.

Appendix table 4-32

Federal budget authority for R&D and R&D plant, by budget function: FYs 2000–13

			Nondefense functions																
Fiscal year	Total, all functions	National defense (050)	Subtotal, nondefense functions	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)
	Current $millions																		
2000	83,581	43,161	40,420	200	5,593	8,437	1,000	2,082	1,561	530	1,664	46	429	18,121	na	25	645	73	14
2001	91,505	46,202	45,303	252	6,353	8,951	1,320	2,138	1,826	468	1,654	54	424	21,023	na	30	719	88	3
2002	103,057	53,731	49,326	279	6,605	9,227	1,332	2,175	1,909	549	1,889	50	426	23,998	na	37	756	91	3
2003	118,065	63,708	54,359	269	6,999	9,677	1,412	2,198	2,042	534	1,888	48	444	27,677	na	38	817	316	0
2004	126,270	70,344	55,926	264	7,352	9,746	1,369	2,244	1,910	499	1,881	47	469	28,480	na	47	866	752	0
2005	131,259	74,641	56,617	255	7,477	9,656	1,324	2,245	2,094	475	1,866	45	495	29,129	na	35	742	779	0
2006	136,019	78,737	57,281	255	7,539	10,401	1,244	2,219	2,118	461	1,730	55	523	28,932	na	27	769	1,008	0
2007	141,890	82,658	59,233	246	8,712	10,988	1,922	2,096	1,950	516	1,380	49	577	29,581	na	27	820	369	0
2008	144,391	85,129	59,261	255	9,007	10,672	2,076	2,202	1,997	560	1,413	50	549	29,212	na	27	886	355	0
2009	164,292	85,642	78,650	255	14,128	9,060	3,794	2,615	2,249	1,051	1,461	62	553	42,051	30	63	943	335	0
Non-ARRA	145,553	85,342	60,211	255	9,941	8,374	2,234	2,371	2,073	641	1,357	62	543	30,989	30	63	943	335	0
ARRA	18,739	300	18,439	0	4,187	686	1,560	244	176	410	104	0	10	11,062	0	0	0	0	0
2010	148,962	86,789	62,174	194	10,509	8,232	2,570	2,430	2,206	668	1,517	109	581	31,693	36	77	1,034	318	0
2011	144,379	83,226	61,153	196	10,581	8,658	2,265	2,314	1,768	650	1,420	83	636	30,990	180	68	1,160	184	0
2012 preliminary	140,568	78,778	61,790	196	10,610	8,924	2,398	2,291	1,957	739	1,446	57	650	31,188	23	34	1,164	113	0
2013 proposed	142,235	77,296	64,938	196	10,440	9,134	2,734	2,431	1,961	2,081	1,593	104	656	31,480	30	74	1,166	858	0
	2005 constant $millions																		
2000	93,943	48,512	45,431	225	6,286	9,483	1,124	2,340	1,755	596	1,870	52	482	20,368	na	28	725	82	16
2001	100,489	50,738	49,751	277	6,977	9,830	1,450	2,348	2,005	514	1,816	59	466	23,087	na	33	790	97	3
2002	111,329	58,044	53,285	301	7,135	9,968	1,439	2,350	2,062	593	2,041	54	460	25,924	na	40	817	98	3
2003	124,989	67,444	57,547	285	7,409	10,245	1,495	2,327	2,162	565	1,999	51	470	29,300	na	40	865	335	0
2004	130,377	72,632	57,745	273	7,591	10,063	1,414	2,317	1,972	515	1,942	49	484	29,406	na	49	894	776	0
2005	131,259	74,641	56,617	255	7,477	9,656	1,324	2,245	2,094	475	1,866	45	495	29,129	na	35	742	779	0
2006	131,546	76,148	55,397	247	7,291	10,059	1,203	2,146	2,048	446	1,673	53	506	27,981	na	26	744	975	0
2007	133,280	77,642	55,639	231	8,183	10,321	1,805	1,969	1,832	485	1,296	46	542	27,786	na	25	770	347	0
2008	132,554	78,150	54,403	234	8,269	9,797	1,906	2,021	1,833	514	1,297	46	504	26,817	na	25	813	326	0
2009	148,681	77,504	71,176	231	12,786	8,199	3,433	2,367	2,035	951	1,322	56	500	38,055	27	57	853	303	0
Non-ARRA	131,722	77,233	54,490	231	8,996	7,578	2,022	2,146	1,876	580	1,228	56	491	28,044	27	57	853	303	0
ARRA	16,958	271	16,687	0	3,789	621	1,412	221	159	371	94	0	9	10,011	0	0	0	0	0
2010	133,574	77,824	55,751	174	9,423	7,382	2,305	2,179	1,978	599	1,360	98	521	28,419	32	69	927	285	0
2011	126,960	73,185	53,775	172	9,304	7,613	1,992	2,035	1,555	572	1,249	73	559	27,251	158	60	1,020	162	0
2012 preliminary	121,368	68,018	53,350	169	9,161	7,705	2,070	1,978	1,690	638	1,248	49	561	26,928	20	29	1,005	98	0
2013 proposed	120,804	65,650	55,154	166	8,867	7,758	2,322	2,065	1,666	1,767	1,353	88	557	26,737	25	63	990	729	0

Appendix table 4-32

Federal budget authority for R&D and R&D plant, by budget function: FYs 2000–13

			Nondefense functions																
Fiscal year	Total, all functions	National defense (050)	Subtotal, nondefense functions	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)
	Share of R&D and R&D plant total (%)																		
2000	100.0	51.6	48.4	0.2	6.7	10.1	1.2	2.5	1.9	0.6	2.0	0.1	0.5	21.7	na	*	0.8	0.1	*
2001	100.0	50.5	49.5	0.3	6.9	9.8	1.4	2.3	2.0	0.5	1.8	0.1	0.5	23.0	na	*	0.8	0.1	*
2002	100.0	52.1	47.9	0.3	6.4	9.0	1.3	2.1	1.9	0.5	1.8	*	0.4	23.3	na	*	0.7	0.1	*
2003	100.0	54.0	46.0	0.2	5.9	8.2	1.2	1.9	1.7	0.5	1.6	*	0.4	23.4	na	*	0.7	0.3	0.0
2004	100.0	55.7	44.3	0.2	5.8	7.7	1.1	1.8	1.5	0.4	1.5	*	0.4	22.6	na	*	0.7	0.6	0.0
2005	100.0	56.9	43.1	0.2	5.7	7.4	1.0	1.7	1.6	0.4	1.4	*	0.4	22.2	na	*	0.6	0.6	0.0
2006	100.0	57.9	42.1	0.2	5.5	7.6	0.9	1.6	1.6	0.3	1.3	*	0.4	21.3	na	*	0.6	0.7	0.0
2007	100.0	58.3	41.7	0.2	6.1	7.7	1.4	1.5	1.4	0.4	1.0	*	0.4	20.8	na	*	0.6	0.3	0.0
2008	100.0	59.0	41.0	0.2	6.2	7.4	1.4	1.5	1.4	0.4	1.0	*	0.4	20.2	na	*	0.6	0.2	0.0
2009	100.0	52.1	47.9	0.2	8.6	5.5	2.3	1.6	1.4	0.6	0.9	*	0.3	25.6	0.0	*	0.6	0.2	0.0
Non-ARRA	100.0	58.6	41.4	0.2	6.8	5.8	1.5	1.6	1.4	0.4	0.9	*	0.4	21.3	0.0	*	0.6	0.2	0.0
ARRA	100.0	1.6	98.4	0.0	22.3	3.7	8.3	1.3	0.9	2.2	0.6	*	0.1	59.0	0.0	0.0	0.0	0.0	0.0
2010	100.0	58.3	41.7	0.1	7.1	5.5	1.7	1.6	1.5	0.4	1.0	0.1	0.4	21.3	0.0	0.1	0.7	0.2	0.0
2011	100.0	57.6	42.4	0.1	7.3	6.0	1.6	1.6	1.2	0.5	1.0	0.1	0.4	21.5	0.1	*	0.8	0.1	0.0
2012 preliminary	100.0	56.0	44.0	0.1	7.5	6.3	1.7	1.6	1.4	0.5	1.0	*	0.5	22.2	0.0	*	0.8	0.1	0.0
2013 proposed	100.0	54.3	45.7	0.1	7.3	6.4	1.9	1.7	1.4	1.5	1.1	0.1	0.5	22.1	0.0	0.1	0.8	0.6	0.0

* = < 0.05%; na = not applicable.

ARRA = American Recovery and Reinvestment Act of 2009.

NOTES: Detail may not add to total due to rounding. Data are from agencies' submissions to the Office of Management and Budget (OMB) per MAX Schedule C, budget justification documents, and supplemental data obtained from agencies' budget offices. National Science Foundation (NSF) data on budget authority for R&D plant are not available before FY 2000. OMB reclassified the Department of Homeland Security's (DHS's) Science and Technology Directorate as administration of justice starting in FY 2013. In FY 2009, the National Aeronautics and Space Administration (NASA) adjusted its R&D reporting to more closely match survey data reported to NSF. In FY 2007, DHS changed its R&D portfolio to reclassify funding in defense and most administration of justice as general science and basic research. In FY 2004, DHS changed its R&D portfolio to reclassify funding in general science and basic research and in agriculture as administration of justice. In FY 2000, NASA transferred funding for the space station program from R&D to R&D plant; this change is reflected in budget authority for space research and technology.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), Federal R&D Funding by Budget Function (annual series). All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

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Appendix table 4-33

Federal budget authority for R&D, R&D plant, and basic research, by budget function: FYs 2000–13

(Millions of dollars)

			Nondefense functions																
Fiscal year	Total, all functions	National defense (050)	Subtotal, nondefense functions	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)
										R&D									
2000	78,664	42,580	36,085	200	4,977	5,363	996	1,999	1,426	406	1,636	46	418	17,869	na	25	645	73	6
2001	86,756	45,713	41,045	252	5,468	6,126	1,314	2,096	1,657	429	1,640	54	411	20,758	na	30	719	88	3
2002	97,624	53,016	44,608	279	5,753	6,270	1,327	2,160	1,606	467	1,838	50	411	23,560	na	37	756	91	3
2003	112,544	63,048	49,496	269	6,129	7,355	1,403	2,151	1,708	463	1,869	48	430	26,517	na	38	817	299	0
2004	121,867	69,593	52,274	264	6,466	7,612	1,343	2,168	1,750	454	1,863	47	459	28,251	na	47	866	684	0
2005	126,601	74,047	52,553	255	6,570	7,300	1,296	2,168	1,820	423	1,847	45	470	28,824	na	35	742	758	0
2006	131,624	78,037	53,586	255	6,691	8,204	1,195	2,120	1,869	390	1,711	55	495	28,797	na	27	769	1,008	0
2007	138,087	82,272	55,816	246	7,809	9,024	1,893	1,936	1,857	428	1,361	49	536	29,461	na	27	820	369	0
2008	140,113	84,713	55,400	255	8,234	8,323	1,896	2,106	1,864	450	1,394	50	497	29,063	na	27	886	355	0
2009	156,009	85,166	70,843	255	11,840	6,891	3,318	2,245	1,935	618	1,440	62	479	40,389	30	63	943	335	0
Non-ARRA	140,903	84,866	56,037	255	8,885	6,205	2,014	2,171	1,935	507	1,336	62	469	30,827	30	63	943	335	0
ARRA	15,106	300	14,806	0	2,955	686	1,304	74	0	111	104	0	10	9,562	0	0	0	0	0
2010	146,596	86,517	60,079	194	9,280	8,232	2,455	2,237	2,043	550	1,496	109	535	31,488	36	77	1,034	313	0
2011	142,457	82,972	59,484	196	9,483	8,398	2,233	2,171	1,916	548	1,395	83	578	30,903	180	68	1,160	172	0
2012 preliminary	138,146	78,471	59,674	196	9,372	8,642	2,367	2,137	1,875	654	1,421	57	609	31,024	23	34	1,164	99	0
2013 proposed	139,554	77,007	62,545	196	9,433	8,884	2,702	2,272	1,878	1,583	1,569	104	620	31,317	30	74	1,166	717	0
										R&D plant									
2000	4,917	581	4,335	0	616	3,074	4	83	135	124	28	0	11	252	na	0	0	0	8
2001	4,749	489	4,258	0	885	2,825	6	42	169	39	14	0	13	265	na	0	0	0	0
2002	5,433	715	4,718	0	852	2,957	5	15	303	82	51	0	15	438	na	0	0	0	0
2003	5,521	660	4,863	0	870	2,322	9	47	334	71	19	0	14	1,160	na	0	0	17	0
2004	4,403	751	3,652	0	886	2,134	26	76	160	45	18	0	10	229	na	0	0	68	0
2005	4,658	594	4,064	0	907	2,356	28	77	274	52	19	0	25	305	na	0	0	21	0
2006	4,395	700	3,695	0	848	2,197	49	99	249	71	19	0	28	135	na	0	0	0	0
2007	3,803	386	3,417	0	903	1,964	29	160	93	88	19	0	41	120	na	0	0	0	0
2008	4,278	416	3,861	0	773	2,349	180	96	133	110	19	0	52	149	na	0	0	0	0
2009	8,283	476	7,807	0	2,288	2,169	476	370	314	433	21	0	74	1,662	0	0	0	0	0
Non-ARRA	4,650	476	4,174	0	1,056	2,169	220	200	138	134	21	0	74	162	0	0	0	0	0
ARRA	3,633	0	3,633	0	1,232	0	256	170	176	299	0	0	0	1,500	0	0	0	0	0
2010	2,366	272	2,095	0	1,229	0	115	193	163	118	21	0	46	205	0	0	0	5	0
2011	1,922	254	1,669	0	1,098	260	32	143	-148	102	25	0	58	87	0	0	0	12	0
2012 preliminary	2,422	307	2,116	0	1,238	282	31	154	82	85	25	0	41	164	0	0	0	14	0
2013 proposed	2,681	289	2,393	0	1,007	250	32	159	83	498	24	0	36	163	0	0	0	141	0

Appendix table 4-33

Federal budget authority for R&D, R&D plant, and basic research, by budget function: FYs 2000–13

(Millions of dollars)

			Nondefense functions																
Fiscal year	Total, all functions	National defense (050)	Subtotal, nondefense functions	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)
									Basic research										
2000	19,470	1,184	18,286	42	4,722	1,616	36	146	651	39	542	0	107	10,099	0	0	266	20	0
2001	21,376	1,303	20,073	50	5,187	1,695	40	215	749	50	17	0	112	11,642	0	0	289	27	0
2002	23,848	1,404	22,444	53	5,561	1,912	45	471	762	56	17	0	115	12,957	0	0	465	30	0
2003	25,323	1,409	23,913	18	5,907	2,206	40	185	824	53	23	1	125	14,162	0	0	327	42	0
2004	26,529	1,380	25,148	18	6,198	2,473	32	201	780	46	20	0	125	14,850	0	0	347	58	0
2005	27,678	1,508	26,170	18	6,238	2,486	31	195	789	53	65	0	130	15,826	0	0	297	42	0
2006	27,336	1,490	25,846	18	6,406	2,299	8	195	805	66	0	0	131	15,532	0	0	318	68	0
2007	28,166	1,533	26,632	18	6,887	2,318	7	260	821	92	2	0	149	15,637	0	0	335	106	0
2008	28,740	1,631	27,109	18	7,260	2,183	16	210	790	98	0	0	146	15,909	0	0	354	125	0
2009	36,401	1,772	34,628	18	10,727	932	28	219	799	152	0	0	155	21,108	0	0	375	115	0
Non-ARRA	28,161	1,769	26,391	18	7,913	900	28	219	799	112	0	0	145	15,767	0	0	375	115	0
ARRA	8,240	3	8,237	0	2,814	32	0	0	0	40	0	0	10	5,341	0	0	0	0	0
2010	29,614	1,849	27,765	0	8,578	1,109	57	223	881	131	0	0	174	16,125	0	0	413	74	0
2011	29,888	1,940	27,948	0	8,738	1,199	47	218	823	154	0	0	207	16,002	0	0	438	122	0
2012 preliminary	30,193	2,172	28,021	0	8,677	1,342	59	219	811	166	0	0	208	16,037	0	0	444	58	0
2013 proposed	30,738	2,185	28,552	0	8,975	1,379	18	227	883	193	0	0	213	15,999	0	0	446	219	0

na = not applicable.

ARRA = American Recovery and Reinvestment Act of 2009.

NOTES: Detail may not add to total due to rounding. Data are from agencies' submissions to the Office of Management and Budget (OMB) per MAX Schedule C, budget justification documents, and supplemental data obtained from agencies' budget offices. National Science Foundation (NSF) data on budget authority for R&D plant are not available before FY 2000. OMB reclassified the Department of Homeland Security's (DHS's) Science and Technology Directorate as administration of justice starting in FY 2013. In FY 2009, the National Aeronautics and Space Administration (NASA) adjusted its R&D reporting to more closely match survey data reported to NSF. In FY 2007, DHS changed its R&D portfolio to reclassify funding in defense and most administration of justice as general science and basic research. In FY 2004, DHS changed its R&D portfolio to reclassify funding in general science and basic research and in agriculture as administration of justice. In FY 2000, NASA transferred funding for the space station program from R&D to R&D plant; this change is reflected in budget authority for space research and technology.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), Federal R&D Funding by Budget Function (annual series). All NSF/NCSES reports are available at http://www.nsf.gov/statistics/.

Science and Engineering Indicators 2014

Appendix table 4-34

Federal obligations for R&D and R&D plant, by character of work: FYs 1953–2012

Fiscal year	Total, R&D and R&D plant	R&D				R&D plant
		All R&D	Basic	Applied	Development	
	Current $millions					
1953	2,167	1,920	116	NA	NA	248
1954	1,918	1,762	116	NA	NA	156
1955	2,252	2,045	130	NA	NA	207
1956	3,267	2,988	206	646	2,136	279
1957	4,389	3,932	262	662	3,007	457
1958	4,906	4,570	335	744	3,491	336
1959	7,123	6,694	466	874	5,353	429
1960	8,080	7,552	590	1,282	5,679	528
1961	9,607	9,059	815	1,663	6,581	548
1962	11,069	10,290	986	2,018	7,285	779
1963	13,663	12,495	1,152	2,356	8,987	1,168
1964	15,324	14,225	1,303	2,571	10,351	1,099
1965	15,746	14,614	1,435	2,812	10,367	1,132
1966	16,179	15,320	1,579	3,081	10,660	858
1967	17,149	16,529	1,846	2,786	11,898	620
1968	16,525	15,921	1,841	2,941	11,140	604
1969	16,310	15,641	1,945	2,700	10,996	669
1970	15,863	15,339	1,926	2,975	10,438	524
1971	16,154	15,543	1,980	3,143	10,419	611
1972	17,098	16,496	2,187	3,361	10,948	602
1973	17,574	16,800	2,232	3,349	11,219	774
1974	18,176	17,410	2,388	3,788	11,235	766
1975	19,860	19,039	2,588	4,141	12,309	821
1976	21,616	20,780	2,767	4,852	13,160	837
1977	24,818	23,450	3,259	5,255	14,936	1,367
1978	27,141	25,845	3,699	5,908	16,238	1,296
1979	29,621	28,145	4,193	6,342	17,610	1,475
1980	31,386	29,830	4,674	6,923	18,233	1,556
1981	34,590	33,104	5,041	7,171	20,891	1,486
1982	37,822	36,433	5,482	7,541	23,410	1,390
1983	40,009	38,712	6,260	7,993	24,458	1,297
1984	44,012	42,225	7,067	7,911	27,246	1,787
1985	50,180	48,360	7,819	8,315	32,226	1,821
1986	52,951	51,412	8,153	8,349	34,910	1,539
1987	57,100	55,254	8,942	8,998	37,313	1,846
1988	58,827	56,769	9,474	9,177	38,119	2,057
1989	63,572	61,406	10,602	10,164	40,641	2,165
1990	65,831	63,559	11,286	10,337	41,937	2,272
1991	64,148	61,295	12,171	11,798	37,327	2,853
1992	68,577	65,593	12,490	12,001	41,102	2,985
1993	70,415	67,314	13,399	13,491	40,424	3,101
1994	69,451	67,235	13,523	13,888	39,824	2,215
1995	70,443	68,187	13,877	14,557	39,752	2,256
1996	69,399	67,653	14,464	13,796	39,393	1,746
1997	71,753	69,827	14,942	14,423	40,461	1,927
1998	73,914	72,101	15,613	15,309	41,178	1,813
1999	77,386	75,341	17,444	16,084	41,813	2,046
2000	80,403	75,910	19,570	18,901	37,440	4,493
2001	88,562	84,493	21,958	22,756	39,779	4,070
2002	98,013	93,709	23,668	24,338	45,702	4,305
2003	107,794	103,527	24,751	26,320	52,455	4,267
2004	116,069	112,074	26,121	27,237	58,717	3,994
2005	122,619	118,848	27,140	26,598	65,110	3,771
2006	123,855	121,730	26,585	26,951	68,194	2,125

Appendix table 4-34

Federal obligations for R&D and R&D plant, by character of work: FYs 1953–2012

Fiscal year	Total, R&D and R&D plant	R&D				R&D plant
		All R&D	Basic	Applied	Development	
2007	129,431	127,263	26,866	27,228	73,169	2,168
2008	129,050	127,106	27,154	26,740	73,212	1,944
2009[a]	144,761	141,093	32,873	30,821	77,398	3,668
2010[a]	146,968	140,355	31,795	31,933	76,627	6,613
2011 preliminary	136,418	132,141	29,061	29,106	73,974	4,277
2012 preliminary	135,834	130,952	30,665	30,048	70,240	4,882
	2005 constant $millions					
1953	13,363	11,834	715	NA	NA	1,528
1954	11,688	10,736	707	NA	NA	952
1955	13,615	12,362	786	NA	NA	1,253
1956	19,251	17,609	1,217	3,804	12,588	1,642
1957	24,939	22,341	1,491	3,762	17,088	2,598
1958	27,060	25,205	1,845	4,105	19,255	1,855
1959	38,710	36,378	2,533	4,751	29,094	2,332
1960	43,371	40,535	3,169	6,882	30,484	2,836
1961	50,858	47,955	4,312	8,806	34,837	2,903
1962	57,953	53,874	5,164	10,568	38,142	4,079
1963	70,646	64,605	5,955	12,183	46,467	6,041
1964	78,303	72,690	6,658	13,140	52,892	5,613
1965	79,045	73,365	7,206	14,115	52,043	5,681
1966	79,541	75,321	7,764	15,148	52,409	4,220
1967	81,702	78,747	8,794	13,271	56,683	2,954
1968	76,047	73,268	8,470	13,532	51,266	2,779
1969	71,755	68,812	8,556	11,879	48,377	2,943
1970	66,235	64,046	8,041	12,421	43,583	2,190
1971	64,230	61,799	7,873	12,497	41,429	2,430
1972	64,912	62,627	8,303	12,759	41,565	2,286
1973	63,930	61,114	8,119	12,184	40,810	2,817
1974	61,699	59,098	8,105	12,857	38,136	2,601
1975	61,012	58,491	7,952	12,723	37,816	2,521
1976	61,956	59,558	7,932	13,906	37,719	2,398
1977	66,180	62,534	8,690	14,015	39,830	3,646
1978	67,801	64,564	9,240	14,759	40,566	3,237
1979	68,487	65,075	9,694	14,664	40,717	3,411
1980	66,680	63,375	9,930	14,708	38,736	3,305
1981	66,892	64,018	9,749	13,869	40,401	2,873
1982	68,457	65,941	9,921	13,648	42,372	2,515
1983	69,364	67,114	10,853	13,858	42,403	2,249
1984	73,587	70,598	11,816	13,228	45,554	2,988
1985	81,264	78,315	12,662	13,465	52,188	2,949
1986	83,810	81,374	12,905	13,215	55,255	2,436
1987	88,035	85,189	13,787	13,873	57,529	2,846
1988	87,879	84,806	14,152	13,709	56,945	3,073
1989	91,417	88,304	15,246	14,615	58,443	3,113
1990	91,305	88,155	15,653	14,337	58,165	3,151
1991	85,725	81,913	16,265	15,766	49,882	3,812
1992	89,316	85,429	16,267	15,630	53,532	3,887
1993	89,723	85,772	17,073	17,191	51,508	3,951
1994	86,662	83,897	16,875	17,329	49,693	2,764
1995	86,074	83,317	16,956	17,788	48,573	2,757
1996	83,192	81,099	17,339	16,538	47,223	2,093
1997	84,465	82,198	17,589	16,979	47,630	2,268
1998	85,917	83,809	18,148	17,795	47,865	2,108
1999	88,776	86,430	20,011	18,451	47,967	2,347
2000	90,371	85,321	21,996	21,244	42,081	5,050

Appendix table 4-34

Federal obligations for R&D and R&D plant, by character of work: FYs 1953–2012

Fiscal year	Total, R&D and R&D plant	R&D				R&D plant
		All R&D	Basic	Applied	Development	
2001	97,257	92,788	24,114	24,990	43,684	4,469
2002	105,880	101,230	25,568	26,292	49,370	4,650
2003	114,116	109,599	26,203	27,864	55,532	4,517
2004	119,844	115,720	26,970	28,123	60,626	4,124
2005	122,619	118,848	27,140	26,598	65,110	3,771
2006	119,782	117,727	25,710	26,065	65,952	2,055
2007	121,577	119,541	25,236	25,576	68,729	2,037
2008	118,470	116,686	24,928	24,548	67,210	1,785
2009[a]	131,005	127,686	29,749	27,892	70,044	3,319
2010[a]	131,786	125,856	28,511	28,634	68,711	5,930
2011 preliminary	119,960	116,198	25,555	25,594	65,049	3,761
2012 preliminary	117,281	113,065	26,476	25,943	60,646	4,215

NA = not available; data collected for this table were not recorded at that level in that particular fiscal year.

[a] Includes obligations from the additional federal R&D funding authorized by the American Recovery and Reinvestment Act of 2009.

NOTES: Beginning in FY 2000, the Department of the Air Force did not report Budget Activity (BA) 6.7 Operational Systems Development data because the agency misunderstood the reporting requirements. During the Volume 57 data collection cycle, the Department of the Air Force edited prior-year data from FYs 2000–07 to include BA 6.7 Operational Systems Development data. These data revisions were derived from FY 2007 distribution percentages that were then applied backward to revise FY 2000–06 data. In FY 2000, the National Aeronautics and Space Administration (NASA) reclassified the Space Station as a physical asset, reclassified Space Station Research as equipment, and transferred funding for the program from R&D to R&D plant. In FY 2006, NASA reclassified as operational costs funding for Space Operations, the Hubble Space Telescope, Stratospheric Observatory for Infrared Astronomy, and the James Webb Space Telescope previously reported as R&D plant. In FY 2000, the National Institutes of Health reclassified all its development activities as research.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development (FYs 2010–12).

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Appendix table 4-35

Federal obligations for R&D and R&D plant, by agency, performer, and character of work: FY 2011

(Millions of current dollars)

Agency	All federal obligations	Federal intramural[a]	Extramural performers							
				United States and U.S. territories						
			Business firms	Industry FFRDCs	Universities and colleges	University FFRDCs	Other nonprofits	Nonprofit FFRDCs	State, local governments	Foreign
Total R&D and R&D plant										
All agencies	136,418.1	33,156.6	56,747.7	4,107.5	28,143.5	3,488.9	6,423.2	3,443.4	401.2	506.1
Department of Agriculture	2,634.6	1,654.4	18.3	0.0	918.9	0.0	26.5	2.8	11.0	2.6
Department of Commerce	1,419.7	1,008.6	94.9	0.0	293.8	2.6	11.8	0.1	3.9	3.9
Department of Defense	71,842.3	19,837.8	46,581.7	662.8	2,472.2	416.9	322.6	1,351.4	41.6	155.4
Department of Education	346.3	16.9	17.0	0.0	236.4	2.2	73.9	0.0	0.0	0.0
Department of Energy	9,923.2	914.7	1,351.9	2,839.3	891.8	1,915.2	145.5	1,847.5	14.9	2.4
Department of Health and Human Services	31,766.3	5,506.7	1,924.3	551.7	18,309.0	47.4	4,904.2	94.4	158.6	270.0
Department of Homeland Security	1,051.1	526.2	232.0	25.3	79.6	59.4	71.6	56.6	0.3	0.1
Department of the Interior	694.8	571.5	26.4	0.0	71.6	0.0	2.6	0.0	12.2	10.7
Department of Justice	101.0	26.3	14.9	1.0	29.0	0.4	15.3	0.3	13.9	0.0
Department of Transportation	1,021.2	295.9	426.2	0.0	74.3	2.6	50.6	50.7	120.3	0.6
Department of Veterans Affairs	579.0	579.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	577.0	464.9	50.6	0.0	53.6	0.0	7.0	0.0	0.6	0.3
National Aeronautics and Space Administration	8,429.0	1,210.3	5,549.9	0.6	587.2	843.6	206.3	15.7	0.5	14.9
National Science Foundation	5,373.3	155.9	347.3	0.0	4,092.8	189.4	532.6	5.3	22.8	27.1
Smithsonian Institution	227.0	227.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	432.3	160.6	112.3	26.8	33.4	9.2	52.6	18.6	0.6	18.2
R&D										
All agencies	132,140.6	32,065.9	54,781.5	3,946.4	27,803.4	3,239.0	6,306.9	3,102.8	400.9	493.8
Department of Agriculture	2,591.3	1,611.2	18.3	0.0	918.9	0.0	26.5	2.8	11.0	2.6
Department of Commerce	1,135.5	801.9	94.9	0.0	219.7	2.6	8.6	0.1	3.9	3.9
Department of Defense	71,684.2	19,791.0	46,472.1	662.8	2,471.9	416.9	321.1	1,351.4	41.6	155.4
Department of Education	346.3	16.9	17.0	0.0	236.4	2.2	73.9	0.0	0.0	0.0
Department of Energy	9,136.2	877.5	1,284.7	2,678.7	890.0	1,721.6	145.5	1,521.0	14.9	2.4
Department of Health and Human Services	31,573.7	5,318.6	1,924.3	551.7	18,305.1	47.4	4,903.6	94.4	158.6	270.0
Department of Homeland Security	634.7	219.9	155.8	24.8	79.6	59.4	49.0	45.7	0.3	0.1
Department of the Interior	688.6	571.5	20.1	0.0	71.6	0.0	2.6	0.0	12.2	10.7
Department of Justice	101.0	26.3	14.9	1.0	29.0	0.4	15.3	0.3	13.9	0.0
Department of Transportation	997.0	295.9	402.0	0.0	74.3	2.6	50.6	50.7	120.3	0.6
Department of Veterans Affairs	579.0	579.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	577.0	464.9	50.6	0.0	53.6	0.0	7.0	0.0	0.6	0.3
National Aeronautics and Space Administration	6,570.5	1,036.8	3,901.1	0.6	573.3	842.4	198.7	12.6	0.5	4.4
National Science Foundation	4,924.4	124.9	313.5	0.0	3,846.8	134.3	451.8	5.3	22.5	25.2
Smithsonian Institution	169.0	169.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	432.3	160.7	112.3	26.8	33.4	9.2	52.6	18.6	0.6	18.2

Appendix table 4-35

Federal obligations for R&D and R&D plant, by agency, performer, and character of work: FY 2011

(Millions of current dollars)

Agency	All federal obligations	Federal intramural[a]	Extramural performers							
				United States and U.S. territories						
			Business firms	Industry FFRDCs	Universities and colleges	University FFRDCs	Other nonprofits	Nonprofit FFRDCs	State, local governments	Foreign
Basic research										
All agencies	29,060.8	4,794.1	1,602.0	515.2	15,758.7	1,914.6	3,088.6	1,102.9	93.8	190.9
Department of Agriculture	1,078.8	682.6	1.4	0.0	379.5	0.0	11.3	0.0	3.1	1.0
Department of Commerce	149.8	119.5	10.8	0.0	18.9	0.0	0.6	0.0	0.0	0.0
Department of Defense	1,903.9	464.5	259.2	7.5	1,104.0	3.0	39.6	4.8	0.0	21.4
Department of Education	7.5	0.3	0.0	0.0	5.5	0.0	1.6	0.0	0.0	0.0
Department of Energy	3,717.2	110.5	91.2	208.2	653.0	1,578.6	36.1	1,036.9	0.2	2.4
Department of Health and Human Services	16,123.6	2,630.3	865.1	297.7	9,565.7	22.8	2,485.3	49.0	66.3	141.4
Department of Homeland Security	91.2	18.0	5.3	1.3	53.0	4.3	3.2	6.0	0.0	0.0
Department of the Interior	48.9	42.4	0.1	0.0	4.6	0.0	0.2	0.0	1.0	0.5
Department of Justice	17.5	0.6	2.4	0.0	9.7	0.0	3.7	0.0	1.2	0.0
Department of Transportation	8.1	8.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Veterans Affairs	218.0	218.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	88.0	70.9	7.7	0.0	8.2	0.0	1.1	0.0	0.1	0.0
National Aeronautics and Space Administration	856.8	135.4	159.1	0.4	314.2	171.7	73.6	0.9	0.2	1.4
National Science Foundation	4,581.2	123.4	199.5	0.0	3,642.4	134.3	431.8	5.3	21.8	22.7
Smithsonian Institution	169.0	169.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	1.1	0.6	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Applied research										
All agencies	29,105.9	7,733.4	4,602.3	2,265.1	10,754.3	212.7	2,773.0	353.1	231.3	180.8
Department of Agriculture	1,293.4	731.1	17.0	0.0	519.0	0.0	14.3	2.8	7.9	1.4
Department of Commerce	839.3	609.4	52.6	0.0	162.9	2.6	6.2	0.1	3.3	2.1
Department of Defense	4,674.3	1,613.5	2,250.2	66.7	570.4	53.4	78.0	23.4	1.1	17.7
Department of Education	205.6	10.7	5.6	0.0	149.6	1.7	38.1	0.0	0.0	0.0
Department of Energy	3,054.2	418.1	202.7	1,906.9	145.6	75.8	57.0	241.5	6.5	0.0
Department of Health and Human Services	15,316.8	2,599.8	1,058.2	254.0	8,706.1	24.6	2,411.7	45.4	88.3	128.6
Department of Homeland Security	208.2	74.9	46.3	9.7	14.1	29.9	24.4	8.8	0.0	0.1
Department of the Interior	564.6	466.0	18.7	0.0	59.2	0.0	1.9	0.0	9.2	9.6
Department of Justice	65.8	14.3	12.6	1.0	19.3	0.4	11.6	0.3	6.4	0.0
Department of Transportation	704.6	202.4	290.1	0.0	65.9	1.6	30.9	6.8	106.9	0.0
Department of Veterans Affairs	314.0	314.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	403.4	325.0	35.4	0.0	37.5	0.0	4.9	0.0	0.4	0.2
National Aeronautics and Space Administration	717.8	207.5	399.1	0.0	67.3	13.5	24.3	5.4	0.2	0.4
National Science Foundation	343.2	1.5	114.0	0.0	204.5	0.0	20.0	0.0	0.7	2.5
Smithsonian Institution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	400.9	145.2	99.8	26.8	33.0	9.2	49.8	18.6	0.4	18.2

Appendix table 4-35

Federal obligations for R&D and R&D plant, by agency, performer, and character of work: FY 2011

(Millions of current dollars)

Agency	All federal obligations	Federal intramural[a]	Extramural performers							
				United States and U.S. territories						
			Business firms	Industry FFRDCs	Universities and colleges	University FFRDCs	Other nonprofits	Nonprofit FFRDCs	State, local governments	Foreign
Development										
All agencies	73,973.9	19,538.4	48,577.3	1,166.1	1,290.5	1,111.7	445.3	1,646.9	75.7	122.1
Department of Agriculture	219.1	197.4	0.0	0.0	20.4	0.0	1.0	0.0	0.1	0.2
Department of Commerce	146.4	73.0	31.4	0.0	37.9	0.0	1.9	0.0	0.6	1.8
Department of Defense	65,106.0	17,713.1	43,962.7	588.5	797.6	360.5	203.6	1,323.2	40.6	116.3
Department of Education	133.2	5.9	11.4	0.0	81.2	0.6	34.2	0.0	0.0	0.0
Department of Energy	2,364.8	348.9	990.7	563.5	91.4	67.1	52.4	242.6	8.2	0.0
Department of Health and Human Services	133.3	88.6	0.9	0.0	33.3	0.0	6.6	0.0	4.0	0.0
Department of Homeland Security	335.2	127.0	104.1	13.8	12.5	25.3	21.4	30.8	0.3	0.0
Department of the Interior	75.1	63.1	1.3	0.0	7.7	0.0	0.4	0.0	1.9	0.6
Department of Justice	17.7	11.4	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0
Department of Transportation	284.2	85.3	111.9	0.0	8.4	1.0	19.6	43.9	13.4	0.6
Department of Veterans Affairs	47.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	85.6	69.0	7.5	0.0	8.0	0.0	1.0	0.0	0.1	0.0
National Aeronautics and Space Administration	4,995.8	694.0	3,342.9	0.2	191.7	657.2	100.8	6.3	0.1	2.6
National Science Foundation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smithsonian Institution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	30.3	14.8	12.4	0.0	0.4	0.0	2.4	0.0	0.2	0.0
R&D plant										
All agencies	4,277.4	1,090.7	1,966.2	161.1	340.1	249.9	116.3	340.5	0.3	12.3
Department of Agriculture	43.3	43.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Commerce	284.2	206.8	0.0	0.0	74.2	0.0	3.2	0.0	0.0	0.0
Department of Defense	158.1	46.7	109.7	0.0	0.3	0.0	1.5	0.0	0.0	0.0
Department of Education	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Energy	786.9	37.2	67.2	160.6	1.8	193.7	0.0	326.5	0.0	0.0
Department of Health and Human Services	192.6	188.0	0.0	0.0	4.0	0.0	0.6	0.0	0.0	0.0
Department of Homeland Security	416.4	306.2	76.2	0.5	0.0	0.0	22.6	10.9	0.0	0.0
Department of the Interior	6.3	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Justice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Transportation	24.2	0.0	24.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Veterans Affairs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
National Aeronautics and Space Administration	1,858.5	173.5	1,648.8	0.0	13.9	1.1	7.6	3.1	0.0	10.5

Appendix table 4-35

Federal obligations for R&D and R&D plant, by agency, performer, and character of work: FY 2011

(Millions of current dollars)

Agency	All federal obligations	Federal intramural[a]	Extramural performers							
			United States and U.S. territories							
			Business firms	Industry FFRDCs	Universities and colleges	University FFRDCs	Other nonprofits	Nonprofit FFRDCs	State, local governments	Foreign
National Science Foundation	448.9	31.0	33.8	0.0	246.0	55.1	80.8	0.0	0.3	1.9
Smithsonian Institution	58.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FFRDC = federally funded R&D center.

[a] Includes costs associated with administration of intramural and extramural programs by federal personnel and actual intramural performance.

NOTES: Detail may not add to total due to rounding. Agencies included have a total annual R&D of $100 million or more. All other agencies includes Department of Housing and Urban Development, Department of Labor, Department of State, Department of the Treasury, Agency for International Development, Appalachian Regional Commission, Federal Communications Commission, Federal Trade Commission, Library of Congress, National Archives and Records Commission, Nuclear Regulatory Commission, and Social Security Administration.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development (FYs 2010–12).

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Appendix table 4-36

Differences in federal R&D support, as reported by performers and federal agencies: 1985–2011

(Billions of dollars)

	All performers			Business performers[a]		
Year	Performer reported	Agency reported	Difference	Performer reported	Agency reported	Difference
1985	52.6	48.4	4.3	25.3	21.7	3.6
1986	54.6	51.4	3.2	26.0	24.2	1.8
1987	58.6	55.3	3.4	28.8	26.8	2.0
1988	60.1	56.8	3.4	28.2	26.7	1.5
1989	60.5	61.4	-0.9	26.4	28.6	-2.2
1990	61.6	63.6	-2.0	25.8	29.4	-3.6
1991	60.8	61.3	-0.5	24.1	26.4	-2.3
1992	60.9	65.6	-4.7	22.4	29.8	-7.4
1993	60.5	67.3	-6.8	20.8	30.2	-9.4
1994	60.8	67.2	-6.5	20.3	30.5	-10.2
1995	63.0	68.2	-5.2	21.2	30.2	-9.1
1996	63.4	67.7	-4.3	21.4	30.4	-9.0
1997	64.6	69.8	-5.3	21.8	31.4	-9.6
1998	66.4	72.1	-5.7	22.1	32.0	-9.9
1999	67.4	75.3	-8.0	20.5	31.9	-11.4
2000	67.9	75.9	-8.0	17.1	29.4	-12.3
2001	75.0	84.5	-9.5	16.9	28.2	-11.3
2002	80.3	93.7	-13.4	16.4	34.6	-18.2
2003	86.7	103.5	-16.8	17.8	40.7	-22.9
2004	92.4	112.1	-19.7	20.3	43.8	-23.5
2005	97.0	118.9	-21.8	21.9	48.9	-27.0
2006	101.6	121.7	-20.2	24.3	52.8	-28.4
2007	106.6	127.3	-20.6	26.6	55.3	-28.8
2008	118.4	127.1	-8.7	36.4	56.3	-20.0
2009	126.6	133.3	-6.8	39.6	53.3	-13.7
2010	127.0	140.4	-13.4	34.2	59.9	-25.7
2011	133.7	133.6	0.1	39.3	56.2	-16.9

[a] Excludes industry-administered federally funded research and development centers.

NOTE: Performer-reported data are expenditures; agency-reported data are obligations.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series), and Survey of Federal Funds for Research and Development (FYs 2010–12).

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Appendix table 4-37

Federal obligations for research, by agency and S&E field: FY 2011

Agency	All federal obligations	Environmental sciences	Life sciences	Mathematics and computer sciences	Physical sciences	Psychology	Social sciences	Other sciences nec	Engineering
	Current $millions								
All agencies	58,167	3,125	30,203	3,276	5,534	1,905	1,222	2,764	10,139
Departments									
Department of Agriculture	2,372	21	1,895	10	197	0	207	0	43
Department of Commerce	989	351	74	116	203	1	16	12	217
Department of Defense	6,578	297	599	950	783	81	48	190	3,630
Department of Education	213	0	13	0	0	12	180	3	6
Department of Energy	6,771	305	298	993	2,612	0	0	287	2,277
Department of Health and Human Services	31,440	447	25,397	173	221	1,667	314	1,464	1,758
Department of Homeland Security	299	6	79	51	43	13	17	18	73
Department of Housing and Urban Development	64	0	0	0	0	0	63	0	1
Department of the Interior	614	341	208	0	33	0	18	4	9
Department of Justice	83	0	17	6	5	0	48	8	0
Department of Labor	11	0	0	0	0	0	5	6	0
Department of State	3	0	0	0	0	0	3	0	0
Department of Transportation	713	30	24	27	0	33	13	81	505
Department of the Treasury	77	0	0	0	5	0	0	71	2
Department of Veterans Affairs	532	0	446	0	0	61	0	0	25
Other agencies									
Agency for International Development	80	0	71	0	0	0	8	1	0
Appalachian Regional Commission	1	0	0	0	0	0	0	0	0
Environmental Protection Agency	491	179	224	12	13	0	2	0	61
Federal Communications Commission	4	0	0	0	1	0	1	0	2
Federal Trade Commission	2	0	0	0	0	0	2	0	0
Library of Congress	1	0	0	0	0	1	0	0	0
National Aeronautics and Space Administration	1,575	354	92	28	407	6	0	74	613
National Archives and Records Administration	3	0	0	3	0	0	0	0	0
National Science Foundation	4,924	786	693	909	948	30	179	543	836
Nuclear Regulatory Commission	84	0	0	0	0	0	0	0	84
Smithsonian Institution	169	7	73	0	62	0	25	2	0
Social Security Administration	72	0	0	0	0	0	72	0	0
	Percent distribution								
All agencies	100.0	5.4	51.9	5.6	9.5	3.3	2.1	4.8	17.4
Departments									
Department of Agriculture	100.0	0.9	79.9	0.4	8.3	0.0	8.7	0.0	1.8
Department of Commerce	100.0	35.5	7.5	11.7	20.5	0.1	1.6	1.2	21.9
Department of Defense	100.0	4.5	9.1	14.4	11.9	1.2	0.7	2.9	55.2
Department of Education	100.0	0.0	5.9	0.0	0.0	5.8	84.2	1.3	2.8
Department of Energy	100.0	4.5	4.4	14.7	38.6	0.0	0.0	4.2	33.6
Department of Health and Human Services	100.0	1.4	80.8	0.5	0.7	5.3	1.0	4.7	5.6

Appendix table 4-37

Federal obligations for research, by agency and S&E field: FY 2011

Agency	All federal obligations	Environmental sciences	Life sciences	Mathematics and computer sciences	Physical sciences	Psychology	Social sciences	Other sciences nec	Engineering
Department of Homeland Security	100.0	1.9	26.3	16.9	14.5	4.3	5.5	6.1	24.4
Department of Housing and Urban Development	100.0	0.0	0.0	0.0	0.0	0.0	97.5	0.7	1.8
Department of the Interior	100.0	55.7	34.0	0.0	5.3	0.0	2.9	0.7	1.5
Department of Justice	100.0	0.0	19.9	6.6	6.3	0.0	57.5	9.7	0.0
Department of Labor	100.0	0.0	0.0	0.0	0.0	0.0	46.3	53.7	0.0
Department of State	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Department of Transportation	100.0	4.1	3.3	3.7	0.0	4.7	1.9	11.4	70.8
Department of the Treasury	100.0	0.0	0.0	0.0	6.0	0.0	0.0	91.6	2.4
Department of Veterans Affairs	100.0	0.0	83.9	0.0	0.0	11.5	0.0	0.0	4.6
Other agencies									
Agency for International Development	100.0	0.2	88.4	0.0	0.0	0.0	9.9	1.4	0.0
Appalachian Regional Commission	100.0	0.0	0.0	0.0	0.0	0.0	45.2	54.8	0.0
Environmental Protection Agency	100.0	36.5	45.6	2.4	2.7	0.0	0.5	0.0	12.3
Federal Communications Commission	100.0	0.0	0.0	3.6	16.0	0.0	38.9	0.0	41.4
Federal Trade Commission	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Library of Congress	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
National Aeronautics and Space Administration	100.0	22.5	5.9	1.8	25.9	0.4	0.0	4.7	38.9
National Archives and Records Administration	100.0	1.6	0.0	96.1	2.3	0.0	0.0	0.0	0.0
National Science Foundation	100.0	16.0	14.1	18.5	19.3	0.6	3.6	11.0	17.0
Nuclear Regulatory Commission	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Smithsonian Institution	100.0	4.4	43.1	0.0	36.9	0.0	14.7	0.9	0.0
Social Security Administration	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0

nec = not elsewhere classified.

NOTE: Research includes basic research and applied research.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development (FYs 2010–12).

Science and Engineering Indicators 2014

Appendix table 4-38

Federal obligations for research, by detailed S&E field: FYs 1991–2011

(Millions of current dollars)

Field of science and engineering	1991	1996	2001	2006	2007	2008	2009	2010	Preliminary 2011	Average annual growth rate 1991–2011	2001–11	2006–11
	Current $millions									Percent		
Total, all fields	23,968.4	28,259.8	44,713.7	53,535.7	54,093.6	53,893.7	63,694.3	63,728.0	58,166.7	4.5	2.7	1.7
Environmental sciences	2,149.8	3,019.7	3,251.7	3,430.6	3,170.5	2,984.6	3,751.1	3,338.9	3,124.7	1.9	-0.4	-1.9
Atmospheric sciences	802.7	1,085.7	1,113.6	1,166.9	964.6	884.5	1,018.1	953.8	NA	–	–	–
Geological sciences	728.7	784.3	673.8	653.9	638.0	517.5	754.0	530.4	NA	–	–	–
Oceanography	398.6	574.3	681.1	745.8	787.8	788.7	834.2	743.7	NA	–	–	–
Environmental sciences nec	219.8	575.4	783.3	864.0	780.1	793.9	1,144.8	1,111.0	NA	–	–	–
Life sciences	9,622.0	12,064.3	23,057.3	27,927.7	29,463.6	28,918.8	33,267.1	33,909.1	30,202.7	5.9	2.7	1.6
Biological and agricultural	5,597.9	6,629.9	14,116.4	15,485.6	16,326.3	16,321.4	19,460.8	19,162.1	NA	–	–	–
Agricultural	680.3	616.0	1,007.7	1,108.2	1,139.4	1,020.3	1,120.4	1,131.9	NA	–	–	–
Biological (excluding environmental)	4,457.8	5,309.9	12,380.0	13,690.8	14,429.7	14,443.1	17,376.8	17,213.9	NA	–	–	–
Environmental biology	459.7	704.0	728.8	686.6	757.2	858.0	963.7	816.4	NA	–	–	–
Medical sciences	3,460.3	4,973.4	6,585.2	10,592.2	10,790.7	10,387.3	11,392.7	11,677.0	NA	–	–	–
Clinical medical	na	na	na	na	na	na	na	na	na	–	–	–
Other medical	na	na	na	na	na	na	na	na	na	–	–	–
Life sciences nec	563.8	461.1	2,355.7	1,849.9	2,346.5	2,210.1	2,413.6	3,070.0	NA	–	–	–
Mathematics and computer sciences	903.7	1,571.6	2,610.6	2,814.9	2,945.7	3,047.3	3,611.8	3,411.8	3,275.5	6.7	2.3	3.1
Computer sciences	584.9	1,119.8	2,022.8	1,987.8	2,077.7	2,053.0	2,422.2	2,362.0	NA	–	–	–
Mathematics	227.6	254.5	396.4	669.2	708.6	782.9	927.9	835.5	NA	–	–	–
Mathematics and computer sciences nec	91.1	197.3	191.4	157.9	159.4	211.4	261.6	214.4	NA	–	–	–
Physical sciences	4,235.3	3,923.0	4,600.8	5,351.1	5,136.1	5,072.6	5,821.1	5,870.8	5,534.0	1.3	1.9	0.7
Astronomy	631.7	729.0	759.2	792.5	655.9	527.9	671.5	559.9	NA	–	–	–
Chemistry	828.4	881.1	1,024.9	1,126.4	1,149.9	1,148.4	1,274.0	1,310.6	NA	–	–	–
Physics	2,460.9	1,991.3	2,461.7	3,001.8	2,939.2	2,968.9	3,356.1	3,470.1	NA	–	–	–
Physical sciences nec	314.3	321.6	354.9	430.5	391.1	427.4	519.6	530.2	NA	–	–	–
Psychology	482.4	525.0	741.9	1,747.3	1,837.9	1,740.8	2,086.3	2,155.6	1,905.0	7.1	9.9	1.7
Biological aspects	140.2	62.8	13.6	3.0	3.8	21.8	2.1	13.6	NA	–	–	–
Social aspects	197.5	83.4	59.8	40.9	36.8	18.8	50.8	74.5	NA	–	–	–
Psychological sciences nec	144.8	378.8	668.5	1,703.4	1,797.3	1,700.3	2,033.4	2,067.4	NA	–	–	–
Social sciences	727.3	654.6	1,008.6	1,123.9	1,147.1	977.0	1,159.2	1,197.3	1,221.9	2.6	1.9	1.7
Anthropology	16.0	18.3	15.6	15.1	16.1	17.4	29.4	24.7	NA	–	–	–
Economics	187.4	194.2	234.1	202.6	250.0	212.3	232.6	274.0	NA	–	–	–
Political science	17.0	16.7	19.5	44.6	41.2	29.2	24.6	14.2	NA	–	–	–
Sociology	184.0	41.2	95.5	144.2	217.6	95.2	138.8	132.3	NA	–	–	–
Social sciences nec	322.9	384.2	644.0	717.4	622.2	622.9	733.8	752.0	NA	–	–	–
History	na	na	na	na	na	na	na	na	na	–	–	–
Linguistics	na	na	na	na	na	na	na	na	na	–	–	–
Other social sciences	na	na	na	na	na	na	na	na	na	–	–	–
Other sciences nec	903.4	820.7	1,245.8	2,461.3	1,403.1	2,177.1	3,712.7	2,763.2	2,763.5	5.7	8.3	2.3
Engineering	4,944.5	5,680.9	8,197.0	8,678.7	8,989.7	8,975.5	10,285.0	11,081.2	10,139.4	3.7	2.1	3.2

Appendix table 4-38

Federal obligations for research, by detailed S&E field: FYs 1991–2011

(Millions of current dollars)

Field of science and engineering	1991	1996	2001	2006	2007	2008	2009	2010	Preliminary 2011	Average annual growth rate 1991–2011	2001–11	2006–11
Aeronautical	1,016.2	1,249.4	2,430.1	1,229.2	929.2	810.3	907.8	830.1	NA	–	–	–
Astronautical	653.1	526.6	752.7	476.3	341.0	288.1	370.2	389.9	NA	–	–	–
Chemical	304.3	215.1	199.0	294.6	353.8	345.6	447.1	509.7	NA	–	–	–
Civil	305.0	300.2	288.4	352.7	461.5	488.0	678.9	699.8	NA	–	–	–
Electrical	729.9	669.7	889.7	1,035.5	1,027.5	1,046.5	1,254.0	1,360.9	NA	–	–	–
Mechanical	335.5	294.0	319.2	298.2	337.2	292.4	314.3	363.6	NA	–	–	–
Metallurgy and materials	710.7	989.0	1,080.8	1,250.0	1,479.8	1,623.9	1,721.6	1,758.8	NA	–	–	–
Engineering nec	889.8	1,437.0	2,237.0	3,742.3	4,059.8	4,080.8	4,591.2	5,168.4	NA	–	–	–
	2005 constant $millions											
Total, all fields	32,030.4	33,876.5	49,103.6	51,775.3	50,811.2	49,475.5	57,641.9	57,144.9	51,149.1	2.4	0.4	-0.2
Environmental sciences	2,872.9	3,619.9	3,570.9	3,317.8	2,978.1	2,739.9	3,394.7	2,994.0	2,747.7	-0.2	-2.6	-3.7
Atmospheric sciences	1,072.7	1,301.5	1,222.9	1,128.5	906.0	812.0	921.4	855.3	NA	–	–	–
Geological sciences	973.9	940.1	739.9	632.4	599.3	475.1	682.4	475.6	NA	–	–	–
Oceanography	532.6	688.4	748.0	721.3	740.0	724.0	754.9	666.9	NA	–	–	–
Environmental sciences nec	293.7	689.8	860.1	835.6	732.8	728.8	1,036.0	996.2	NA	–	–	–
Life sciences	12,858.5	14,462.2	25,321.0	27,009.4	27,675.7	26,548.1	30,106.0	30,406.3	26,558.8	3.7	0.5	-0.3
Biological and agricultural	7,480.8	7,947.6	15,502.4	14,976.4	15,335.6	14,983.4	17,611.6	17,182.7	NA	–	–	–
Agricultural	909.2	738.4	1,106.6	1,071.7	1,070.3	936.6	1,013.9	1,015.0	NA	–	–	–
Biological (excluding environmental)	5,957.2	6,365.3	13,595.4	13,240.7	13,554.1	13,259.1	15,725.6	15,435.7	NA	–	–	–
Environmental biology	614.4	843.9	800.4	664.0	711.3	787.7	872.1	732.1	NA	–	–	–
Medical sciences	4,624.2	5,961.8	7,231.7	10,243.9	10,136.0	9,535.8	NA	10,470.8	NA	–	–	–
Clinical medical	na	na	na	na	na	na	na	na	NA	–	–	–
Other medical	na	na	na	na	na	na	na	na	NA	–	–	–
Life sciences nec	753.5	552.7	2,586.9	1,789.1	2,204.1	2,028.9	2,184.3	2,752.9	NA	–	–	–
Mathematics and computer sciences	1,207.7	1,883.9	2,866.9	2,722.4	2,766.9	2,797.5	3,268.6	3,059.4	2,880.3	4.4	0.0	1.1
Computer sciences	781.7	1,342.4	2,221.4	1,922.5	1,951.6	1,884.7	2,192.0	2,118.0	NA	–	–	–
Mathematics	304.2	305.0	435.3	647.2	665.6	718.7	839.7	749.2	NA	–	–	–
Mathematics and computer sciences nec	121.8	236.5	210.2	152.7	149.7	194.1	236.7	192.3	NA	–	–	–
Physical sciences	5,659.9	4,702.7	5,052.5	5,175.1	4,824.4	4,656.7	5,268.0	5,264.3	4,866.3	-0.8	-0.4	-1.2
Astronomy	844.1	873.8	833.7	766.4	616.1	484.6	607.7	502.1	NA	–	–	–
Chemistry	1,107.1	1,056.2	1,125.5	1,089.3	1,080.1	1,054.2	1,152.9	1,175.2	NA	–	–	–
Physics	3,288.7	2,387.1	2,703.4	2,903.1	2,760.9	2,725.5	3,037.2	3,111.6	NA	–	–	–
Physical sciences nec	420.1	385.5	389.8	416.3	367.4	392.3	470.2	475.4	NA	–	–	–
Psychology	644.7	629.4	814.8	1,689.9	1,726.3	1,598.1	1,888.1	1,932.9	1,675.2	4.9	7.5	-0.2
Biological aspects	187.3	75.3	15.0	2.9	3.6	20.0	1.9	12.2	NA	–	–	–
Social aspects	263.9	100.0	65.7	39.6	34.5	17.2	46.0	66.8	NA	–	–	–
Psychological sciences nec	193.4	454.1	734.1	1,647.4	1,688.2	1,560.9	1,840.2	1,853.8	NA	–	–	–
Social sciences	971.9	784.7	1,107.7	1,087.0	1,077.5	896.9	1,049.0	1,073.6	1,074.5	0.5	-0.3	-0.2
Anthropology	21.4	22.0	17.1	14.6	15.1	16.0	26.6	22.1	NA	–	–	–
Economics	250.5	232.8	257.0	195.9	234.9	194.9	210.5	245.7	NA	–	–	–

Appendix table 4-38

Federal obligations for research, by detailed S&E field: FYs 1991–2011

(Millions of current dollars)

Field of science and engineering	1991	1996	2001	2006	2007	2008	2009	2010	Preliminary 2011	Average annual growth rate 1991–2011	2001–11	2006–11
Political science	22.7	20.0	21.4	43.1	38.7	26.8	22.3	12.7	NA	–	–	–
Sociology	245.9	49.4	104.8	139.4	204.4	87.4	125.6	118.6	NA	–	–	–
Social sciences nec	431.5	460.5	707.2	693.8	584.4	571.8	664.1	674.3	NA	–	–	–
History	na	na	na	na	na	na	na	na	NA	–	–	–
Linguistics	na	na	na	na	na	na	na	na	NA	–	–	–
Other social sciences	na	na	na	na	na	na	na	na	NA	–	–	–
Other sciences nec	1,207.3	983.8	1,368.1	2,380.4	1,318.0	1,998.6	3,359.9	2,477.8	2,430.1	3.6	5.9	0.4
Engineering	6,607.6	6,810.0	9,001.8	8,393.4	8,444.2	8,239.7	9,307.7	9,936.5	8,916.1	1.5	-0.1	1.2
Aeronautical	1,358.1	1,497.7	2,668.6	1,188.8	872.8	743.9	821.5	744.4	NA	–	–	–
Astronautical	872.8	631.2	826.6	460.7	320.3	264.5	335.0	349.6	NA	–	–	–
Chemical	406.7	257.9	218.6	284.9	332.3	317.2	404.6	457.0	NA	–	–	–
Civil	407.6	359.8	316.7	341.1	433.5	448.0	614.4	627.5	NA	–	–	–
Electrical	975.4	802.8	977.1	1,001.4	965.1	960.7	1,134.8	1,220.3	NA	–	–	–
Mechanical	448.4	352.5	350.6	288.4	316.7	268.4	284.4	326.0	NA	–	–	–
Metallurgy and materials	949.7	1,185.5	1,186.9	1,208.9	1,390.0	1,490.8	1,558.0	1,577.1	NA	–	–	–
Engineering nec	1,189.1	1,722.6	2,456.6	3,619.3	3,813.5	3,746.2	4,154.9	4,634.5	NA	–	–	–

na = not applicable; data collected for this table were not recorded at that level in that particular fiscal year, or agency or subagency did not exist as such or in that organization in that year; NA = not available, data collected for this table were not recorded at that level in that particular fiscal year; nec = not elsewhere classified.

NOTES: Detail may not add to total due to rounding. Between FY 2006 and FY 2007, the National Aeronautics and Space Administration's (NASA's) R&D obligations decreased for two reasons: (1) In FY 2007, NASA excluded projects that were operational in nature that were not excluded in FY 2006, which accounts for $850 million of the decrease, and (2) there was an overall decrease in obligations between FY 2006 and FY 2007, which accounts for the remainder of the decrease. In FY 2010, NASA resumed reporting obligations for the International Space Station as an R&D plant.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development (FYs 2010–12).

Science and Engineering Indicators 2014

Appendix table 4-39

Government budget appropriations or outlays for R&D, by socioeconomic objectives and selected countries: 2011

Socioeconomic objective	United States	France	Germany	United Kingdom[a]	China	Japan	South Korea
	PPP, US $millions						
All objectives	144,379	19,394	29,366	14,081	NA	34,136	15,856
Defense	82,021	1,318	1,174	2,386	–	906	2,582
Nondefense	62,358	18,075	28,192	11,695	NA	33,231	13,274
Exploration and exploitation of Earth	1,315	154	522	431	–	478	270
Environment	584	292	798	352	–	367	348
Exploration and exploitation of space	8,658	2,506	1,413	240	–	2,242	313
Transport, telecommunication, and other infrastructures	1,518	1,168	399	248	–	967	101
Energy	2,285	1,198	1,282	96	–	4,546	852
Industrial production and technology	532	328	4,678	183	–	2,275	4,680
Health	33,536	1,317	1,308	2,905	–	1,488	1,259
Agriculture	2,211	424	862	445	–	1,065	994
Education	546	na	289	76	–	76	NA
Culture, recreation, religion, and mass media	27	na	425	341	–	25	NA
Political and social systems, structures, and processes	1,211	976	436	237	–	123	NA
General advancement of knowledge, R&D financed from GUF[b]	na	4,412	11,144	3,495	–	12,424	**
General advancement of knowledge, R&D financed from sources other than GUF	9,955	3,229	4,831	2,645	–	7,155	4,104
	Percent						
Share of all objectives	100.0	100.0	100.0	100.0	NA	100.0	100.0
Defense	56.8	6.8	4.0	16.9	–	2.7	16.3
Nondefense	43.2	93.2	96.0	83.1	–	97.3	83.7
Share of nondefense objectives	100.0	88.6	100.7	100.0	NA	100.0	97.3
Exploration and exploitation of Earth	2.1	0.9	1.9	3.7	–	1.4	2.0
Environment	0.9	1.6	2.8	3.0	–	1.1	2.6
Exploration and exploitation of space	13.9	13.9	5.0	2.1	–	6.7	2.4
Transport, telecommunication, and other infrastructures	2.4	6.5	1.4	2.1	–	2.9	0.8
Energy	3.7	6.6	4.5	0.8	–	13.7	6.4
Industrial production and technology	0.9	1.8	16.6	1.6	–	6.8	35.3
Health	53.8	7.3	4.6	24.8	–	4.5	9.5
Agriculture	3.5	2.3	3.1	3.8	–	3.2	7.5
Education	0.9	na	1.0	0.6	–	0.2	NA
Culture, recreation, religion, and mass media	0.0	na	1.5	2.9	–	0.1	NA
Political and social systems, structures, and processes	1.9	5.4	1.5	2.0	–	0.4	NA

Appendix table 4-39

Government budget appropriations or outlays for R&D, by socioeconomic objectives and selected countries: 2011

Socioeconomic objective	United States	France	Germany	United Kingdom[a]	China	Japan	South Korea
General advancement of knowledge, R&D financed from GUF[b]	na	24.4	39.5	29.9	–	37.4	**
General advancement of knowledge, R&D financed from sources other than GUF	16.0	17.9	17.1	22.6	–	21.5	30.9

** = included in other categories; na = not applicable; NA = not available.

GUF = general university funds; PPP = purchasing power parity.

[a] The data for the United Kingdom are for 2010, the most recent year available.
[b] The United States and South Korea do not have a category equivalent to GUF.

NOTES: Detail may not add to total due to rounding. U.S. data are based on federal budget authority. Socioeconomic objective categories reflect the NABS 2007 classifications (Nomenclature for the Analysis and Comparison of Scientific Budgets and Programmes 2007 classifications). Conversions of foreign currencies to U.S. dollars are based on PPP exchange rates. Because of GUF and slight differences in accounting practices, distribution of government budgets among socioeconomic objectives may not completely reflect actual distribution of government-funded research in particular objectives.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of federal R&D budget authority by spending category, Organisation for Economic Co-operation and Development (January 2013).

Science and Engineering Indicators 2014

Appendix table 4-40

Federal technology transfer activity indicators for U.S. agencies with federal laboratories: FYs 2001–10

Agency	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Invention disclosures and patenting										
All 10 agencies										
Inventions disclosed	3,962	4,149	5,106	5,454	4,771	5,193	4,486	4,365	4,423	4,783
Patent applications filed	2,175	2,130	2,318	1,768	1,745	1,912	1,825	1,938	2,086	1,830
Patents issued	1,610	1,511	1,631	1,391	1,012	1,284	1,405	1,272	1,497	1,143
USDA										
Inventions disclosed	118	151	121	142	125	105	126	133	154	164
Patent applications filed	83	90	60	81	88	83	114	123	123	112
Patents issued	64	53	64	50	27	39	37	30	24	44
DOC										
Inventions disclosed	26	17	21	25	21	14	32	40	41	34
Patent applications filed	12	12	5	12	12	5	8	21	20	19
Patents issued	21	20	9	12	10	7	3	2	7	11
DOD										
Inventions disclosed	1,005	1,122	1,332	1,369	534	1,056	838	1,018	831	698
Patent applications filed	809	829	810	517	354	691	597	590	690	436
Patents issued	619	617	619	426	191	472	425	462	404	304
DOE										
Inventions disclosed	1,527	1,498	1,469	1,617	1,776	1,694	1,575	1,460	1,439	1,616
Patent applications filed	792	711	866	661	812	726	693	904	919	965
Patents issued	605	551	627	520	467	438	441	370	520	480
EPA										
Inventions disclosed	17	16	14	18	12	12	16	9	8	5
Patent applications filed	14	14	23	12	13	13	15	6	3	3
Patents issued	12	9	8	11	9	10	10	4	9	9
HHS										
Inventions disclosed	434	431	472	461	452	442	447	437	389	363
Patent applications filed	255	262	279	216	230	166	261	164	156	113
Patents issued	119	116	136	167	154	164	379	278	397	153
DHS										
Inventions disclosed	na	na	na	NA	NA	NA	NA	10	32	7
Patent applications filed	na	na	na	NA	NA	NA	NA	0	2	2
Patents issued	na	na	na	NA	NA	NA	NA	1	2	1
DOI										
Inventions disclosed	6	14	9	6	4	5	7	7	4	5
Patent applications filed	17	12	8	6	3	2	5	7	8	7
Patents issued	7	13	5	9	9	5	6	1	4	5
NASA										
Inventions disclosed	696	775	1,485	1,612	1,678	1,749	1,514	1,324	1,412	1,722
Patent applications filed	152	166	231	207	202	142	127	122	141	144
Patents issued	159	128	155	189	133	85	68	90	93	129

Appendix table 4-40

Federal technology transfer activity indicators for U.S. agencies with federal laboratories: FYs 2001–10

Agency	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DOT										
Inventions disclosed	2	0	0	0	4	3	2	3	3	1
Patent applications filed	3	0	0	2	5	3	2	0	1	1
Patents issued	0	0	0	0	2	0	3	2	1	1
VA										
Inventions disclosed	131	125	183	204	165	157	175	164	150	168
Patent applications filed	38	34	36	54	26	27	25	13	37	31
Patents issued	4	4	8	7	10	5	8	10	15	10
Licensing										
All 10 agencies										
All licenses, total active in the FY	4,391	6,063	6,497	7,567	9,577	10,186	10,352	11,098	10,926	13,542
Invention licenses	3,140	3,588	3,747	3,804	4,236	4,163	3,935	4,172	4,239	4,004
Other intellectual property licenses	1,254	2,475	2,771	3,775	5,341	6,023	6,405	6,972	6,730	9,121
USDA										
All licenses, total active in the FY	255	267	270	296	320	332	339	328	329	343
Invention licenses	255	267	270	296	320	332	339	328	329	343
Other intellectual property licenses	0	0	0	0	0	0	0	0	0	0
DOC										
All licenses, total active in the FY	40	41	101	125	133	111	222	29	40	41
Invention licenses	40	41	101	125	133	111	222	29	40	41
Other intellectual property licenses	0	0	0	0	0	0	0	0	0	0
DOD										
All licenses, total active in the FY	285	471	364	369	412	444	495	365	432	397
Invention licenses	283	350	361	364	406	438	460	351	386	341
Other intellectual property licenses	5	121	3	5	6	6	35	14	46	56
DOE										
All licenses, total active in the FY	2,005	3,459	3,687	4,345	5,677	5,916	5,842	6,196	5,752	6,224
Invention licenses	1,162	1,327	1,223	1,362	1,535	1,420	1,354	1,418	1,452	1,453
Other intellectual property licenses	843	2,132	2,464	2,983	4,142	4,496	4,488	4,748	4,300	4,771
EPA										
All licenses, total active in the FY	16	23	32	38	39	35	38	37	40	37
Invention licenses	16	23	32	38	39	35	38	37	40	37
Other intellectual property licenses	0	0	0	0	0	0	0	0	0	0
HHS										
All licenses, total active in the FY	1,367	1,356	1,423	1,424	1,532	1,535	1,418	1,675	1,584	1,941
Invention licenses	1,007	1,213	1,350	1,173	1,237	1,213	915	1,376	1,304	1,240
Other intellectual property licenses	360	143	82	251	295	322	460	352	327	683
DHS										
All licenses, total active in the FY	na	na	na	NA	NA	NA	NA	18	63	458
Invention licenses	na	na	na	NA	NA	NA	NA	0	0	0
Other intellectual property licenses	na	na	na	NA	NA	NA	NA	18	63	458

Appendix table 4-40

Federal technology transfer activity indicators for U.S. agencies with federal laboratories: FYs 2001–10

Agency	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DOI										
All licenses, total active in the FY	8	8	11	13	20	21	15	19	21	28
Invention licenses	8	8	10	12	19	20	15	18	18	23
Other intellectual property licenses	0	0	1	1	1	1	0	1	1	1
NASA										
All licenses, total active in the FY	328	357	521	861	1,338	2,856	3,520	3,912	4,181	3,901
Invention licenses	292	290	312	338	441	308	316	330	146	354
Other intellectual property licenses	36	67	209	523	897	2,548	3,204	3,582	3,835	3,547
DOT										
All licenses, total active in the FY	1	0	0	1	5	5	5	5	2	3
Invention licenses	1	0	0	1	5	5	1	5	3	3
Other intellectual property licenses	0	0	0	0	0	0	0	0	0	0
VA										
All licenses, total active in the FY	86	81	88	95	101	112	130	153	163	169
Invention licenses	76	69	88	95	101	112	130	153	163	169
Other intellectual property licenses	10	12	12	12	0	0	0	0	0	0
Collaborative R&D relationships										
All 10 agencies										
CRADAs, total active in the FY	3,676	5,377	5,603	6,015	5,947	7,268	7,326	6,923	7,759	8,525
Traditional CRADAs	2,837	2,858	2,316	3,546	3,962	3,666	3,819	3,664	4,245	4,768
Other collaborative R&D relationships	NA	NA	8,162	7,454	11,767	9,738	10,164	11,411	16,319	18,667
USDA										
CRADAs, total active in the FY	219	225	229	205	199	195	230	252	259	287
Traditional CRADAs	217	222	212	185	171	163	184	202	217	233
Other collaborative R&D relationships	NA	NA	2,769	1,166	5,028	3,477	4,084	5,466	9,960	11,214
DOC										
CRADAs, total active in the FY	247	1,883	1,903	1,969	1,904	3,008	2,778	2,390	2,386	2,399
Traditional CRADAs	188	139	92	67	80	149	154	131	101	101
Other collaborative R&D relationships	1,575	1,694	1,814	2,301	2,714	2,114	2,672	2,816	2,828	2,897
DOD										
CRADAs, total active in the FY	1,965	1,913	2,134	2,833	2,736	2,999	2,971	2,596	2,870	3,248
Traditional CRADAs	1,418	1,376	1,523	2,425	2,736	2,424	2,383	1,993	2,247	2,516
Other collaborative R&D relationships	0	0	0	0	0	0	0	3	1	287
DOE										
CRADAs, total active in the FY	558	680	661	610	644	631	697	711	744	697
Traditional CRADAs	558	680	661	610	644	631	697	711	744	697
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	0	0
EPA										
CRADAs, total active in the FY	48	59	91	104	107	94	84	112	112	67
Traditional CRADAs	45	55	77	82	95	83	67	74	51	50
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	0	0

Appendix table 4-40

Federal technology transfer activity indicators for U.S. agencies with federal laboratories: FYs 2001–10

Agency	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
HHS										
CRADAs, total active in the FY	498	470	427	220	215	164	284	453	457	447
Traditional CRADAs	289	261	254	119	117	92	206	295	284	300
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	0	0
DHS										
CRADAs, total active in the FY	na	na	na	NA	NA	NA	NA	23	23	36
Traditional CRADAs	na	na	na	NA	NA	NA	NA	21	22	32
Other collaborative R&D relationships	na	na	na	NA	NA	NA	NA	3	1	3
DOI										
CRADAs, total active in the FY	56	52	51	61	70	82	170	170	248	436
Traditional CRADAs	41	42	51	45	49	31	20	33	36	29
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	0	0
NASA										
CRADAs, total active in the FY	1	1	0	0	1	1	1	1	1	1
Traditional CRADAs	1	1	0	0	1	1	1	1	1	1
Other collaborative R&D relationships	1,053	2,659	3,579	3,987	4,025	4,275	3,812	4,076	4,507	4,246
DOT										
CRADAs, total active in the FY	82	92	96	0	57	59	36	23	22	22
Traditional CRADAs	78	80	96	0	55	59	36	23	0	0
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	2	2
VA										
CRADAs, total active in the FY	2	2	11	13	14	37	82	221	623	895
Traditional CRADAs	2	2	11	13	14	33	74	207	581	833
Other collaborative R&D relationships	0	0	0	0	0	0	0	0	0	18

na = not applicable; NA = not available.

CRADA = Cooperative R&D Agreement; DHS = Department of Homeland Security; DOC = Department of Commerce; DOD = Department of Defense; DOE = Department of Energy; DOI = Department of the Interior; DOT = Department of Transportation; EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; USDA = U.S. Department of Agriculture; VA = Department of Veterans Affairs.

NOTES: DHS started to operate in early 2003; it did not start to provide technology transfer statistics until FY 2008. Invention licenses refers to inventions which are patented or could be patented. Other intellectual property refers to intellectual property protected through mechanisms other than a patent (e.g., copyright). Total CRADAs refers to all agreements executed under CRADA authority (15 USC 3710a). Traditional CRADAs are collaborative R&D partnerships between a federal laboratory and one or more nonfederal organizations. (Nontraditional CRADAs are established for special purposes, such as material transfer or technical assistance that may result in protected information.) Federal agencies have varying authorities for other kinds of collaborative R&D relationships.

SOURCE: National Institute of Standards and Technology, *Federal Laboratory Technology Transfer, Fiscal Year 2010 Summary Report to the President and the Congress* (August 2012), http://www.nist.gov/tpo/publications/index.cfm.

Science and Engineering Indicators 2014

Appendix table 4-41

SBIR and STTR awards, by type of award: FYs 1983–2011

	SBIR			STTR		
Fiscal year	Total	Phase I	Phase II	Total	Phase I	Phase II
1983	789	789	0	na	na	na
1984	1,293	1,016	277	na	na	na
1985	1,839	1,483	356	na	na	na
1986	2,173	1,600	573	na	na	na
1987	2,767	2,065	702	na	na	na
1988	2,668	1,958	710	na	na	na
1989	2,817	2,049	768	na	na	na
1990	3,225	2,379	846	na	na	na
1991	3,405	2,649	756	na	na	na
1992	3,607	2,685	922	na	na	na
1993	4,016	2,970	1,046	na	na	na
1994	4,033	3,130	903	na	na	na
1995	4,366	3,092	1,274	1	1	0
1996	4,056	2,850	1,206	0	0	0
1997	4,792	3,374	1,418	0	0	0
1998	4,292	3,024	1,268	209	208	1
1999	4,644	3,388	1,256	377	303	74
2000	5,307	3,959	1,348	410	315	95
2001	5,833	4,286	1,547	409	318	91
2002	6,753	5,150	1,603	468	369	99
2003	6,847	5,102	1,745	572	459	113
2004	6,384	4,395	1,989	903	719	184
2005	6,083	4,216	1,867	802	579	223
2006	5,658	3,748	1,910	857	630	227
2007	5,394	3,814	1,580	848	637	211
2008	5,546	3,698	1,848	734	482	252
2009	5,796	4,016	1,780	831	593	238
2010	6,184	4,271	1,913	905	625	280
2011	5,396	3,626	1,770	708	468	240

na = not applicable.

SBIR = Small Business Innovation Research program; STTR = Small Business Technology Transfer program.

SOURCE: U.S. Small Business Administration, SBIR/STTR official website, http://www.sbir.gov/past-awards, accessed 25 February 2013.

Science and Engineering Indicators 2014

Appendix table 4-42

SBIR award funding, by type of award and federal agency: FYs 1983–2011

(Millions of current dollars)

		Type		Agency										
Fiscal year	All	Phase I	Phase II	USDA	DOC	DOD	ED	DOE	HHS	DHS[a]	DOT	EPA	NASA	NSF
1983	38.1	38.1	0.0	0.6	0.0	15.6	0.3	5.0	7.2	na	0.3	0.2	4.9	3.5
1984	149.9	49.3	100.6	2.0	0.0	49.8	1.0	26.2	32.4	na	1.7	0.9	29.9	4.2
1985	195.5	74.5	121.0	3.1	0.2	95.8	1.2	27.0	44.1	na	3.4	1.9	7.8	9.8
1986	305.7	82.0	223.7	3.5	0.9	159.5	1.7	25.0	66.4	na	3.7	2.7	32.5	8.6
1987	272.0	103.8	168.2	3.7	1.7	142.3	1.5	23.3	48.3	na	2.7	3.0	28.4	16.2
1988	392.9	99.3	293.7	3.8	1.4	199.5	2.2	36.3	75.4	na	3.4	3.0	49.2	18.1
1989	401.1	103.1	298.0	3.9	1.1	194.9	1.9	36.2	79.5	na	3.7	3.1	57.6	18.0
1990	453.7	121.2	332.4	4.1	0.7	220.0	2.5	41.5	89.1	na	4.1	3.2	68.5	19.4
1991	454.1	133.4	320.7	5.0	1.2	201.8	2.6	41.6	95.7	na	5.7	3.5	74.2	22.4
1992	532.2	134.9	397.3	5.9	2.1	257.4	1.7	43.1	104.7	na	3.6	4.0	85.5	22.4
1993	630.7	162.1	468.6	7.2	2.3	330.8	2.9	49.5	146.0	na	5.1	4.5	58.6	22.1
1994	602.9	222.5	380.4	7.5	3.7	269.5	2.9	52.0	118.5	na	8.8	5.0	106.4	27.0
1995	960.8	236.5	724.3	11.3	7.6	448.0	3.4	70.8	216.5	na	10.2	7.0	145.7	38.9
1996	926.1	229.0	697.1	9.5	6.2	497.0	3.5	66.9	176.2	na	8.0	4.8	113.1	40.1
1997	1,133.1	281.5	851.6	9.7	7.6	558.9	3.9	73.9	283.4	na	6.8	5.6	130.5	52.6
1998	1,049.7	262.0	787.7	12.9	7.0	568.7	6.5	77.2	232.4	na	5.9	4.8	82.6	51.6
1999	1,123.9	294.9	829.0	12.4	7.0	520.5	4.5	79.1	331.1	na	8.1	5.1	98.2	57.9
2000	1,062.2	295.0	767.2	18.3	6.4	547.6	0.0	85.6	231.2	na	3.8	7.9	99.7	61.8
2001	1,181.4	307.3	874.1	16.2	6.9	604.6	7.1	88.4	283.1	na	4.7	6.1	102.2	62.1
2002	1,505.4	423.3	1,082.1	17.3	7.2	661.5	6.7	94.5	458.5	na	4.6	7.6	187.3	60.2
2003	1,741.4	467.2	1,274.2	16.7	7.9	954.7	9.0	94.9	549.4	na	3.3	6.2	22.9	76.4
2004	1,970.8	493.9	1,476.9	18.9	8.4	1,033.1	7.4	107.3	574.3	10.7	3.7	3.0	114.2	89.8
2005	1,857.6	452.5	1,405.1	18.4	9.0	945.0	8.9	100.6	553.6	30.7	2.5	6.2	103.2	79.6
2006	1,904.0	424.9	1,479.1	16.7	7.0	996.9	9.7	114.3	566.6	13.9	3.3	8.0	106.2	61.4
2007	1,682.4	447.5	1,234.9	18.1	2.3	842.9	10.0	108.5	491.3	36.0	1.9	6.6	96.8	67.9
2008	1,857.1	449.5	1,407.7	18.7	5.8	940.5	9.9	129.7	560.3	22.2	5.3	3.4	99.3	62.2
2009	1,926.2	503.4	1,422.8	16.1	12.5	868.1	9.9	151.0	615.5	19.9	3.8	4.7	133.0	91.6
2010	2,115.2	548.0	1,567.3	22.9	7.3	981.1	10.1	207.0	598.3	26.3	14.9	4.8	136.8	105.5
2011	1,946.0	502.1	1,443.9	22.4	6.1	840.1	12.2	140.9	625.2	19.4	10.5	4.7	173.1	91.2

na = not applicable.

DHS = Department of Homeland Security; DOC = Department of Commerce; DOD = Department of Defense; DOE = Department of Energy; DOT = Department of Transportation; ED = Department of Education; EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; SBIR = Small Business Innovation Research program; USDA = U.S. Department of Agriculture.

[a] DHS, established by the Homeland Security Act of 2002 and formed in January 2003, held its first SBIR competition in FY 2004.

NOTE: Detail may not add to total due to rounding.

SOURCE: U.S. Small Business Administration, SBIR/STTR official website, http://www.sbir.gov/past-awards, accessed 25 February 2013.

Science and Engineering Indicators 2014

Appendix table 4-43

STTR award funding, by type of award and federal agency: FYs 1995–2011

(Millions of current dollars)

		Type		Agency										
Fiscal year	All	Phase I	Phase II	USDA	DOC	DOD	ED	DOE	HHS	DHS[a]	DOT	EPA	NASA	NSF
1995	0.1	0.1	0.0	na	na	na	na	na	0.1	na	na	na	na	na
1996	0.0	0.0	0.0	na	na	na	na	na	0.0	na	na	na	na	na
1997	0.0	0.0	0.0	na	na	na	na	na	0.0	na	na	na	na	na
1998	20.0	19.5	0.5	na	na	8.1	na	1.4	9.3	na	na	na	na	1.2
1999	56.5	24.6	31.9	na	na	25.2	na	4.4	13.2	na	na	na	9.7	4.0
2000	64.0	23.7	40.3	na	na	32.2	na	5.2	17.0	na	na	na	5.5	4.1
2001	62.6	24.9	37.7	na	na	25.7	na	4.3	19.0	na	na	na	5.4	8.2
2002	85.4	31.0	54.4	na	na	36.1	na	7.2	32.2	na	na	na	4.5	5.4
2003	109.2	41.5	67.7	na	na	55.3	na	7.3	33.8	na	na	na	7.0	5.9
2004	205.6	82.4	123.2	na	na	105.2	na	7.5	74.1	na	na	na	12.9	5.9
2005	227.7	66.1	161.6	na	na	118.5	na	12.2	70.6	na	na	na	19.5	7.0
2006	241.5	78.4	163.1	na	na	130.9	na	14.1	70.3	0.4	na	na	13.1	12.7
2007	242.2	83.8	158.5	na	na	118.3	na	15.1	74.7	0.8	na	na	10.5	22.8
2008	247.4	61.1	186.3	na	na	115.8	na	18.2	73.9	0.5	na	na	11.7	27.3
2009	236.8	72.2	164.6	na	na	125.1	na	14.2	58.0	NA	na	na	15.2	24.2
2010	289.2	77.5	211.6	na	na	156.3	na	22.5	80.4	NA	na	na	16.8	13.2
2011	234.6	64.2	170.4	na	na	102.2	na	18.8	83.5	NA	na	na	20.7	9.4

na = not applicable; NA = not available.

DHS = Department of Homeland Security; DOC = Department of Commerce; DOD = Department of Defense; DOE = Department of Energy; DOT = Department of Transportation; ED = Department of Education; EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; STTR = Small Business Technology Transfer program; USDA = U.S. Department of Agriculture.

[a] DHS, established by the Homeland Security Act of 2002 and formed in January 2003, held its first STTR competition in FY 2006.

NOTE: Detail may not add to total due to rounding.

SOURCE: U.S. Small Business Administration, SBIR/STTR official website, http://www.sbir.gov/past-awards, accessed 25 February 2013.

Science and Engineering Indicators 2014

Appendix table 5-1

Higher education R&D expenditures, by R&D field: FYs 2005–12

(Dollars in thousands)

Field	2005	2006	2007	2008	2009	2010	2011	2012
All R&D fields[a]	47,535,201	49,645,341	51,590,017	54,113,750	57,288,415	61,257,398	65,274,235	65,774,524
Science	39,030,577	40,663,615	41,977,651	43,914,300	46,214,473	49,031,326	51,952,691	51,963,778
Computer sciences	1,404,105	1,443,055	1,430,660	1,471,454	1,600,447	1,637,931	1,740,416	1,821,482
Environmental sciences	2,554,468	2,601,097	2,681,473	2,798,750	2,923,404	2,991,911	3,159,158	3,172,613
Atmospheric sciences	460,020	507,583	446,184	423,055	416,826	429,355	480,762	476,210
Earth sciences	919,718	897,499	910,886	950,631	1,019,429	1,085,000	1,139,823	1,166,960
Oceanography	812,061	839,504	992,484	1,051,136	1,077,634	1,021,961	1,049,765	1,021,715
Environmental sciences nec	362,669	356,511	331,919	373,928	409,515	455,595	488,808	507,728
Life sciences	27,604,138	28,803,658	29,805,328	31,192,916	32,778,944	34,949,394	37,319,252	37,215,163
Agricultural sciences	2,656,770	2,796,961	2,913,260	2,995,518	3,055,512	2,986,458	3,112,273	3,296,327
Biological sciences	8,843,679	9,049,032	9,207,593	9,760,099	10,146,059	10,934,309	11,841,831	11,595,919
Medical sciences	14,877,626	15,805,806	16,553,616	17,254,161	18,229,453	19,270,320	20,401,120	20,357,802
Life sciences nec	1,226,063	1,151,859	1,130,859	1,183,138	1,347,920	1,758,307	1,964,028	1,965,115
Mathematical sciences	494,282	532,832	573,070	619,854	546,915	594,254	640,393	674,932
Physical sciences	3,702,783	3,813,770	3,863,269	3,931,833	4,282,795	4,621,945	4,780,886	4,721,131
Astronomy	454,354	469,955	467,604	539,112	578,406	572,517	583,124	706,133
Chemistry	1,371,984	1,414,311	1,460,415	1,486,721	1,582,562	1,749,897	1,784,092	1,750,048
Physics	1,596,290	1,611,248	1,615,766	1,606,997	1,869,890	1,998,184	2,120,737	1,996,446
Physical sciences nec	280,155	318,256	319,484	299,003	251,937	301,347	292,933	268,504
Psychology	825,009	875,641	872,547	925,069	972,319	1,078,419	1,156,794	1,187,582
Social sciences	1,684,610	1,706,003	1,803,115	1,949,741	2,080,953	1,996,708	2,063,212	2,055,807
Economics	324,685	339,800	349,313	398,730	379,720	349,862	387,246	383,224
Political sciences	323,053	317,044	348,310	339,294	368,887	374,444	371,860	391,714
Sociology	370,468	399,697	397,748	403,226	408,444	420,271	432,786	459,757
Social sciences nec	666,404	649,462	707,744	808,491	923,902	852,131	871,320	821,112
Sciences nec	761,182	887,559	948,189	1,024,683	1,028,696	1,160,764	1,092,580	1,115,068
Engineering	6,743,373	7,095,085	7,517,262	7,957,504	8,648,525	9,328,730	10,043,544	10,302,305
Aeronautical/astronautical	445,170	385,254	471,097	537,251	613,828	635,234	667,763	662,221
Bioengineering/biomedical	419,625	477,119	539,137	601,908	648,099	744,124	818,335	878,633
Chemical	505,975	560,005	598,944	655,603	695,842	820,941	918,273	908,969
Civil	787,548	858,346	862,260	924,620	980,451	1,106,954	1,210,306	1,234,326
Electrical	1,581,700	1,615,996	1,636,983	1,704,953	1,844,482	2,053,479	2,209,772	2,314,842
Mechanical	935,302	1,048,506	1,126,726	1,162,428	1,243,910	1,460,936	1,557,472	1,550,936
Metallurgical/materials	612,016	643,244	632,941	646,523	688,225	703,915	738,049	756,843
Engineering nec	1,456,037	1,506,615	1,649,174	1,724,218	1,933,688	1,803,147	1,923,574	1,995,535
Non-S&E[a]	1,761,251	1,886,641	2,095,104	2,241,946	2,425,417	2,897,342	3,278,000	3,508,441
Business and management	220,187	247,335	276,280	329,931	343,916	368,242	399,780	441,705
Communications, journalism, and library science	75,582	84,784	90,832	89,203	107,484	129,891	153,079	159,436
Education	766,416	819,004	905,247	868,830	915,976	994,518	1,115,002	1,229,101
Humanities	192,309	217,263	241,683	246,713	255,289	262,769	312,503	340,628
Law	63,118	69,387	74,809	90,907	107,966	98,122	125,474	131,662
Social work	87,344	89,993	93,540	123,984	138,283	177,376	194,153	199,097
Visual and performing arts	42,135	46,100	46,155	59,285	72,867	66,465	77,478	85,037
Non-S&E nec	314,019	312,774	366,448	432,965	483,636	799,959	900,531	921,775

nec = not elsewhere classified.

[a] From FY 2003 through FY 2009, some institution totals for all fields of R&D expenditures may be lower-bound estimates because the National Science Foundation did not attempt to estimate for nonresponse on the non-S&E R&D expenditures item prior to FY 2010.

NOTE: The non-S&E detailed field data may not sum to total non-S&E R&D expenditures because some institutions reporting non-S&E R&D expenditures did not break out total and federal funds by non-S&E fields.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.

Science and Engineering Indicators 2014

Appendix table 5-2

Total and federally financed higher education R&D expenditures, by character of work: FYs 1953–2012

(Dollars in millions)

	Total					Federal				
	All R&D	Basic research		Applied R&D		All federal R&D	Basic research		Applied R&D	
Fiscal year	expenditures[a]	Amount	Percent	Amount	Percent	expenditures	Amount	Percent	Amount	Percent
Total S&E[a]										
1953	255	110	43.1	145	56.9	138	na	na	na	na
1954	290	136	46.9	154	53.1	160	na	na	na	na
1955	312	159	51.0	153	49.0	169	na	na	na	na
1956	372	200	53.8	172	46.2	213	na	na	na	na
1957	410	240	58.5	170	41.5	229	na	na	na	na
1958	456	281	61.6	175	38.4	254	na	na	na	na
1959	526	343	65.2	183	34.8	306	na	na	na	na
1960	646	433	67.0	213	33.0	405	na	na	na	na
1961	763	536	70.2	227	29.8	500	na	na	na	na
1962	904	659	72.9	245	27.1	613	na	na	na	na
1963	1,081	814	75.3	267	24.7	760	na	na	na	na
1964	1,275	1,003	78.7	272	21.3	917	na	na	na	na
1965	1,474	1,138	77.2	336	22.8	1,073	na	na	na	na
1966	1,715	1,303	76.0	412	24.0	1,261	na	na	na	na
1967	1,921	1,457	75.8	464	24.2	1,409	na	na	na	na
1968	2,149	1,650	76.8	499	23.2	1,572	na	na	na	na
1969	2,225	1,711	76.9	514	23.1	1,600	na	na	na	na
1970	2,335	1,796	76.9	539	23.1	1,647	na	na	na	na
1971	2,500	1,914	76.6	586	23.4	1,724	na	na	na	na
1972	2,630	2,022	76.9	608	23.1	1,795	1,420	79.1	375	20.9
1973	2,884	2,053	71.2	831	28.8	1,985	1,454	73.2	531	26.8
1974	3,023	2,154	71.3	869	28.7	2,032	1,523	74.9	509	25.1
1975	3,409	2,410	70.7	999	29.3	2,288	1,695	74.1	593	25.9
1976	3,729	2,549	68.4	1,180	31.6	2,512	1,841	73.3	671	26.7
1977	4,067	2,800	68.8	1,267	31.2	2,726	2,007	73.6	720	26.4
1978[b]	4,625	na	na	na	na	3,059	na	na	na	na
1979	5,366	3,619	67.4	1,747	32.6	3,598	2,577	71.6	1,022	28.4
1980	6,063	4,036	66.6	2,026	33.4	4,098	2,861	69.8	1,237	30.2
1981	6,847	4,594	67.1	2,253	32.9	4,571	3,260	71.3	1,311	28.7
1982	7,324	4,879	66.6	2,445	33.4	4,768	3,402	71.3	1,367	28.7
1983	7,882	5,303	67.3	2,579	32.7	4,989	3,547	71.1	1,442	28.9
1984	8,620	5,733	66.5	2,887	33.5	5,431	3,830	70.5	1,601	29.5
1985	9,687	6,556	67.7	3,131	32.3	6,064	4,343	71.6	1,722	28.4
1986	10,928	7,492	68.6	3,435	31.4	6,712	4,868	72.5	1,844	27.5
1987	12,153	8,393	69.1	3,760	30.9	7,343	5,375	73.2	1,968	26.8
1988	13,463	8,894	66.1	4,569	33.9	8,193	5,678	69.3	2,515	30.7
1989	14,979	9,793	65.4	5,186	34.6	8,993	6,195	68.9	2,797	31.1
1990	16,290	10,645	65.3	5,645	34.7	9,640	6,649	69.0	2,991	31.0

Appendix table 5-2

Total and federally financed higher education R&D expenditures, by character of work: FYs 1953–2012

(Dollars in millions)

	Total					Federal				
	All R&D	Basic research		Applied R&D		All federal R&D	Basic research		Applied R&D	
Fiscal year	expenditures[a]	Amount	Percent	Amount	Percent	expenditures	Amount	Percent	Amount	Percent
1991	17,589	11,607	66.0	5,982	34.0	10,238	7,128	69.6	3,110	30.4
1992	18,821	12,516	66.5	6,305	33.5	11,095	7,718	69.6	3,377	30.4
1993	19,954	13,303	66.7	6,651	33.3	11,960	8,398	70.2	3,562	29.8
1994	21,035	13,989	66.5	7,046	33.5	12,654	8,878	70.2	3,775	29.8
1995	22,179	14,812	66.8	7,367	33.2	13,337	9,399	70.5	3,938	29.5
1996	23,055	15,481	67.1	7,574	32.9	13,847	9,868	71.3	3,978	28.7
1997	24,380	16,602	68.1	7,778	31.9	14,321	10,316	72.0	4,006	28.0
1998	25,867	19,058	73.7	6,810	26.3	15,159	11,862	78.2	3,298	21.8
1999	27,544	20,450	74.2	7,094	25.8	16,112	12,746	79.1	3,365	20.9
2000	30,084	22,547	74.9	7,537	25.1	17,548	13,936	79.4	3,611	20.6
2001	32,801	24,392	74.4	8,409	25.6	19,227	15,038	78.2	4,188	21.8
2002	36,383	27,363	75.2	9,019	24.8	21,856	17,262	79.0	4,593	21.0
2003	40,077	30,105	75.1	9,973	24.9	24,753	19,627	79.3	5,126	20.7
2004	43,238	31,957	73.9	11,281	26.1	27,627	21,353	77.3	6,274	22.7
2005	45,774	34,353	75.0	11,421	25.0	29,187	22,885	78.4	6,302	21.6
2006	47,759	36,082	75.5	11,677	24.5	30,132	23,697	78.6	6,434	21.4
2007	49,495	37,726	76.2	11,769	23.8	30,430	24,001	78.9	6,429	21.1
2008	51,872	39,322	75.8	12,550	24.2	31,272	24,430	78.1	6,842	21.9
2009	54,863	40,913	74.6	13,950	25.4	32,576	25,025	76.8	7,551	23.2
Total S&E and non-S&E[a]										
2010	61,257	40,448	66.0	20,810	34.0	37,477	25,386	67.7	12,091	32.3
2011	65,274	42,525	65.1	22,749	34.9	40,771	27,097	66.5	13,674	33.5
2012	65,775	41,993	63.8	23,782	36.2	40,130	26,073	65.0	14,058	35.0

na = not applicable; separate data for federally financed basic research, applied research, and development were not collected for these years.

[a] Totals for FYs 1953–2009 represent R&D expenditures in S&E fields only. Beginning in FY 2010, totals and character of work data include R&D expenditures in S&E fields and non-S&E fields.
[b] FY 1978 data are estimated based on data collected from doctorate-granting institutions only.

NOTES: Character-of-work estimation procedure was revised for FY 1998 and later years; hence, these data are not directly comparable with data for FY 1997 and earlier years. Prior to FY 2010 R&D expenditures by character of work were based on percent estimates of basic research provided by universities and colleges. Beginning in FY 2010, institutions were asked for dollar amounts of federally funded and nonfederally funded R&D expenditures for basic research, applied research, and development. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.

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Appendix table 5-3

Sources of S&E R&D funds at private and public academic institutions: Selected years, 1990–2012

Source of funds	All institutions		Public institutions		Private institutions	
	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution
1990						
All sources	16,290	100.0	10,764	100.0	5,525	100.0
Federal government	9,640	59.0	5,626	52.0	4,014	73.0
State/local government	1,324	8.0	1,191	11.0	133	2.0
Business	1,127	7.0	733	7.0	394	7.0
Academic institutions	3,006	19.0	2,508	23.0	498	9.0
Other	1,191	7.0	706	7.0	485	9.0
2000						
All sources	30,084	100.0	20,521	100.0	9,564	100.0
Federal government	17,548	58.0	10,660	52.0	6,888	72.0
State/local government	2,200	7.0	2,005	10.0	195	2.0
Business	2,156	7.0	1,440	7.0	716	8.0
Academic institutions	5,925	20.0	4,989	24.0	936	10.0
Other	2,255	8.0	1,426	7.0	829	9.0
2010						
All sources	58,360	100.0	39,082	100.0	19,278	100.0
Federal government	36,510	63.0	22,598	58.0	13,912	72.0
State/local government	3,605	6.0	3,169	8.0	436	2.0
Business	3,117	5.0	2,024	5.0	1,093	6.0
Academic institutions	10,674	18.0	8,394	22.0	2,280	12.0
Other	4,454	8.0	2,897	7.0	1,557	8.0
2011						
All sources	61,996	100.0	41,510	100.0	20,486	100.0
Federal government	39,653	64.0	24,539	59.0	15,114	74.0
State/local government	3,576	6.0	3,185	8.0	390	2.0
Business	3,096	5.0	2,011	5.0	1,086	5.0
Academic institutions	11,124	18.0	8,806	21.0	2,318	11.0
Other	4,547	7.0	2,968	7.0	1,578	8.0
2012						
All sources	62,266	100.0	41,634	100.0	20,632	100.0
Federal government	38,935	63.0	24,203	58.0	14,733	71.0
State/local government	3,440	6.0	3,069	7.0	371	2.0
Business	3,201	5.0	2,056	5.0	1,146	6.0
Academic institutions	12,086	19.0	9,322	22.0	2,764	13.0
Other	4,603	7.0	2,985	7.0	1,619	8.0

NOTES: Data in table are expenditures for S&E R&D and their sources; expenditures for non-S&E R&D and their sources are not included. The details for each funding source may not add to the totals of all sources because of rounding. Other includes nonprofit organizations and other organizations.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.

Science and Engineering Indicators 2014

Appendix table 5-4

Federally financed higher education R&D expenditures, by federal agency and R&D field: FY 2012

(Dollars in thousands)

Field	All federal R&D expenditures	DOD	DOE	HHS	NASA	NSF	USDA	Other[a]
All R&D fields	40,130,460	4,923,713	1,952,698	21,895,249	1,330,780	5,270,564	1,093,571	3,663,885
Science	32,489,286	2,417,572	1,132,873	21,014,420	912,371	3,869,090	1,029,265	2,113,695
Computer sciences	1,357,726	470,766	55,172	98,645	19,131	568,461	1,477	144,074
Environmental sciences	2,197,709	212,153	173,982	83,598	301,117	792,070	67,428	567,361
Atmospheric sciences	388,814	40,346	34,684	1,480	109,679	88,863	5,905	107,857
Earth sciences	817,223	51,033	89,468	12,587	151,512	308,424	38,005	166,194
Oceanography	670,188	80,767	13,314	10,043	22,355	315,006	4,837	223,866
Environmental sciences nec	321,484	40,007	36,516	59,488	17,571	79,777	18,681	69,444
Life sciences	22,723,650	845,828	226,836	19,136,167	79,490	766,888	881,694	786,747
Agricultural sciences	1,135,807	30,626	70,711	94,636	8,047	113,546	616,981	201,260
Biological sciences	7,720,672	252,320	115,444	6,317,189	34,893	571,466	214,812	214,548
Medical sciences	12,670,344	509,592	25,146	11,733,118	35,714	56,667	25,586	284,521
Life sciences nec	1,196,827	53,290	15,535	991,224	836	25,209	24,315	86,418
Mathematical sciences	490,576	88,386	17,730	75,941	3,341	261,358	4,329	39,491
Physical sciences	3,483,328	550,413	621,797	567,599	476,067	1,116,277	6,985	144,190
Astronomy	534,547	23,342	10,409	2,211	299,710	188,798	0	10,077
Chemistry	1,212,583	151,341	157,523	490,987	15,619	356,079	3,219	37,815
Physics	1,543,999	334,315	430,547	54,183	130,332	513,406	1,288	79,928
Physical sciences nec	192,199	41,415	23,318	20,218	30,406	57,994	2,478	16,370
Psychology	866,254	51,636	794	616,031	15,813	82,446	7,165	92,369
Social sciences	921,095	97,051	11,705	319,767	14,361	142,987	53,105	282,119
Economics	144,431	6,272	4,007	33,906	482	25,888	28,417	45,459
Political sciences	142,803	28,019	2,474	39,542	281	23,305	2,312	46,870
Sociology	247,659	11,130	1,214	125,578	576	37,836	7,388	63,937
Social sciences nec	386,202	51,630	4,010	120,741	13,022	55,958	14,988	125,853
Sciences nec	448,948	101,339	24,857	116,672	3,051	138,603	7,082	57,344
Engineering	6,446,144	2,425,239	795,573	650,533	408,725	1,181,420	54,530	930,124
Aeronautical/astronautical	501,724	272,501	18,348	3,100	118,746	21,191	17	67,821
Bioengineering/biomedical	551,343	82,749	14,846	362,453	4,337	60,350	8,648	17,960
Chemical	505,344	121,428	140,637	65,536	7,466	126,164	6,597	37,516
Civil	571,496	54,128	65,269	21,141	13,606	142,686	8,369	266,297
Electrical	1,603,171	842,588	103,935	72,143	62,224	356,761	1,890	163,630
Mechanical	1,036,311	440,806	195,862	50,068	64,089	170,692	1,992	112,802
Metallurgical/materials	461,763	187,181	101,287	22,223	8,053	111,814	1,261	29,944
Engineering nec	1,214,992	423,858	155,389	53,869	130,204	191,762	25,756	234,154
Non-S&E	1,195,030	80,902	24,252	230,296	9,684	220,054	9,776	620,066
Business and management	96,244	25,835	3,265	6,952	491	14,643	2,100	42,958
Communications, journalism, and library science	53,148	5,488	153	22,279	0	9,345	446	15,437
Education	685,505	21,256	2,448	76,456	5,697	155,378	2,215	422,055
Humanities	68,428	6,620	520	6,022	190	13,305	183	41,588
Law	24,553	691	252	4,870	889	1,484	20	16,347
Social work	108,992	1,682	7	92,572	1	924	1,675	12,131
Visual and performing arts	10,477	651	3,552	497	0	2,197	69	3,511
Non-S&E nec	147,683	18,679	14,055	20,648	2,416	22,778	3,068	66,039

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; nec = not elsewhere classified; NSF = National Science Foundation; USDA = U.S. Department of Agriculture.

[a] Includes all other agencies reported.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, FY 2012.

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Appendix table 5-5

Higher education R&D expenditures, by source of funds and R&D field: FY 2012

(Dollars in thousands)

Field	All R&D expenditures	Federal government	State and local government	Institution funds	Business	Nonprofit organizations	All other sources
All R&D fields	65,774,524	40,130,460	3,704,365	13,673,539	3,281,809	4,033,233	951,118
Science	51,963,778	32,489,286	2,757,482	10,247,426	2,344,693	3,347,940	776,951
Computer sciences	1,821,482	1,357,726	43,688	270,596	82,166	37,182	30,124
Environmental sciences	3,172,613	2,197,709	167,243	528,818	128,925	89,179	60,739
Atmospheric sciences	476,210	388,814	18,041	51,449	8,455	6,234	3,217
Earth sciences	1,166,960	817,223	54,320	195,308	58,544	30,290	11,275
Oceanography	1,021,715	670,188	52,519	191,738	38,279	33,678	35,313
Environmental sciences nec	507,728	321,484	42,363	90,323	23,647	18,977	10,934
Life sciences	37,215,163	22,723,650	2,133,890	7,245,617	1,829,924	2,696,368	585,714
Agricultural sciences	3,296,327	1,135,807	789,901	1,043,488	136,412	135,344	55,375
Biological sciences	11,595,919	7,720,672	553,331	2,125,770	352,943	748,491	94,712
Medical sciences	20,357,802	12,670,344	719,200	3,581,396	1,304,616	1,672,521	409,725
Life sciences nec	1,965,115	1,196,827	71,458	494,963	35,953	140,012	25,902
Mathematical sciences	674,932	490,576	30,130	124,092	7,828	20,441	1,865
Physical sciences	4,721,131	3,483,328	84,821	815,688	123,740	171,214	42,340
Astronomy	706,133	534,547	1,510	111,641	12,805	37,891	7,739
Chemistry	1,750,048	1,212,583	42,353	334,987	63,278	76,976	19,871
Physics	1,996,446	1,543,999	32,356	325,005	40,113	47,017	7,956
Physical sciences nec	268,504	192,199	8,602	44,055	7,544	9,330	6,774
Psychology	1,187,582	866,254	33,600	206,158	20,486	52,803	8,281
Social sciences	2,055,807	921,095	164,970	660,906	52,256	223,899	32,681
Economics	383,224	144,431	49,390	130,937	13,108	38,054	7,304
Political sciences	391,714	142,803	20,930	146,363	7,608	65,414	8,596
Sociology	459,757	247,659	23,397	120,508	9,856	52,384	5,953
Social sciences nec	821,112	386,202	71,253	263,098	21,684	68,047	10,828
Sciences nec	1,115,068	448,948	99,140	395,551	99,368	56,854	15,207
Engineering	10,302,305	6,446,144	682,971	1,838,201	856,703	349,115	129,171
Aeronautical/astronautical	662,221	501,724	16,867	70,150	66,593	3,363	3,524
Bioengineering/biomedical	878,633	551,343	54,219	162,753	45,673	57,350	7,295
Chemical	908,969	505,344	52,441	174,233	132,042	34,232	10,677
Civil	1,234,326	571,496	233,321	278,855	90,517	40,156	19,981
Electrical	2,314,842	1,603,171	86,073	342,288	172,006	80,889	30,415
Mechanical	1,550,936	1,036,311	66,470	241,975	145,364	43,248	17,568
Metallurgical/materials	756,843	461,763	53,078	143,637	63,598	25,142	9,625
Engineering nec	1,995,535	1,214,992	120,502	424,310	140,910	64,735	30,086
Non-S&E	3,508,441	1,195,030	263,912	1,587,912	80,413	336,178	44,996
Business and management	441,705	96,244	36,993	232,494	25,718	42,083	8,173
Communications, journalism, and library science	159,436	53,148	6,056	74,056	3,681	20,999	1,496
Education	1,229,101	685,505	92,111	303,047	23,703	119,463	5,272
Humanities	340,628	68,428	10,186	202,307	4,649	48,996	6,062
Law	131,662	24,553	7,613	67,840	3,303	24,087	4,266
Social work	199,097	108,992	18,450	46,922	1,079	22,308	1,346
Visual and performing arts	85,037	10,477	4,563	58,586	1,564	8,173	1,674
Non-S&E nec	921,775	147,683	87,940	602,660	16,716	50,069	16,707

nec = not elsewhere classified.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, FY 2012.

Science and Engineering Indicators 2014

Appendix table 5-6

Top 100 academic institutions in S&E R&D expenditures in S&E fields, ranked by FY 2012 R&D expenditures: FYs 2005–12

(Dollars in thousands)

Rank	Institution	2005	2006	2007	2008	2009	2010	2011	2012
-	All institutions	45,773,950	47,758,700	49,494,913	51,871,804	54,862,998	58,360,056	61,996,235	62,266,083
1	Johns Hopkins U., The (private)[a]	1,443,792	1,499,977	1,554,103	1,680,927	1,856,270	1,997,252	2,135,547	2,092,999 i
2	U. of Michigan, Ann Arbor (public)	NA	NA	NA	NA	NA	1,128,686	1,212,990	1,247,680
3	U. of Washington-Seattle (public)	NA	NA	NA	NA	NA	995,036	1,112,526	1,065,414
4	U. of California-San Diego (public)	721,035	754,766	798,896	842,027	879,357	937,982	1,003,584	1,065,306
5	U. of California-San Francisco (public)	754,444	796,149	842,840	885,182	947,697	935,509	995,226	1,032,673
6	U. of Wisconsin-Madison (public)	798,099	831,895	840,672	881,777	952,119	940,286	1,022,723	1,030,605
7	Duke U. (private)	630,752	657,080	781,843	766,906	805,021	980,514	1,018,241	1,004,759
8	U. of California-Los Angeles (public)	785,625	811,493	823,083	871,478	889,995	899,677	942,450	969,682
9	U. of North Carolina, Chapel Hill (public)	441,033	443,790	477,231	525,843	646,011	746,828	846,499	864,748
10	Stanford U. (private)	714,897	679,196	687,511	688,225	704,183	810,300	868,393	854,580
11	Columbia U. in the City of New York (private)	535,424	529,945	545,995	548,704	589,575	770,888	841,173	847,809
12	U. of Pittsburgh, Pittsburgh (public)	522,448	530,162	558,566	595,627	623,347	806,014	880,425	839,793
13	U. of Pennsylvania (private)	654,982	676,052	648,247	708,244	726,768	793,523	851,522	813,210
14	U. of Minnesota, Twin Cities (public)	NA	NA	NA	NA	NA	764,916	824,489	806,832
15	Cornell U. (private)	606,804	648,802	641,936	653,996	671,406	747,199	779,809	799,794
16	Pennsylvania State U., University Park and Hershey Medical Center (public)	NA	NA	NA	NA	NA	762,041	776,945	783,894
17	Massachusetts Institute of Technology (private)	580,742	600,748	614,352	659,626	736,102	646,222	693,714	770,367
18	Harvard U. (private)	447,196	453,156	451,276	453,028	462,193	561,703	623,116	753,973
19	Ohio State U. (public)	608,923	652,329	720,206	702,592	716,461	719,574	794,023	720,082
20	U. of California-Davis (public)	546,978	573,002	600,508	642,519	681,618	669,282	698,193	704,999
21	U. of California-Berkeley (public)	554,551	546,035	552,365	591,770	652,474	659,572	670,926	696,904
22	Washington U. in St. Louis (private)	531,846	547,674	572,775	563,967	628,328	693,749	707,404	689,035
23	U. of Texas, M. D. Anderson Cancer Center (public)	383,780	457,696	496,539	558,503	578,788	599,529	663,279	685,814
24	Georgia Institute of Technology (public)	425,386	440,898	472,591	522,136	561,631	611,226	650,588	683,894
25	Texas A&M U., College Station (public)	479,735	492,955	543,888	582,365	630,655	666,516	682,553	669,968
26	Yale U. (private)	431,618	460,075	448,671	487,285	509,452	621,125	654,259	654,824
27	U. of Florida (public)	530,734	565,491	592,835	584,170	592,082	636,607	686,048	649,988
28	U. of Arizona (public)	530,233	535,847	531,753	545,869	565,292	577,958	597,988	615,434
29	Northwestern U. (private)	387,242	419,985	443,345	483,881	515,229	554,228	595,202	602,451
30	U. of Southern California (private)	445,036	450,173	508,138	519,543	533,041	574,366	579,717	593,003
31	U. of Illinois at Urbana-Champaign (public)	499,711	476,198	473,890	501,279	563,710	493,386	522,769	558,022
32	U. of Texas at Austin (public)	410,981	431,398	446,765	493,294	506,369	531,412	558,377	549,312
33	Vanderbilt U. (private)	350,433	376,893	399,149	422,622	431,673	478,345	534,806	533,878
34	Purdue U., West Lafayette (public)	NA	NA	NA	NA	NA	477,145	520,001	528,140
35	U. of Maryland at College Park (public)	338,648	354,244	359,760	395,037	409,190	440,556	485,078	498,417
36	Baylor C. of Medicine (private)	458,694	462,375	438,280	449,301	449,031	447,874	466,061	474,700
37	Emory U. (private)	333,665	345,989	398,383	441,222	449,419	498,309	479,678 i	474,537
38	Michigan State U. (public)	333,735	358,097	360,852	356,767	373,184	399,358	423,766	471,620
39	U. of Alabama at Birmingham, The (public)	318,536	331,436	351,457	404,615	431,732	483,862	497,680	449,108
40	Virginia Polytechnic Institute and State U. (public)	289,994	321,722	366,960	373,281	396,681	393,888	445,302	448,054

Appendix table 5-6

Top 100 academic institutions in S&E R&D expenditures in S&E fields, ranked by FY 2012 R&D expenditures: FYs 2005–12

(Dollars in thousands)

Rank	Institution	2005	2006	2007	2008	2009	2010	2011	2012
41	U. of Texas Southwestern Medical Center, Dallas (public)	320,800	333,237	341,090	390,349	402,087	419,220	431,883	435,085
42	U. of Iowa (public)	334,144	346,357	363,243	293,564	329,901	435,118	433,088	432,980
43	Case Western Reserve U. (private)	323,618	369,264	372,374	416,077	415,539	417,805	428,206	430,246
44	U. of Utah (public)	244,691	248,168	247,794	253,891	331,137	375,420	410,392	425,558
45	New York U. (private)	276,198	284,164	297,867	310,699	308,834	343,762	402,327	425,043
46	U. of Colorado, Denver and Anschutz Medical Campus (public)	251,289	258,030	261,580	266,525	352,902	376,917	407,517	422,844
47	Rutgers, The State U. of New Jersey-New Brunswick (public)	NA	NA	NA	NA	NA	407,170	415,502	420,737
48	U. of Maryland at Baltimore (public)	304,396	405,260	358,851	379,407	359,542	355,910	391,685	414,754
49	U. of Chicago (private)	293,970	305,301	322,488	357,278	377,652	432,943	446,512	411,864
50	U. of Cincinnati (public)	286,036	294,150	336,717	344,046	356,752	393,518	419,456	408,294
51	Icahn School of Medicine at Mt. Sinai (private)	225,293	273,216	269,451	296,380	318,407	370,666	405,527	400,680
52	North Carolina State U. (public)	302,596	330,936	331,662	366,137	380,571	357,802	374,446	400,046
53	Scripps Research Institute, The (private)	330,170	367,375	360,511	366,047	382,275	387,298	400,768	398,673
54	U. of South Florida (public)	NA	NA	NA	NA	NA	330,528	343,366	394,694
55	U. of Rochester (private)	345,337	366,658	373,247	375,218	395,358	412,704	428,144	388,401
56	U. of Illinois at Chicago (public)	318,279	332,176	342,421	335,138	341,655	355,581	373,750	381,918
57	U. of Colorado at Boulder (public)	261,429	250,255	259,624	261,123	288,388	335,983	372,034	373,512
58	U. of Virginia, Charlottesville (public)	NA	NA	NA	NA	NA	271,843	377,757	363,569
59	U. of Miami (private)	209,572	213,516	210,534	241,775	248,029	278,664	321,830	361,772
60	California Institute of Technology (private)	265,364	270,269	285,488	272,881	342,455	359,245	374,636	360,834
61	U. of Kentucky (public)	306,653	323,958	331,606	329,354	351,943	350,857	364,175	354,132
62	Arizona State U. (public)	166,923	201,955	224,352	259,503	281,588	296,458	323,567	344,611
63	SUNY Buffalo (public)	267,271	297,909	314,837	329,720	338,283	337,976	337,783	340,930
64	U. of California-Irvine (public)	276,763	300,229	309,554	324,552	325,493	311,105	328,870	335,874
65	Colorado State U., Fort Collins (public)	236,211	253,992	288,497	295,235	304,397	291,621	321,130	335,336
66	Boston U. (private)	246,520	255,615	249,279	255,022	280,814	344,687	348,593	328,968
67	U. of Hawaii at Manoa (public)	230,651	249,635	266,447	271,835	290,707	303,085	318,316	312,311
68	U. of GA (public)	316,806	323,843	332,612	350,299	349,730	274,380	300,388	311,498
69	IN U.-Purdue U. IN (public)	NA	NA	NA	NA	NA	290,490	314,004	308,101
70	Oregon Health & Science U. (public)	266,687	272,174	287,430	301,396	309,675	314,990	334,324	305,360
71	Rockefeller U. (private)	198,719	215,417	233,917	247,505	252,478	265,750	272,491	292,896
72	Yeshiva U. (private)	193,104	189,416	192,199	197,311	193,010	314,240	281,334	289,027
73	Washington State U. (public)	182,677	196,391	210,010	276,806	285,595	285,120	299,905	288,693
74	Louisiana State U., Baton Rouge (public)	236,729	251,115	260,924	273,001	285,699	280,432	281,221	279,019
75	SUNY at Albany, C.of Nanoscale Science and Engineering (public)	NA	NA	NA	NA	NA	NA	248,778	265,473
76	Princeton U. (private)	202,380	188,165	188,732	194,757	200,580	231,862	255,483	264,980
77	U. of Kansas (public)	190,105	195,947	202,129	215,364	225,856	251,992	248,076	256,310
78	U. of Massachusetts, Medical School (public)	176,349	156,452	157,469	178,614	204,033	232,039	262,714	256,090
79	Carnegie Mellon U. (private)	200,297	212,506	197,143	210,619	217,667	221,376	240,956	254,992
80	Iowa State U. (public)	209,545	221,998	217,158	224,368	224,311	243,890	261,016	252,675
81	U. of Connecticut (public)	219,982	215,184	224,679	225,904	225,217	230,387	247,252	250,468

Appendix table 5-6

Top 100 academic institutions in S&E R&D expenditures in S&E fields, ranked by FY 2012 R&D expenditures: FYs 2005–12

(Dollars in thousands)

Rank	Institution	2005	2006	2007	2008	2009	2010	2011	2012
82	Dartmouth C. (private)	179,094	200,277	192,846	186,938	189,351	193,608	210,274	243,085
83	Oregon State U. (public)	180,309	189,606	189,368	188,056	209,061	215,400	227,752	239,571
84	Wayne State U. (public)	226,331	220,731	235,186	249,210	251,854	248,753	252,620	239,166
85	U. of Nebraska-Lincoln (public)	200,287	215,850	216,032	229,761	235,492	180,544	220,141	238,471
86	Medical U. of South Carolina (public)	178,086	176,055	184,624	189,369	216,778	224,632	213,346	236,586
87	U. of Texas Health Science Center, Houston (public)	152,631	175,154	191,724	197,252	217,623	240,772	261,172	236,250
88	U. of Missouri, Columbia (public)	220,718	215,240	228,654	244,639	245,058	133,120	130,269	234,975
89	Brown U. (private)	138,262	157,926	152,619	157,670	161,650	201,116	223,455	234,906
90	U. of CA, Santa Barbara (public)	165,014	174,429	191,204	203,719	215,728	217,952	217,877	222,916
91	Mississippi State U. (public)	179,825	189,917	206,207	210,951	216,936	223,032	217,793	222,320
92	SUNY at Stony Brook (public)	212,289	234,635	268,282	189,968	188,472	201,846	206,207	218,209
93	U. of Oklahoma (public)	173,663	178,719	176,825	192,070	197,836	201,187	223,828	217,177
94	U. of New Mexico (public)	178,703	181,223	177,430	197,630	201,769	207,906	217,206	216,218
95	Medical C. of Wisconsin (private)	143,540	147,140	158,171	165,529	176,237	191,816	215,358	209,040
96	Florida State U. (public)	172,858	185,633	189,565	182,314	195,244	208,834	216,869	208,005
97	U. of Medicine & Dentistry of New Jersey (public)	239,778	245,771	236,834	230,347	223,796	230,235	234,354	206,504
98	Woods Hole Oceanographic Institution (private)	117,517	121,888	137,410	150,720	157,289	181,746	198,775	204,352
99	Wake Forest U. (private)	185,152	183,129	185,609	199,915	201,204	192,034	208,460	203,730
100	George Washington U. (private)	107,715	113,982	126,110	157,145	99,945	189,113	189,427	187,652

i = imputed. NA = not available; institution was not surveyed separately.

[a] Johns Hopkins University includes the Applied Physics Laboratory, with $1,121,483 thousand in total R&D expenditures in S&E fields in FY 2012.

NOTES: Institutions reporting zero expenditures in ranked total for FY 2012 are not listed in this table. Tied institutions are ranked alphabetically. Institutions ranked are geographically separate campuses headed by a campus-level president or chancellor. Some campuses are part of large, multicampus universities; some are part of state university systems.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, 2012.

Science and Engineering Indicators 2014

Appendix table 5-7

Expenditures for academic R&D passed through to and received by subrecipients: FYs 2000–09

(Millions of current dollars)

Source of funds and year	All R&D expenditures	Expenditures passed through			Expenditures received		
		All passed through	To educational subrecipients	To other subrecipients	All received	From higher education pass-through entities	From other passthrough entities
All R&D							
2000	30,084	1,423	699	482	1,808	669	889
2001	32,800	1,620	789	552	1,776	734	771
2002	36,382	2,091	967	663	2,206	911	929
2003	40,077	2,449	1,126	784	2,606	1,142	1,073
2004	43,237	2,732	1,251	986	3,007	1,379	1,310
2005	45,773	3,055	1,547	1,027	3,287	1,487	1,535
2006	47,758	3,148	1,622	1,137	3,605	1,583	1,748
2007	49,495	3,340	1,712	1,199	3,735	1,704	1,760
2008	51,871	3,482	1,696	1,294	3,866	1,699	1,879
2009	54,863	3,801	1,873	1,429	4,135	1,783	2,067
Federally financed R&D							
2000	17,547	1,203	626	380	1,464	586	699
2001	19,226	1,376	705	436	1,531	655	682
2002	21,855	1,782	858	525	1,933	818	816
2003	24,752	2,122	1,011	627	2,317	1,038	938
2004	27,627	2,382	1,132	802	2,674	1,240	1,143
2005	29,186	2,660	1,372	877	2,919	1,352	1,322
2006	30,131	2,744	1,456	944	3,262	1,468	1,533
2007	30,430	2,844	1,494	977	3,387	1,571	1,560
2008	31,271	3,028	1,527	1,086	3,483	1,556	1,656
2009	32,576	3,236	1,660	1,172	3,714	1,620	1,830

NOTES: Data in the table are expenditures for S&E R&D and their sources; expenditures for non-S&E R&D and their sources are not included. Total should be viewed as an undercount because a small percentage of institutions did not have systems in place to provide data on passthrough funding and the data were not adjusted for nonresponse. Detail may not add to total because of rounding and because some institutions could not break out totals by type of entity.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2009.

Science and Engineering Indicators 2014

Appendix table 5-8

S&E research space in academic institutions, by field: FYs 1988–2011

Field	1988	1990	1992	1994	1996	1998	1999	2001	2003	2005	2007	2009	2011
	Millions of net assignable square feet[a]												
All fields	112	116	122	127	136	143	148	155	172.7	185.1	187.9	196.1	202.9
Agricultural and natural resources	18	21	20	20	22	25	24	27	26.4	26.8	27.9	29.5	27.6
Biological and biomedical sciences	24	27	28	28	30	31	32	33	36.0	38.5	44.8	50.3	54.3
Computer and information sciences	1	1	2	2	2	2	2	2	3.1	4.1	4.8	5.2	5.0
Engineering	16	17	18	21	22	23	24	26	27.4	28.9	28.4	30.2	31.7
Health and clinical sciences	19	20	22	23	25	25	26	28	34.9	39.7	37.0	36.3	36.7
Mathematics and statistics	1	1	1	1	1	1	1	1	1.5	1.6	1.6	1.5	1.6
Physical sciences	22	22	23	24	25	26	27	27	29.3	29.6	28.7	28.5	29.6
Earth, atmospheric, and ocean sciences	6	6	7	7	7	8	8	8	8.9	8.6	8.4	8.0	7.8
Astronomy, chemistry, and physics	16	16	16	17	18	18	19	19	20.4	21.0	20.3	20.5	21.8
Psychology	3	3	3	3	3	3	3	4	4.4	4.8	4.9	5.2	5.5
Social sciences	3	3	3	3	4	5	5	5	5.7	6.3	6.0	5.5	5.7
Other sciences	4	2	2	2	2	3	3	3	3.8	4.9	3.7	3.9	5.2
Research animal space	na	na	9	11	12	12	13	na	16.7	16.5	17.8	18.1	18.5
	Change over previous period (percent)												
All fields	na	3.6	5.2	4.1	7.1	5.1	3.5	4.7	11.4	7.2	1.5	4.4	3.5
Agricultural and natural resources	na	16.7	-4.8	0.0	10.0	13.6	-4.0	12.5	-2.2	1.5	4.1	5.7	-6.4
Biological and biomedical sciences	na	12.5	3.7	0.0	7.1	3.3	3.2	3.1	9.1	6.9	16.4	12.3	8.0
Computer and information sciences	na	0.0	100.0	0.0	0.0	0.0	0.0	0.0	55.0	32.3	17.1	8.3	-3.8
Engineering	na	6.3	5.9	16.7	4.8	4.5	4.3	8.3	5.4	5.5	-1.7	6.3	5.0
Health and clinical sciences	na	5.3	10.0	4.5	8.7	0.0	4.0	7.7	24.6	13.8	-6.8	-1.9	1.1
Mathematics and statistics	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	6.7	0.0	-6.2	6.7
Physical sciences	na	0.0	4.5	4.3	4.2	4.0	3.8	0.0	8.5	1.0	-3.0	-0.7	3.9
Earth, atmospheric, and ocean sciences	na	0.0	16.7	0.0	0.0	14.3	0.0	0.0	11.3	-3.4	-2.3	-4.8	-2.5
Astronomy, chemistry, and physics	na	0.0	0.0	6.3	5.9	0.0	5.6	0.0	7.4	2.9	-3.3	1.0	6.3
Psychology	na	0.0	0.0	0.0	0.0	0.0	0.0	33.3	10.0	9.1	2.1	6.1	5.8
Social sciences	na	0.0	0.0	0.0	33.3	25.0	0.0	0.0	14.0	10.5	-4.8	-8.3	3.6
Other sciences	na	-50.0	0.0	0.0	0.0	50.0	0.0	0.0	26.7	28.9	-24.5	5.4	33.3
Research animal space	na	na	na	22.2	9.1	0.0	8.3	na	na	-1.2	7.9	1.7	2.2
	Share of total square feet (percent)												
All fields	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agricultural and natural resources	16.1	18.1	16.4	15.7	16.2	17.5	16.2	17.4	15.3	14.5	14.8	15.0	13.6
Biological and biomedical sciences	21.4	23.3	23.0	22.0	22.1	21.7	21.6	21.3	20.8	20.8	23.8	25.7	26.8
Computer and information sciences	0.9	0.9	1.6	1.6	1.5	1.4	1.4	1.3	1.8	2.2	2.6	2.7	2.5
Engineering	14.3	14.7	14.8	16.5	16.2	16.1	16.2	16.8	15.9	15.6	15.1	15.4	15.6
Health and clinical sciences	17.0	17.2	18.0	18.1	18.4	17.5	17.6	18.1	20.2	21.4	19.7	18.5	18.1
Mathematics and statistics	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.6	0.9	0.9	0.9	0.8	0.8
Physical sciences	19.6	19.0	18.9	18.9	18.4	18.2	18.2	17.4	17.0	16.0	15.3	14.5	14.6
Earth, atmospheric, and ocean sciences	5.4	5.2	5.7	5.5	5.1	5.6	5.4	5.2	5.2	4.6	4.5	4.1	3.8
Astronomy, chemistry, and physics	14.3	13.8	13.1	13.4	13.2	12.6	12.8	12.3	11.8	11.3	10.8	10.5	10.7

Appendix table 5-8

S&E research space in academic institutions, by field: FYs 1988–2011

Field	1988	1990	1992	1994	1996	1998	1999	2001	2003	2005	2007	2009	2011
Psychology	2.7	2.6	2.5	2.4	2.2	2.1	2.0	2.6	2.5	2.6	2.6	2.7	2.7
Social sciences	2.7	2.6	2.5	2.4	2.9	3.5	3.4	3.2	3.3	3.4	3.2	2.8	2.8
Other sciences	3.6	1.7	1.6	1.6	1.5	2.1	2.0	1.9	2.2	2.6	2.0	2.0	2.6
Research animal space	na	na	na	na	na	na	na	na	na	na	na	na	na

na = not applicable; question not asked.

[a] Precision reflects the level of detail at which data were originally published.

NOTES: Detail may not add to total because of rounding. Figures for research animal space are listed separately and also are included in individual field totals. S&E fields are those used in the National Center for Education Statistics (NCES) Classification of Instructional Programs (CIP). NCES updates the CIP every 10 years; S&E fields here reflect the NCES 2010 CIP update. For comparison of subfields in the FY 2005 and FY 2007 surveys, see *S&E Research Facilities: FY 2007*, detailed statistical tables.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

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Appendix table 5-9

Source of funds for new construction of S&E research space in academic institutions, by year of project start and type of institution: FYs 2002–11

(Millions of current dollars)

Year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State/local	
FY 2002–03	7,388.7	351.3	2,364.5	4,672.9
Doctorate granting	7,185.2	318.5	2,301.4	4,565.3
Nondoctorate granting	203.5	32.8	63.1	107.6
FY 2004–05	6,030.3	450.2	1,341.6	4,238.5
Doctorate granting	5,767.3	417.1	1,204.8	4,145.5
Nondoctorate granting	263.0	33.1	136.9	93.1
FY 2006–07	5,923.5	360.9	1,880.7	3,681.8
Doctorate granting	5,681.3	357.6	1,764.6	3,559.1
Nondoctorate granting	242.2	3.3	116.1	122.7
FY 2008–09	7,406.8	235.9	2,697.0	4,473.8
Doctorate granting	7,082.4	225.7	2,515.0	4,341.7
Nondoctorate granting	324.4	10.2	182.0	132.1
FY 2010–11	6,411.3	486.6	1,956.3	3,968.4
Doctorate granting	6,242.8	479.5	1,875.5	3,887.9
Nondoctorate granting	168.5	7.1	80.9	80.5

[a] Institutional funds and other sources include an institution's operating funds, endowments, private donations, tax-exempt bonds and other debt financing, and indirect costs recovered from federal and nonfederal sources.

NOTES: Detail may not add to total because of rounding. Only construction projects costing over $250,000 for a single field were reported for FYs 2002–11.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

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Appendix table 5-10

Costs for repair and renovation of S&E research space in academic institutions, by field and time of repair and renovation: FYs 2010–13

(Dollars in millions)

Field	Started in FY 2010 or FY 2011	Planned to start in FY 2012 or FY 2013	Deferred projects	
			Included in institutional plan	Not included in institutional plan
All research space	3,511.0	3,107.9	4,826.1	2,552.6
Agricultural and natural resources sciences	87.8	78.4	301.2	282.9
Biological and biomedical sciences	1,318.0	976.0	1,213.9	542.1
Computer and information sciences	48.8	49.3	26.2	56.8
Engineering	434.3	268.5	477.9	573.0
Health and clinical sciences	775.4	963.9	1,279.4	288.1
Mathematics and statistics	39.6	17.0	56.4	16.3
Physical sciences	507.5	494.5	883.3	561.1
Earth, atmospheric, and ocean sciences	146.5	68.1	175.8	103.8
Astronomy, chemistry, and physics	361.1	426.4	707.5	457.3
Psychology	100.6	55.3	145.8	87.4
Social sciences	95.7	181.0	275.5	120.7
Other	103.2	23.9	166.4	24.3

NOTES: Detail may not add to totals because of rounding. Data were not collected on repair or renovation of research animal space for the FY 2011 survey.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

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Appendix table 5-11

Current fund expenditures for research equipment at academic institutions, by S&E field: Selected years, 1985–2012

Field	1985	1990	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Current $millions														
All fields	672	1,013	1,240	1,437	1,703	1,820	1,895	1,880	1,826	1,824	1,874	1,947	2,114	2,198	1,979
Science	548	792	968	1,131	1,340	1,435	1,502	1,442	1,382	1,396	1,439	1,470	1,603	1,629	1,423
Computer sciences	35	48	77	56	101	99	105	72	70	75	80	90	65	89	73
Environmental sciences	48	72	83	100	132	121	126	123	123	136	144	126	151	114	121
Atmospheric sciences	8	11	14	12	15	18	20	26	34	31	27	17	24	20	20
Earth sciences	18	27	27	37	33	42	43	44	35	36	39	47	52	46	53
Oceanography	16	20	28	34	74	50	41	40	44	62	70	52	58	31	29
Environmental sciences nec	5	13	15	17	11	11	22	13	10	7	9	11	17	16	19
Life sciences	283	420	464	630	737	819	836	826	752	737	796	786	906	934	812
Agricultural sciences	52	54	63	77	72	78	79	72	75	79	103	81	79	74	85
Biological sciences	105	171	192	269	296	337	348	326	302	272	303	299	395	390	330
Medical sciences	114	177	187	263	339	371	376	378	337	339	355	367	390	414	357
Life sciences nec	12	19	22	21	29	33	34	50	37	46	35	39	42	55	39
Mathematical sciences	6	10	14	10	10	8	8	9	9	9	9	9	8	7	7
Physical sciences	142	191	240	251	276	298	339	325	329	310	302	333	363	379	330
Astronomy	7	13	22	25	19	19	25	23	20	29	27	29	24	25	28
Chemistry	54	73	82	104	123	120	118	113	122	113	114	136	162	155	133
Physics	71	91	115	110	122	139	160	159	153	143	136	149	154	180	155
Physical sciences nec	10	14	22	13	12	20	36	30	34	25	25	20	24	18	14
Psychology	9	11	12	14	19	23	18	15	18	14	15	24	17	17	20
Social sciences	10	15	27	19	17	18	16	19	14	20	22	26	15	14	10
Economics	3	4	7	3	2	3	2	2	2	2	2	1	1	2	1
Political science	1	1	3	2	2	2	2	2	1	1	1	2	1	1	1
Sociology	2	3	4	3	4	3	2	3	2	3	2	5	2	2	1
Social sciences nec	4	7	12	11	9	9	9	12	8	15	16	18	10	9	6
Sciences nec	15	25	51	51	48	49	54	53	67	95	71	76	78	75	51
Engineering	124	220	272	306	364	385	394	439	443	428	435	475	511	570	556
Aeronautical/astronautical	7	13	17	20	24	22	22	21	24	24	35	28	35	34	33
Bioengineering/biomedical	NA	NA	NA	14	18	20	21	32	28	29	28	33	40	52	45
Chemical	11	18	22	26	30	32	57	41	43	40	41	50	53	56	54
Civil	10	20	22	29	43	31	39	35	34	34	36	38	38	51	42
Electrical	33	58	68	72	79	86	86	97	101	97	92	101	115	139	137
Mechanical	17	32	42	54	54	55	59	81	89	78	78	80	100	84	87
Metallurgical/materials	NA	27	28	30	41	61	40	53	57	56	53	60	51	52	60
Engineering nec	46	51	73	61	74	78	70	79	69	71	71	87	80	100	98
	2005 constant $millions														
All fields	1,088	1,405	1,515	1,615	1,847	1,927	1,957	1,880	1,766	1,713	1,720	1,762	1,896	1,933	1,709
Science	887	1,098	1,183	1,271	1,453	1,519	1,551	1,442	1,337	1,311	1,321	1,330	1,437	1,432	1,251
Computer sciences	57	67	94	63	110	105	108	72	68	70	73	81	58	78	64
Environmental sciences	78	100	101	112	143	128	130	123	119	128	132	114	135	100	106
Atmospheric sciences	13	15	17	13	16	19	21	26	33	29	25	15	22	18	18

Appendix table 5-11

Current fund expenditures for research equipment at academic institutions, by S&E field: Selected years, 1985–2012

Field	1985	1990	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Earth sciences	29	37	33	42	36	44	44	44	34	34	36	43	47	40	47
Oceanography	26	28	34	38	80	53	42	40	43	58	64	47	52	27	26
Environmental sciences nec	8	18	18	19	12	12	23	13	10	7	8	10	15	14	17
Life sciences	458	583	567	708	799	867	863	826	727	692	731	711	812	821	714
Agricultural sciences	84	75	77	87	78	83	82	72	73	74	95	73	71	65	75
Biological sciences	170	237	235	302	321	357	359	326	292	255	278	271	354	343	290
Medical sciences	185	245	228	296	368	393	388	378	326	318	326	332	350	364	314
Life sciences nec	19	26	27	24	31	35	35	50	36	43	32	35	38	48	34
Mathematical sciences	10	14	17	11	11	8	8	9	9	8	8	8	7	6	6
Physical sciences	230	265	293	282	299	315	350	325	318	291	277	301	326	333	290
Astronomy	11	18	27	28	21	20	26	23	19	27	25	26	22	22	25
Chemistry	87	101	100	117	133	127	122	113	118	106	105	123	145	136	117
Physics	115	126	141	124	132	147	165	159	148	134	125	135	138	158	136
Physical sciences nec	16	19	27	15	13	21	37	30	33	23	23	18	22	16	12
Psychology	15	15	15	16	21	24	19	15	17	13	14	22	15	15	18
Social sciences	16	21	33	21	18	19	17	19	14	19	20	24	13	12	9
Economics	5	6	9	3	2	3	2	2	2	2	2	1	1	2	1
Political science	2	1	4	2	2	2	2	2	1	1	1	2	1	1	1
Sociology	3	4	5	3	4	3	2	3	2	3	2	5	2	2	1
Social sciences nec	6	10	15	12	10	10	9	12	8	14	15	16	9	8	5
Sciences nec	24	35	62	57	52	52	56	53	65	89	65	69	70	66	45
Engineering	201	305	332	344	395	408	407	439	428	402	399	430	458	501	489
Aeronautical/astronautical	11	18	21	22	26	23	23	21	23	23	32	25	31	30	29
Bioengineering/biomedical	NA	NA	NA	16	20	21	22	32	27	27	26	30	36	46	40
Chemical	18	25	27	29	33	34	59	41	42	38	38	45	48	49	47
Civil	16	28	27	33	47	33	40	35	33	32	33	34	34	45	37
Electrical	53	80	83	81	86	91	89	97	98	91	84	91	103	122	120
Mechanical	28	44	51	61	59	58	61	81	86	73	72	72	90	74	77
Metallurgical/materials	NA	37	34	34	44	65	41	53	55	53	49	54	46	46	53
Engineering nec	74	71	89	69	80	83	72	79	67	67	65	79	72	88	86
	Percent distribution														
All fields	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Science	81.5	78.2	78.1	78.7	78.7	78.8	79.3	76.7	75.7	76.5	76.8	75.5	75.8	74.1	71.9
Computer sciences	5.2	4.7	6.2	3.9	5.9	5.4	5.5	3.8	3.8	4.1	4.3	4.6	3.1	4.0	3.7
Environmental sciences	7.1	7.1	6.7	7.0	7.8	6.6	6.6	6.5	6.7	7.5	7.7	6.5	7.1	5.2	6.1
Atmospheric sciences	1.2	1.1	1.1	0.8	0.9	1.0	1.1	1.4	1.9	1.7	1.4	0.9	1.1	0.9	1.0
Earth sciences	2.7	2.7	2.2	2.6	1.9	2.3	2.3	2.3	1.9	2.0	2.1	2.4	2.5	2.1	2.7
Oceanography	2.4	2.0	2.3	2.4	4.3	2.7	2.2	2.1	2.4	3.4	3.7	2.7	2.7	1.4	1.5
Environmental sciences nec	0.7	1.3	1.2	1.2	0.6	0.6	1.2	0.7	0.5	0.4	0.5	0.6	0.8	0.7	1.0
Life sciences	42.1	41.5	37.4	43.8	43.3	45.0	44.1	43.9	41.2	40.4	42.5	40.4	42.9	42.5	41.0
Agricultural sciences	7.7	5.3	5.1	5.4	4.2	4.3	4.2	3.8	4.1	4.3	5.5	4.2	3.7	3.4	4.3
Biological sciences	15.6	16.9	15.5	18.7	17.4	18.5	18.4	17.3	16.5	14.9	16.2	15.4	18.7	17.7	16.7

Appendix table 5-11

Current fund expenditures for research equipment at academic institutions, by S&E field: Selected years, 1985–2012

Field	1985	1990	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Medical sciences	17.0	17.5	15.1	18.3	19.9	20.4	19.8	20.1	18.5	18.6	18.9	18.8	18.4	18.8	18.0
Life sciences nec	1.8	1.9	1.8	1.5	1.7	1.8	1.8	2.7	2.0	2.5	1.9	2.0	2.0	2.5	2.0
Mathematical sciences	0.9	1.0	1.1	0.7	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.4
Physical sciences	21.1	18.9	19.4	17.5	16.2	16.4	17.9	17.3	18.0	17.0	16.1	17.1	17.2	17.2	16.7
Astronomy	1.0	1.3	1.8	1.7	1.1	1.0	1.3	1.2	1.1	1.6	1.4	1.5	1.1	1.1	1.4
Chemistry	8.0	7.2	6.6	7.2	7.2	6.6	6.2	6.0	6.7	6.2	6.1	7.0	7.7	7.1	6.7
Physics	10.6	9.0	9.3	7.7	7.2	7.6	8.4	8.5	8.4	7.8	7.3	7.7	7.3	8.2	7.8
Physical sciences nec	1.5	1.4	1.8	0.9	0.7	1.1	1.9	1.6	1.9	1.4	1.3	1.0	1.1	0.8	0.7
Psychology	1.3	1.1	1.0	1.0	1.1	1.3	0.9	0.8	1.0	0.8	0.8	1.2	0.8	0.8	1.0
Social sciences	1.5	1.5	2.2	1.3	1.0	1.0	0.8	1.0	0.8	1.1	1.2	1.3	0.7	0.6	0.5
Economics	0.4	0.4	0.6	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Political science	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Sociology	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.1	0.1	0.1
Social sciences nec	0.6	0.7	1.0	0.8	0.5	0.5	0.5	0.6	0.4	0.8	0.9	0.9	0.5	0.4	0.3
Sciences nec	2.2	2.5	4.1	3.5	2.8	2.7	2.8	2.8	3.7	5.2	3.8	3.9	3.7	3.4	2.6
Engineering	18.5	21.7	21.9	21.3	21.4	21.2	20.8	23.4	24.3	23.5	23.2	24.4	24.2	25.9	28.1
Aeronautical/astronautical	1.0	1.3	1.4	1.4	1.4	1.2	1.2	1.1	1.3	1.3	1.9	1.4	1.7	1.5	1.7
Bioengineering/biomedical	NA	NA	NA	1.0	1.1	1.1	1.1	1.7	1.5	1.6	1.5	1.7	1.9	2.4	2.3
Chemical	1.6	1.8	1.8	1.8	1.8	1.8	3.0	2.2	2.4	2.2	2.2	2.6	2.5	2.5	2.7
Civil	1.5	2.0	1.8	2.0	2.5	1.7	2.1	1.9	1.9	1.9	1.9	2.0	1.8	2.3	2.1
Electrical	4.9	5.7	5.5	5.0	4.6	4.7	4.5	5.2	5.5	5.3	4.9	5.2	5.4	6.3	6.9
Mechanical	2.5	3.2	3.4	3.8	3.2	3.0	3.1	4.3	4.9	4.3	4.2	4.1	4.7	3.8	4.4
Metallurgical/materials	NA	2.7	2.3	2.1	2.4	3.4	2.1	2.8	3.1	3.1	2.8	3.1	2.4	2.4	3.0
Engineering nec	6.8	5.0	5.9	4.2	4.3	4.3	3.7	4.2	3.8	3.9	3.8	4.5	3.8	4.5	5.0

NA = not available; nec = not elsewhere classified.

NOTES: See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2005 dollars. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Research and Development Expenditures at Universities and Colleges, and Higher Education Research and Development Survey.

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Appendix table 5-12

Federal share of current funding for research equipment at academic institutions, by S&E field: Selected years, FYs 1985–2012

(Percent)

Field	1985	1990	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All S&E fields	64.4	59.9	59.3	56.3	59.0	63.3	61.9	62.6	59.6	58.0	56.4	54.4	63.5	63.7	57.0
Science	64.7	60.1	59.0	56.6	59.2	64.1	63.4	64.1	60.2	58.1	56.3	54.1	65.2	66.4	58.8
Computer sciences	83.0	65.8	63.5	60.4	73.7	83.3	80.5	79.3	72.5	70.1	78.3	76.3	70.9	73.0	67.4
Environmental sciences	67.7	65.9	69.9	63.9	61.5	73.0	74.3	77.0	73.3	74.3	69.8	65.3	76.6	70.3	70.0
Atmospheric sciences	84.2	76.8	71.5	79.0	75.9	80.5	80.1	88.3	87.7	87.7	84.6	75.0	82.7	78.9	83.6
Earth sciences	56.3	56.8	63.0	50.9	58.2	61.7	67.1	67.6	64.1	64.4	53.6	61.2	68.1	66.6	68.3
Oceanography	74.2	75.1	76.5	74.4	61.5	81.2	79.5	79.0	68.4	74.8	74.7	66.6	80.2	66.7	60.0
Environmental sciences nec	60.7	61.4	68.5	60.8	51.5	67.2	73.2	80.4	78.5	61.6	57.4	61.4	82.7	77.0	75.1
Life sciences	55.6	53.2	48.6	52.8	55.5	59.9	60.7	61.7	56.5	53.1	48.6	47.7	62.9	63.9	50.9
Agricultural sciences	29.1	28.3	31.9	28.0	29.8	40.4	39.5	42.5	36.1	30.1	27.4	27.8	31.4	38.7	34.1
Biological sciences	67.3	60.2	56.0	60.2	59.5	63.8	63.2	62.5	59.5	56.0	53.7	56.4	71.0	68.6	55.6
Medical sciences	57.4	54.3	48.3	53.1	58.3	61.2	62.7	66.4	58.2	53.7	49.6	44.9	61.8	62.9	50.0
Life sciences nec	49.1	50.6	34.6	43.9	45.5	51.3	60.9	47.9	58.1	71.0	56.2	48.1	56.4	72.6	56.6
Mathematical sciences	82.1	65.7	65.5	67.1	66.5	71.2	72.9	75.4	69.2	74.8	68.8	63.4	66.6	65.1	68.8
Physical sciences	79.8	75.2	74.5	69.9	70.1	73.0	68.1	69.5	67.1	69.4	70.0	63.9	75.6	77.2	75.9
Astronomy	69.3	63.1	61.5	83.4	80.6	74.4	79.5	77.3	82.0	83.5	77.6	69.7	78.5	78.2	83.4
Chemistry	76.6	71.2	69.8	61.1	61.8	64.8	66.0	70.9	65.0	64.5	62.5	60.2	69.6	72.8	68.6
Physics	84.5	81.1	81.7	76.8	76.5	78.8	71.4	73.1	73.0	76.2	78.8	66.1	81.7	81.6	80.8
Physical sciences nec	70.9	69.5	67.6	55.2	72.8	81.3	52.6	39.2	40.1	37.2	47.6	64.4	74.4	70.2	76.1
Psychology	71.5	63.8	63.4	64.0	70.8	74.1	71.7	63.1	68.5	61.1	58.7	60.4	70.6	74.0	69.4
Social sciences	40.1	32.4	39.5	32.3	36.6	45.1	41.1	35.3	34.1	54.8	58.1	66.9	45.4	55.4	51.4
Economics	35.6	27.2	38.9	54.3	36.7	56.9	34.5	39.7	29.7	40.5	37.9	22.5	44.8	31.7	51.4
Political science	32.1	24.4	36.8	36.7	21.3	51.0	71.8	56.9	54.2	50.8	31.3	41.3	52.3	41.4	46.1
Sociology	53.5	43.2	46.9	44.9	43.0	50.9	48.2	37.7	29.1	53.1	58.4	75.2	53.9	61.5	41.7
Social sciences nec	39.1	32.8	38.0	22.0	37.4	38.0	34.7	31.0	34.0	56.8	62.8	70.2	43.2	62.2	54.3
Sciences nec	46.2	46.0	63.7	24.9	18.4	19.5	20.1	25.6	32.5	25.9	30.3	24.5	19.4	28.0	29.4
Engineering	62.9	58.9	60.4	55.1	58.5	60.4	56.4	57.6	57.7	57.5	56.5	55.2	58.0	56.1	52.5
Aeronautical/astronautical	75.0	81.1	77.5	63.7	79.0	83.5	68.4	63.1	58.6	62.8	70.6	60.6	53.3	55.6	56.3
Bioengineering/biomedical	NA	NA	NA	43.1	52.7	57.8	48.4	40.3	41.8	46.9	50.9	51.7	61.1	54.2	43.5
Chemical	58.7	46.1	58.8	52.3	55.2	55.7	30.9	49.4	52.5	47.4	44.5	43.0	50.0	55.4	45.9
Civil	58.5	58.7	44.2	35.2	59.1	60.7	53.4	47.7	36.7	40.6	44.8	37.4	43.2	38.7	37.2
Electrical	68.5	61.8	61.7	61.8	59.9	67.7	65.4	62.6	62.2	63.2	61.2	57.5	67.1	64.0	64.2
Mechanical	65.1	56.8	63.7	64.9	63.6	69.1	62.1	66.0	73.6	69.1	60.0	63.0	55.9	61.5	55.9
Metallurgical/materials	NA	66.5	50.5	60.9	53.2	45.8	62.2	63.2	55.6	63.0	60.2	53.7	58.5	55.7	52.0
Engineering nec	58.5	52.2	62.7	46.4	51.9	53.7	58.1	53.5	52.3	48.7	52.2	61.0	60.2	51.3	46.4

NA = not available; nec = not elsewhere classified.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Research and Development Expenditures at Universities and Colleges, and Higher Education Research and Development Survey.

Science and Engineering Indicators 2014

Appendix table 5-13

Centrally administered high-performance computing in academic institutions, by type of institution and computing architecture: FY 2011

Type of institution	Number of institutions	Number of institutions with HPC	Type of architecture				Number of institutions with HPC accelerators
			Clusters	MPP	SMP	Other	
All institutions	539	192	187	21	37	38	101
Doctorate granting	379	178	174	17	33	36	97
Nondoctorate granting	160	14	13	4	4	2	4
Public	342	135	131	16	26	24	77
Private	197	57	56	5	11	14	24
Public doctorate granting	260	125	121	12	24	22	73
Private doctorate granting	119	53	53	5	9	14	24

HPC = high-performance computing; MPP = massively parallel processor; SMP = symmetric multiprocessor.

NOTES: Each institution is counted only once in each architecture. Centrally administered HPC is located within a distinct organizational unit with a staff and a budget; the unit has a stated mission that includes supporting HPC needs of faculty and researchers. Institutions may have HPC of more than one type of architecture. Accelerators may be system components or independent.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities, FY 2011.

Science and Engineering Indicators 2014

Appendix table 5-14

SEH doctorate holders employed in academia, by type of position and degree field: 1973–2010

(Thousands)

Position and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
All positions																		
All fields	118.0	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8
Physical sciences	25.5	29.2	28.8	30.0	29.9	32.2	32.8	33.6	33.7	35.0	35.7	37.5	38.7	38.6	39.9	39.6	39.9	43.7
Mathematics	9.7	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7
Computer sciences	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3
Life sciences	34.9	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0
Psychology	12.2	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4
Social sciences	23.4	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9
Engineering	12.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8
All full-time faculty																		
All fields	103.3	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	174.1	179.8	182.4	190.6	193.1	199.1	206.8
Physical sciences	20.8	23.6	23.5	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.6	26.7	26.4	27.6	26.9	27.6	29.3
Mathematics	9.3	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.4	12.9	12.3	14.0	14.0	14.8	15.1
Computer sciences	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.7	5.8
Life sciences	29.5	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.5	56.1	58.3	61.7	62.8	63.5	66.7
Psychology	10.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.6	21.0	21.7	21.4	23.2	23.1	23.3
Social sciences	21.6	28.8	30.4	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.3	38.7	38.7	39.6	39.2	42.1	43.1
Engineering	11.3	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.9	21.6	21.9	22.1	22.7	23.4
Full-time professors																		
All fields	42.6	51.0	57.5	64.4	69.9	72.8	79.1	83.1	82.5	80.0	77.7	80.9	83.1	84.8	87.7	85.3	90.5	93.6
Physical sciences	9.0	10.8	11.7	13.1	13.9	14.6	15.5	15.5	14.8	14.2	13.9	13.8	14.2	14.0	14.3	13.3	14.0	15.0
Mathematics	3.2	3.9	4.4	5.0	5.6	6.1	6.5	6.9	6.7	7.1	6.6	6.9	6.6	6.6	7.2	6.9	7.3	7.3
Computer sciences	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.7	0.8	1.2	1.6	1.9	2.2
Life sciences	12.3	13.9	15.5	17.0	19.3	19.6	21.7	22.5	22.9	21.2	22.5	22.5	23.3	24.5	25.7	25.6	26.6	28.1
Psychology	3.9	4.8	5.6	6.5	7.0	7.6	8.3	9.1	9.5	8.7	8.7	9.5	9.4	9.9	9.8	9.8	10.0	9.9
Social sciences	9.4	11.3	12.9	14.7	15.1	15.9	16.8	18.5	18.6	18.4	16.6	17.1	18.2	18.2	18.6	17.5	19.2	19.6
Engineering	4.7	6.4	7.4	8.0	9.0	9.2	10.4	10.6	9.9	10.3	9.1	10.7	10.6	10.7	10.9	10.6	11.7	11.5
Full-time associate professors																		
All fields	31.4	39.7	39.7	42.9	45.7	46.9	48.2	47.9	50.5	48.6	49.6	51.0	53.6	52.2	54.3	54.1	57.0	59.1
Physical sciences	6.2	7.2	7.1	6.6	6.3	6.3	6.1	5.8	6.3	6.4	6.1	6.5	6.6	6.7	6.9	6.9	7.0	7.4
Mathematics	2.8	3.7	3.9	4.0	4.1	4.0	4.1	4.0	5.1	4.4	4.0	3.9	4.1	3.6	4.0	3.8	4.3	4.2
Computer sciences	NA	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.7	1.4	1.4	1.4	1.6	1.7	1.6	1.9	2.1
Life sciences	8.6	10.7	11.5	12.5	13.4	14.1	14.1	14.0	14.6	14.6	14.7	15.8	17.3	16.7	17.7	18.1	18.2	19.1
Psychology	3.3	4.3	4.3	5.2	5.9	5.9	6.0	5.9	5.9	5.6	5.8	5.8	6.2	6.0	5.9	6.3	7.0	7.0
Social sciences	6.5	9.4	8.8	10.2	11.2	11.8	12.7	12.6	12.0	11.6	11.5	11.7	11.9	11.4	12.1	11.8	12.8	13.1
Engineering	4.0	4.4	4.2	4.4	4.7	4.7	4.9	5.3	5.9	5.3	6.2	5.8	6.0	6.1	5.9	5.6	5.9	6.2
Full-time junior faculty[a]																		
All fields	29.3	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	42.2	43.1	45.4	48.6	53.7	51.6	54.1
Physical sciences	5.6	5.7	4.7	4.6	4.0	4.6	4.7	4.8	5.0	5.2	5.6	5.3	5.9	5.7	6.4	6.7	6.6	6.9

Appendix table 5-14

SEH doctorate holders employed in academia, by type of position and degree field: 1973–2010

(Thousands)

Position and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Mathematics	3.3	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.6	2.2	2.1	2.8	3.3	3.2	3.6
Computer sciences	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.2	1.1	0.9	1.3	1.7	1.9	1.5
Life sciences	8.5	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	15.2	15.5	17.1	18.3	19.1	18.7	19.5
Psychology	3.6	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	4.3	5.4	5.8	5.7	7.1	6.1	6.4
Social sciences	5.7	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.5	8.6	9.1	8.9	9.9	10.1	10.4
Engineering	2.6	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	4.7	4.3	4.8	5.1	5.9	5.1	5.7
Other full-time positions[b]																		
All fields	7.6	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	29.1	31.9	34.8	39.9	40.6	43.9	48.2
Physical sciences	2.2	2.4	2.5	2.9	3.0	3.7	3.4	4.0	4.1	4.8	4.9	6.6	7.3	7.7	8.4	7.2	7.4	7.9
Mathematics	0.2	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.5	0.6	1.0	0.8	1.1	1.4	1.3	1.7	1.8
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.6	0.6	0.9	1.0
Life sciences	2.5	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	9.8	11.2	12.3	14.2	15.5	16.2	18.4
Psychology	0.8	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.3	4.6	4.9	6.3	6.5	6.8	7.1
Social sciences	1.0	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	4.0	4.4	4.7	5	6.1	6.2	6.9
Engineering	0.8	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.2	3	3.6	3.9	3.3	4.7	5.1
Postdocs																		
All fields	4.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8
Physical sciences	1.8	2.4	2.0	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6
Mathematics	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3
Life sciences	1.9	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0	12.8	10.3	12.2
Psychology	0.2	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1
Social sciences	0.1	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8
Engineering	0.2	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1
Part-time positions[c]																		
All fields	2.9	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.3	15.7	15.6	17.0
Physical sciences	0.7	0.7	0.8	0.7	1.1	1.1	0.8	0.7	1.2	1.0	0.9	1.2	1.0	1.0	1.1	1.5	1.6	2.0
Mathematics	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.9	1.2	1.0	1.1
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3
Life sciences	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0	4.4	4.3	4.6

Appendix table 5-14

SEH doctorate holders employed in academia, by type of position and degree field: 1973–2010

(Thousands)

Position and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Psychology	0.4	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.2	3.6	3.7	3.8
Social sciences	0.7	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1	3.7	4.0	4.0
Engineering	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8	1.1	0.9	1.2

NA = not available.

SEH = science, engineering, and health.

[a] Full-time junior faculty includes assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time junior faculty includes assistant professors.
[b] Other full-time positions include positions such as research associates, adjunct positions, lecturers, and administrative positions from 1973 to 1995; for 1997 to 2010 other full-time positions also include instructors.
[c] Part-time positions exclude those employed part time because they are students or retired.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-15

SEH doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2010

(Thousands)

Position, sex, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
All positions																		
Both sexes, all fields	118.0	145.5	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8
Physical sciences	25.5	29.2	28.8	30.0	29.9	32.2	32.8	33.6	33.7	35.0	35.7	37.5	38.7	38.6	39.9	39.6	39.9	43.7
Mathematics	9.7	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7
Computer sciences	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3
Life sciences	34.9	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0
Psychology	12.2	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4
Social sciences	23.4	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9
Engineering	12.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8
Male, all fields	107.2	129.0	136.0	144.0	149.8	159.2	162.0	168.0	168.7	166.9	165.1	173.3	175.8	175.0	180.7	182.7	182.3	189.6
Physical sciences	24.0	27.4	26.9	27.8	27.7	29.8	30.0	30.5	30.8	31.4	31.4	32.4	33.4	32.8	33.7	32.3	32.1	34.4
Mathematics	9.0	10.8	11.3	11.3	11.8	12.3	12.5	13.0	13.9	13.7	12.8	13.5	12.9	12.6	13.8	14.1	14.1	14.4
Computer sciences	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.6	2.1	2.5	2.6	2.9	2.9	4.3	4.5	5.5	5.8
Life sciences	30.8	36.6	40.1	42.9	44.5	46.7	47.9	49.5	50.1	49.4	50.1	52.6	55.1	54.9	56.6	57.9	55.5	58.7
Psychology	10.0	12.6	13.5	14.9	15.1	16.0	16.2	16.5	16.0	14.7	14.7	15.4	15.6	15.7	15.6	16.0	15.6	15.6
Social sciences	21.0	26.9	28.5	30.9	32.3	34.3	33.9	35.1	34.6	33.4	31.3	31.9	32.4	31.7	32.0	31.9	33.1	33.4
Engineering	12.3	14.7	15.7	15.9	17.8	19.5	20.6	22.2	21.8	22.1	22.3	24.8	23.4	24.3	24.8	26.0	26.3	27.3
Female, all fields	10.7	16.5	19.4	23.1	26.5	31.1	34.0	38.7	41.9	46.9	52.4	59.2	64.4	70.5	78.7	90.1	94.2	105.2
Physical sciences	1.4	1.7	1.9	2.1	2.2	2.5	2.8	3.1	3.0	3.6	4.4	5.1	5.3	5.8	6.1	7.3	7.8	9.3
Mathematics	0.6	0.9	0.9	1.1	1.1	1.3	1.4	1.5	1.4	1.7	1.8	2.1	2.2	2.3	2.9	3.3	3.9	4.3
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.8	1.0	1.2	1.4	1.5
Life sciences	4.0	6.0	6.9	8.4	10.3	12.1	13.3	15.3	16.8	18.8	21.5	24.7	26.7	29.4	33.4	37.6	38.7	43.3
Psychology	2.2	3.6	4.3	5.2	5.9	7.1	7.6	8.5	9.2	10.3	11.5	11.9	13.4	14.7	16.2	19.0	18.9	19.8
Social sciences	2.4	4.2	5.2	6.0	6.5	7.7	8.3	9.4	10.2	10.9	11.2	13.0	13.8	15.2	16.2	18.2	19.5	21.5
Engineering	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.7	1.0	1.1	1.5	1.7	2.1	2.3	3.0	3.6	4.1	5.5
Full-time senior faculty[a]																		
Both sexes, all fields	74.0	90.7	97.2	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9	142.0	139.4	147.5	152.8
Physical sciences	15.2	18.0	18.8	19.7	20.2	20.8	21.5	21.4	21.2	20.6	20.0	20.5	20.7	20.7	21.3	20.2	20.9	22.4
Mathematics	5.9	7.6	8.3	9.1	9.7	10.0	10.5	10.9	11.8	11.5	10.6	10.8	10.8	10.2	11.2	10.7	11.6	11.5
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.9	0.9	1.7	1.7	2.1	2.4	2.9	3.2	3.8	4.2
Life sciences	21.0	24.6	27.0	29.6	32.6	33.7	35.8	36.4	37.4	35.8	37.2	38.3	40.6	41.2	43.4	43.7	44.8	47.2
Psychology	7.3	9.1	9.9	11.7	12.8	13.5	14.3	15.0	15.3	14.3	14.5	15.3	15.6	15.9	15.8	16.1	17.0	17.0
Social sciences	15.9	20.7	21.7	24.9	26.3	27.7	29.5	31.1	30.6	29.9	28.1	28.8	30.1	29.6	30.7	29.3	32.0	32.8
Engineering	8.7	10.7	11.6	12.4	13.7	13.9	15.3	15.9	15.8	15.7	15.3	16.6	16.6	16.8	16.8	16.2	17.6	17.7
Male, all fields	69.7	84.7	90.2	98.7	104.9	107.4	113.2	115.2	115.5	110.3	107.0	109.4	110.6	108.3	109.7	104.6	108.1	109.9
Physical sciences	14.7	17.4	18.1	19.0	19.4	20.0	20.6	20.3	20.3	19.5	18.8	18.9	19.0	18.6	18.9	17.6	17.9	18.9
Mathematics	5.6	7.2	7.9	8.6	9.1	9.3	9.8	10.0	10.8	10.5	9.8	10.0	9.7	9.1	9.9	9.2	9.6	9.4
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.8	1.4	1.3	1.6	2.0	2.4	2.6	3.1	3.5
Life sciences	19.5	22.7	24.8	26.9	29.1	29.4	31.0	31.0	31.4	29.3	29.3	30.0	31.1	30.4	30.9	30.4	30.2	31.0
Psychology	6.4	7.8	8.4	9.7	10.5	10.8	11.2	11.5	11.3	10.2	10.1	10.7	10.3	10.3	9.5	9.1	9.3	9.3
Social sciences	14.7	18.8	19.5	22.3	23.2	24.1	25.3	26.4	25.5	24.7	22.8	22.4	23.2	21.9	22.4	20.7	21.7	21.9

Appendix table 5-15

SEH doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2010

(Thousands)

Position, sex, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Engineering	8.7	10.7	11.5	12.2	13.6	13.7	15.1	15.7	15.4	15.3	14.8	16.1	15.8	15.9	15.7	15.0	16.3	16.0
Female, all fields	4.3	6.0	7.0	8.6	10.7	12.4	14.0	15.8	17.6	18.3	20.3	22.5	26.1	28.6	32.3	34.8	39.4	42.8
Physical sciences	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	0.9	1.1	1.2	1.5	1.9	2.1	2.4	2.7	3.1	3.6
Mathematics	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	0.8	0.8	1.1	1.1	1.3	1.4	1.9	2.1
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.5	0.4	0.5	0.6	0.6	0.7
Life sciences	1.5	1.9	2.2	2.7	3.5	4.3	4.8	5.4	6.1	6.5	7.8	8.3	9.5	10.8	12.5	13.3	14.6	16.2
Psychology	0.8	1.2	1.4	2.0	2.4	2.7	3.1	3.5	4.0	4.1	4.4	4.6	5.4	5.6	6.3	7.0	7.7	7.6
Social sciences	1.1	1.8	2.2	2.6	3.1	3.6	4.1	4.7	5.1	5.2	5.3	6.4	7.0	7.7	8.3	8.7	10.2	10.9
Engineering	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.5	0.5	0.8	0.9	1.1	1.2	1.3	1.7
Full-time junior faculty[b]																		
Both sexes, all fields	29.3	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	42.2	43.1	45.4	48.6	53.7	51.6	54.1
Physical sciences	5.6	5.7	4.7	4.6	4.0	4.6	4.7	4.8	5.0	5.2	5.6	5.3	5.9	5.7	6.4	6.7	6.6	6.9
Mathematics	3.3	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.6	2.2	2.1	2.8	3.3	3.2	3.6
Computer sciences	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.2	1.1	0.9	1.3	1.7	1.9	1.5
Life sciences	8.5	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	15.2	15.5	17.1	18.3	19.1	18.7	19.5
Psychology	3.6	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	4.7	5.4	5.8	5.7	7.1	6.1	6.4
Social sciences	5.7	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.5	8.6	9.1	8.9	9.9	10.1	10.4
Engineering	2.6	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	4.7	4.3	4.8	5.1	5.9	5.1	5.7
Male, all fields	26.0	28.9	27.3	27.1	25.2	27.8	27.2	27.6	28.1	29.7	28.5	27	27.5	28.2	29.2	31.1	30.1	30.1
Physical sciences	5.2	5.2	4.3	4.1	3.5	3.9	4.1	4.1	4.1	4.2	4.1	3.9	4.5	4.2	4.9	4.9	4.8	4.9
Mathematics	3.1	2.9	2.7	2.2	2.2	2.3	2.0	2.2	2.2	2.7	2.0	2	1.6	1.5	2.0	2.3	2.3	2.5
Computer sciences	NA	NA	0.1	0.2	0.3	0.5	0.5	0.8	0.8	1.1	1.0	1	0.9	0.7	1.0	1.2	1.4	1.1
Life sciences	7.5	8.4	8.1	8.9	8.1	8.5	8.5	8.4	8.8	9.5	9.5	8.9	9.3	10.2	10.3	10.4	9.8	9.7
Psychology	2.7	3.3	2.8	3.0	2.6	2.7	2.7	2.9	3.0	2.3	2.4	1.8	2.4	2.3	2.3	2.6	2.4	2.2
Social sciences	5.0	6.5	6.6	6.5	5.9	6.0	5.6	5.2	5.3	5.9	5.5	5.3	5.1	5.2	4.5	5.0	5.6	5.7
Engineering	2.6	2.7	2.7	2.2	2.6	3.8	3.8	4.0	3.9	4.0	4.1	4.2	3.8	4.1	4.3	4.6	3.8	3.9
Female, all fields	3.3	6.0	6.8	7.5	7.7	9.4	10.0	11.2	12.0	14.1	15.6	15.2	15.6	17.2	19.3	22.6	21.5	23.9
Physical sciences	0.3	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.9	1.1	1.5	1.4	1.4	1.5	1.5	1.8	1.8	2.0
Mathematics	0.2	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.5	0.5	0.6	0.7	0.5	0.8	1.0	1.0	1.1
Computer sciences	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.4	0.5	0.4
Life sciences	1.1	1.9	2.2	2.4	2.7	3.4	3.8	4.5	4.9	5.5	6.1	6.3	6.2	6.9	8.0	8.7	8.9	9.8
Psychology	0.9	1.5	1.6	1.8	1.9	2.3	2.2	2.3	2.4	2.9	3.1	2.9	3.0	3.5	3.4	4.5	3.7	4.2
Social sciences	0.8	1.7	2.1	2.3	2.1	2.4	2.6	2.7	3.0	3.4	3.5	3.2	3.5	3.9	4.4	4.9	4.4	4.7
Engineering	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.6	0.5	0.7	0.8	1.3	1.3	1.8
Other full-time positions[c]																		
Both sexes, all fields	7.6	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	29.1	31.9	34.8	39.9	40.6	43.9	48.2
Physical sciences	2.2	2.4	2.5	2.9	3.0	3.7	3.4	4.0	4.1	4.8	4.9	6.6	7.3	7.7	8.4	7.2	7.4	7.9
Mathematics	0.2	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.7	0.5	0.6	1	0.8	1.1	1.4	1.3	1.7	1.8
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.6	0.9	1.0
Life sciences	2.5	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	9.8	11.2	12.3	14.2	15.5	16.2	18.4
Psychology	0.8	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.3	4.6	4.9	6.3	6.5	6.8	7.1

Appendix table 5-15

SEH doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2010

(Thousands)

Position, sex, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Social sciences	1.0	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	4	4.4	4.7	5.0	6.1	6.2	6.9
Engineering	0.8	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.2	3.0	3.6	3.9	3.3	4.7	5.1
Male, all fields	6.5	7.4	9.4	10.0	10.3	14.3	12.0	13.9	14.4	15.4	16.1	19.5	22.4	23.1	26.0	25.6	26.2	28.1
Physical sciences	2.1	2.2	2.3	2.6	2.7	3.4	2.9	3.5	3.6	4.2	4.1	5.6	6.4	6.6	7.1	5.9	5.6	5.9
Mathematics	0.1	0.4	0.2	0.3	0.2	0.4	0.5	0.4	0.5	0.4	0.4	0.8	0.7	0.9	1.0	0.9	1.2	1.1
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.6	0.6	0.7	0.9
Life sciences	2.0	2.2	3.0	3.0	3.2	4.6	4.1	4.6	4.9	5.1	5.6	6	7.2	7.3	8.3	9.0	8.6	9.5
Psychology	0.7	0.9	1.4	1.4	1.4	1.8	1.6	1.5	1.2	1.9	1.7	1.9	2.2	2.1	2.6	2.8	2.6	2.7
Social sciences	0.8	0.9	1.6	1.6	1.7	2.5	1.8	2.4	2.4	2.2	2.1	2.2	2.7	2.7	3.1	3.5	3.3	3.7
Engineering	0.8	0.8	0.9	1.1	1.0	1.5	1.0	1.4	1.7	1.5	2.0	2.9	2.7	3.2	3.3	2.8	3.9	4.3
Female, all fields	1.1	1.4	2.0	2.6	3.1	3.8	4.5	5.3	5.8	6.7	7.7	9.4	9.6	11.6	13.9	15.0	17.7	20.1
Physical sciences	0.1	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.5	0.6	0.8	1	0.8	1.1	1.3	1.4	1.6	2.0
Mathematics	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.3	0.5	0.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Life sciences	0.6	0.6	0.9	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.8	3.7	4.1	5	5.9	6.5	7.6	8.9
Psychology	0.2	0.3	0.5	0.8	0.8	1.1	1.3	1.4	1.6	2.0	2.2	2.4	2.5	2.8	3.5	3.7	4.2	4.4
Social sciences	0.2	0.2	0.3	0.4	0.5	0.7	0.8	1.1	1.1	1.5	1.5	1.8	1.7	1.9	1.9	2.6	2.9	3.2
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.6	0.5	0.8	0.7
Postdocs																		
Both sexes, all fields	4.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8
Physical sciences	1.8	2.4	2.0	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6
Mathematics	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3
Life sciences	1.9	3.9	4.8	5.2	5.1	5.3	5.4	6.8	6.3	8.2	9.1	10.8	11.6	11.0	10.0	12.8	10.3	12.2
Psychology	0.2	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1
Social sciences	0.1	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8
Engineering	0.2	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1
Male, all fields	3.5	6.1	6.3	6.3	5.8	6.0	6.8	8.2	6.8	9.2	11.1	12.1	11.2	10.5	9.8	13.8	10.8	13.8
Physical sciences	1.6	2.1	1.8	1.8	1.4	1.7	1.9	2.2	1.8	2.9	3.7	3.0	2.7	2.3	2.1	2.9	2.5	3.4
Mathematics	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.3	0.3	0.5	0.6	0.3	0.8	0.4	0.6
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2
Life sciences	1.5	2.9	3.5	3.6	3.3	3.4	3.8	4.7	4.1	5.2	5.5	6.2	6.6	6.2	5.7	6.7	5.5	6.6
Psychology	0.1	0.4	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.1	0.3	0.6	0.2	0.4	0.4	0.5	0.4	0.4
Social sciences	0.1	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.2	0.1	0.2	0.5	0.3	0.3	0.3	0.4	0.1	0.4
Engineering	0.2	0.4	0.3	0.2	0.3	0.2	0.5	0.5	0.4	0.9	1.0	1.4	0.9	0.7	0.9	2.4	1.7	2.2
Female, all fields	0.6	1.6	1.8	2.2	2.5	2.6	2.6	3.3	3.0	4.1	5.7	6.8	7.3	6.9	6.0	9.5	7.0	8.9
Physical sciences	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.7	0.7	0.7	0.8	0.7	0.5	1.0	0.8	1.2
Mathematics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D	0.1
Life sciences	0.4	1.1	1.2	1.6	1.8	1.8	1.8	2.2	2.3	3.0	3.7	4.6	5.1	4.7	4.3	6.1	4.8	5.6
Psychology	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.3	0.3	0.7	0.8	0.9	0.8	0.5	1.1	0.6	0.7

Appendix table 5-15

SEH doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2010

(Thousands)

Position, sex, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Social sciences	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.5	0.2	0.5
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.6	0.4	0.8
Part-time positions[d]																		
Both sexes, all fields	2.9	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.3	15.7	15.6	17.0
Physical sciences	0.7	0.7	0.8	0.7	1.1	1.1	0.8	0.7	1.2	1.0	0.9	1.2	1.0	1.0	1.1	1.5	1.6	2.0
Mathematics	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.9	1.2	1.0	1.1
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3
Life sciences	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0	4.4	4.3	4.6
Psychology	0.4	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.2	3.6	3.7	3.8
Social sciences	0.7	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1	3.7	4.0	4.0
Engineering	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8	1.1	0.9	1.2
Male, all fields	1.5	1.8	2.7	1.9	3.5	3.6	2.7	3.1	3.8	2.3	2.4	4.4	3.4	3.8	6.1	7.6	7.0	7.6
Physical sciences	0.4	0.5	0.6	0.4	0.9	0.7	0.5	0.4	0.8	0.7	0.7	0.8	0.7	0.6	0.7	1.1	1.1	1.3
Mathematics	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.4	0.3	0.6	0.9	0.6	0.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	D	0.2
Life sciences	0.4	0.4	0.5	0.4	0.7	0.7	0.5	0.8	1.0	0.4	0.3	1.3	0.8	0.7	1.3	1.5	1.4	1.8
Psychology	0.1	0.2	0.5	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.3	0.8	0.9	1.0	1.0
Social sciences	0.4	0.4	0.6	0.5	1.1	1.4	1.0	0.8	1.2	0.5	0.7	1.4	1.0	1.4	1.7	2.2	2.3	1.8
Engineering	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.5	0.5	0.4	0.3	0.2	0.2	0.4	0.7	1.0	0.6	0.8
Female, all fields	1.4	1.6	1.9	2.1	2.5	2.9	3.0	3.1	3.5	3.6	3.1	4.5	4.9	5.1	7.3	8.1	8.6	9.4
Physical sciences	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.2	0.4	0.4	0.3	0.4	0.5	0.5	0.7
Mathematics	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.4	0.4
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	S	0.1
Life sciences	0.5	0.6	0.6	0.7	0.9	1.0	1.1	1.1	1.3	1.2	0.9	1.6	1.8	1.7	2.7	3.0	2.9	2.9
Psychology	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.9	1.1	1.0	0.8	1.0	1.5	2.4	2.8	2.7	2.8
Social sciences	0.3	0.3	0.4	0.5	0.5	0.9	0.8	0.8	0.8	0.8	0.7	1.2	1.2	1.3	1.4	1.5	1.7	2.2
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.3

D = suppressed for confidentiality reasons; NA = not available; S = suppressed for reliability reasons.

SEH = science, engineering, and health.

[a] Full-time senior faculty includes full professors and associate professors.
[b] Full-time junior faculty includes assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time junior faculty includes assistant professors.
[c] Other full-time positions include positions such as research associates, adjunct positions, lecturers, and administrative positions from 1973 to 1995; from 1997 to 2010, other full-time positions also include instructors.
[d] Part-time positions exclude those employed part time because they are students or retired.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-16

SEH doctorate holders employed in academia, by type of position, degree field, race, and ethnicity: 1973–2010

(Thousands)

Position, race, ethnicity, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
All positions																		
All races and ethnicities, all fields	118.0	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8
Physical sciences	25.5	29.2	28.8	29.9	29.9	32.2	32.8	33.6	33.8	35.0	35.8	37.5	38.7	38.6	39.9	39.6	39.9	43.7
Mathematics	9.7	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.3	18.0	18.7
Computer sciences	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3
Life sciences	34.9	42.6	47.0	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0
Psychology	12.2	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4
Social sciences	23.4	31.1	33.6	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.1	52.5	54.9
Engineering	12.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8
White, all fields	107.7	131.4	140.0	149.9	157.2	168.4	172.8	181.0	183.5	181.8	182.6	193.2	198.2	201.0	204.3	212.2	211.8	219.7
Physical sciences	23.0	26.1	25.9	26.6	26.4	28.3	28.5	29.2	29.5	29.3	29.5	31.0	32.3	32.0	32.1	31.4	31.5	33.5
Mathematics	8.8	10.6	10.8	11.0	11.5	11.9	12.2	12.6	13.0	12.9	12.0	12.6	12.3	12.1	13.0	13.1	13.6	13.7
Computer sciences	NA	NA	0.1	0.2	0.4	0.6	0.9	1.1	1.4	1.6	2.1	2.2	2.7	2.7	3.4	3.7	4.0	4.1
Life sciences	32.1	38.8	42.4	46.1	49.3	52.7	54.6	57.6	59.2	59.1	61.3	64.9	67.2	68.4	70.4	74.2	72.5	76.9
Psychology	11.6	15.2	16.8	18.8	19.6	21.3	22.0	23.2	23.2	22.9	23.6	24.4	25.5	26.6	27.1	29.5	28.7	28.6
Social sciences	21.4	28.2	30.5	33.1	34.7	37.2	37.5	39.4	39.1	38.6	36.5	38.0	38.9	39.0	39.1	40.7	41.7	43.0
Engineering	10.8	12.6	13.5	14.0	15.2	16.4	17.2	18.1	18.2	17.5	17.6	20.2	19.4	20.2	19.2	19.5	19.7	20.0
Asian or Pacific Islander, all fields	5.0	6.7	9.8	10.8	11.8	14.0	15.0	16.3	16.8	20.9	22.4	25.4	26.3	27.6	34.7	37.4	39.7	46.9
Physical sciences	1.2	1.5	1.9	2.1	2.4	2.9	3.1	3.1	2.8	4.2	4.6	4.6	4.6	4.5	5.5	5.6	5.7	7.0
Mathematics	0.4	0.5	0.9	0.9	1.0	1.1	1.1	1.3	1.6	1.9	1.8	2.2	2.1	2.0	2.8	3.0	3.2	3.7
Computer sciences	NA	NA	0.0	0.1	0.1	0.1	0.1	0.3	0.5	0.7	0.9	0.9	0.9	0.9	1.5	1.7	2.5	2.7
Life sciences	1.3	2.0	3.1	3.6	3.6	4.0	4.4	4.7	5.1	6.3	6.8	8.5	9.9	11.0	13.3	14.0	13.9	16.2
Psychology	0.1	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.4	1.6	2.0
Social sciences	1.0	1.2	1.6	2.0	2.0	2.5	2.2	2.4	2.6	2.7	2.8	3.2	3.5	3.6	4.1	3.9	4.5	5.2
Engineering	1.1	1.3	1.9	1.8	2.4	3.0	3.5	4.1	3.7	4.7	4.9	5.2	4.6	4.8	6.4	7.8	8.2	10.1
Underrepresented minority, all fields	2.4	3.7	4.9	5.8	6.5	7.2	7.8	9.0	9.9	10.7	12.4	13.7	15.6	16.8	20.4	20.4	21.8	24.4
Physical sciences	0.5	0.6	0.8	1.0	1.0	1.0	1.1	1.2	1.3	1.5	1.6	1.9	1.8	2.0	2.3	2.2	2.3	2.7
Mathematics	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.7	0.8	0.7	0.8	0.8	1.0	1.0	1.1	1.2
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.4
Life sciences	0.8	1.2	1.3	1.5	1.7	1.8	2.1	2.4	2.6	2.7	3.5	3.9	4.7	4.9	6.2	6.4	6.6	7.6
Psychology	0.3	0.6	0.5	0.8	1.0	1.2	1.2	1.3	1.5	1.6	2.0	2.3	2.7	2.9	3.6	3.6	3.7	4.3
Social sciences	0.5	0.8	1.5	1.8	2.0	2.1	2.3	2.8	3.0	3.1	3.2	3.6	3.9	4.3	4.9	4.9	5.6	5.8
Engineering	0.2	0.3	0.4	0.3	0.5	0.5	0.5	0.7	0.9	0.9	1.2	1.2	1.5	1.6	2.1	2.0	2.1	2.4
Full-time faculty[a]																		
All races and ethnicities, all fields	103.3	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	172.9	178.2	180.9	190.6	193.1	199.1	206.9
Physical sciences	20.8	23.6	23.5	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.5	26.3	26.1	27.7	26.9	27.5	29.3
Mathematics	9.3	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	12.9	12.4	14.0	14.0	14.8	15.1
Computer sciences	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.6	5.7
Life sciences	29.5	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.6	56.1	58.3	61.7	62.8	63.5	66.7

Appendix table 5-16

SEH doctorate holders employed in academia, by type of position, degree field, race, and ethnicity: 1973–2010

(Thousands)

Position, race, ethnicity, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Psychology	10.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.4	20.6	21.2	21.5	23.2	23.0	23.4
Social sciences	21.6	28.8	30.3	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	36.9	38.2	38.3	39.6	39.2	42.0	43.2
Engineering	11.3	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.7	21.5	21.9	22.1	22.7	23.4
White, all fields	94.9	114.3	118.7	128.1	133.4	139.7	146.2	149.8	151.8	148.7	147.1	146.8	150.8	151.1	153.5	155.3	156.5	158.7
Physical sciences	19.0	21.5	21.3	22.1	21.6	22.8	23.4	23.3	23.2	22.2	22.1	21.8	22.5	22.0	23.2	22.6	22.4	23.4
Mathematics	8.5	9.9	10.1	10.3	10.9	11.1	11.4	11.7	12.2	12.3	10.7	11.0	10.6	10.0	10.9	10.8	11.3	11.4
Computer sciences	NA	NA	0.0	0.2	0.3	0.5	0.7	1.0	1.3	1.5	1.9	2.0	2.3	2.2	2.6	2.9	3.2	3.2
Life sciences	27.5	32.1	33.9	37.2	39.7	41.3	43.3	44.4	46.0	45.1	46.7	47.1	48.8	49.9	50.5	51.5	51.0	52.6
Psychology	10.3	13.0	13.6	15.4	16.2	17.1	17.9	18.8	19.2	18.0	18.4	17.6	18.4	18.8	18.6	19.9	19.5	19.2
Social sciences	19.7	26.1	27.5	30.1	30.7	32.2	33.5	34.4	33.8	34.1	31.9	31.1	32.2	32.0	32.3	32.3	33.5	33.8
Engineering	10.0	11.6	12.2	12.7	14.0	14.8	15.9	16.2	16.2	15.6	15.3	16.4	15.8	16.2	15.2	15.3	15.4	15.0
Asian or Pacific Islander, all fields	4.0	5.0	7.8	8.4	9.1	10.9	11.7	12.3	12.6	14.8	14.5	15.8	16.3	17.7	21.4	21.8	25.0	28.5
Physical sciences	0.7	1.0	1.4	1.3	1.6	1.7	2.0	1.9	1.8	2.4	2.3	2.2	2.4	2.5	2.7	2.7	3.1	3.8
Mathematics	0.4	0.5	0.8	0.9	1.0	1.1	1.1	1.3	1.5	1.7	1.6	1.9	1.7	1.7	2.2	2.3	2.5	2.6
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.7	0.8	1.3	1.5	2.0	2.2
Life sciences	0.9	1.2	2.1	2.3	2.4	2.8	3.1	3.0	3.0	3.7	3.5	3.7	4.4	5.3	6.5	6.5	7.3	8.4
Psychology	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.7	0.8	1.0	1.2
Social sciences	0.9	1.1	1.5	1.9	1.9	2.1	2.1	2.1	2.4	2.3	2.4	2.8	2.8	3.0	3.1	2.9	3.6	4.0
Engineering	0.9	1.1	1.8	1.7	1.9	2.7	3.0	3.4	3.1	3.7	3.6	3.8	3.7	3.9	4.9	5.0	5.5	6.4
Underrepresented minority, all fields	2.0	3.2	4.2	5.0	5.4	5.8	6.3	7.4	8.4	8.6	9.8	10.3	11.1	12.0	13.4	13.9	15.3	17.2
Physical sciences	0.4	0.4	0.7	0.9	0.9	0.8	0.9	0.9	1.1	1.2	1.1	1.4	1.4	1.6	1.5	1.5	1.7	2.0
Mathematics	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.7	0.7	0.8	0.9	1.0
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.3
Life sciences	0.7	1.0	1.1	1.3	1.3	1.4	1.6	1.8	2.0	2.0	2.6	2.8	2.9	3.2	3.9	4.0	4.3	5.0
Psychology	0.2	0.5	0.4	0.6	0.7	0.9	0.9	1.0	1.1	1.1	1.3	1.3	1.7	1.8	1.8	2.1	2.2	2.5
Social sciences	0.4	0.8	1.4	1.6	1.7	1.8	2.0	2.5	2.8	2.8	2.8	3.0	3.1	3.2	3.6	3.6	4.3	4.7
Engineering	0.1	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.8	1.1	1.1	1.2	1.4	1.6	1.6	1.5	1.7
Postdocs																		
All races and ethnicities, all fields	4.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8
Physical sciences	1.8	2.4	2.0	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6
Mathematics	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3
Life sciences	1.9	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0	12.8	10.3	12.2
Psychology	0.2	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1
Social sciences	0.1	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8
Engineering	0.2	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1
White, all fields	3.6	6.2	6.8	6.9	6.8	7.1	7.4	9.0	7.1	9.1	11.2	12.5	11.9	11.4	9.9	13.4	10.3	12.5
Physical sciences	1.5	1.8	1.6	1.5	1.4	1.4	1.5	1.8	1.4	2.4	2.6	2.5	2.3	2.2	1.5	2.4	1.9	2.7
Mathematics	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.3	0.3	0.5	0.7	0.4	0.6	0.4	0.3

Appendix table 5-16

SEH doctorate holders employed in academia, by type of position, degree field, race, and ethnicity: 1973–2010

(Thousands)

Position, race, ethnicity, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	D	D	0.1
Life sciences	1.7	3.3	4.1	4.4	4.3	4.5	4.7	5.6	4.8	5.9	6.5	7.0	7.2	6.7	6.4	7.3	6.3	7.0
Psychology	0.1	0.4	0.6	0.6	0.5	0.7	0.6	0.8	0.4	0.3	0.9	1.1	0.9	1.0	0.7	1.3	0.8	0.7
Social sciences	0.1	0.3	0.3	0.3	0.5	0.3	0.1	0.3	0.2	0.1	0.3	0.6	0.3	0.4	0.3	0.6	0.2	0.6
Engineering	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.5	0.9	0.7	0.6	0.5	1.1	0.7	1.0
Asian or Pacific Islander, all fields	0.5	1.1	1.1	1.4	1.1	1.1	1.6	1.9	2.3	3.6	4.7	5.3	5.2	4.9	4.8	8.1	6.1	8.3
Physical sciences	0.2	0.4	0.4	0.6	0.2	0.5	0.6	0.7	0.7	1.0	1.5	1.2	1.1	0.8	0.9	1.3	1.2	1.7
Mathematics	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.3
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	D	0.2	0.2
Life sciences	0.2	0.5	0.5	0.8	0.6	0.6	0.6	0.9	1.3	1.9	2.2	3.2	3.6	3.6	3.0	4.4	3.0	4.0
Psychology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Social sciences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2
Engineering	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.7	0.7	0.7	0.2	0.3	0.5	1.7	1.3	1.8
Underrepresented minority, all fields[b]	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.4	0.6	0.9	1.1	1.5	1.1	1.1	1.7	1.3	1.6
Physical sciences	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Mathematics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	D	D
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D	D	D
Life sciences	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.6	0.8	0.6	0.6	1.0	0.8	0.9
Psychology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.2
Social sciences	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1
Engineering	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.1	0.2	0.2
Other positions[c]																		
All races and ethnicities, all fields	10.5	12.2	15.9	16.6	19.4	24.6	22.1	25.4	27.6	28.1	29.4	41.1	43.5	47.3	53.2	56.4	59.5	65.1
Physical sciences	2.9	3.1	3.3	3.6	4.2	4.8	4.2	4.7	5.4	5.8	5.8	8.0	8.6	9.0	9.5	8.8	9.1	9.8
Mathematics	0.4	0.7	0.7	0.6	0.5	0.7	0.6	0.8	0.9	0.8	1.1	1.7	1.8	1.8	2.2	2.4	2.7	2.9
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.5	1.0	0.8	1.0	1.3
Life sciences	3.4	3.7	5.0	5.2	6.3	7.8	7.6	8.7	9.5	9.2	9.6	13.2	14.5	15.5	18.3	19.9	20.5	23.1
Psychology	1.2	1.8	2.8	3.0	3.1	3.9	3.8	4.0	4.0	5.1	5.0	6.7	7.2	8.0	9.4	10.1	10.5	10.9
Social sciences	1.6	1.9	2.9	2.9	3.8	5.5	4.3	5.1	5.5	5.0	5.0	7.3	7.4	8.0	8.0	9.9	10.2	10.9
Engineering	0.9	0.9	1.2	1.3	1.4	1.8	1.4	2.0	2.2	2.0	2.5	3.7	3.7	4.3	4.8	4.5	5.6	6.3
White, all fields	9.3	10.9	14.5	15.0	17.0	21.6	19.3	22.2	24.6	24.0	24.3	34.2	35.6	38.5	41.3	43.5	45.0	48.5
Physical sciences	2.5	2.8	3.1	3.2	3.6	4.1	3.6	4.0	4.8	4.8	4.8	6.4	7.1	7.5	7.5	6.4	7.2	7.4
Mathematics	0.3	0.6	0.6	0.6	0.5	0.7	0.6	0.7	0.8	0.6	0.9	1.4	1.3	1.5	1.7	1.8	1.9	2.0
Computer sciences	NA	NA	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.4	0.5	0.8	0.8	0.8	0.8
Life sciences	3.0	3.3	4.4	4.5	5.3	6.9	6.6	7.5	8.4	8.1	8.1	11.1	11.6	12.1	13.6	15.4	15.2	17.3
Psychology	1.1	1.7	2.6	2.8	2.9	3.5	3.5	3.6	3.6	4.5	4.3	5.7	6.2	6.8	7.9	8.3	8.4	8.7
Social sciences	1.5	1.7	2.7	2.7	3.5	4.7	3.9	4.7	5.1	4.4	4.3	6.3	6.3	6.6	6.5	7.8	8.0	8.6
Engineering	0.7	0.8	1.1	1.2	1.1	1.6	1.1	1.6	1.8	1.6	1.8	2.9	2.9	3.4	3.4	3.0	3.6	4.0

Appendix table 5-16

SEH doctorate holders employed in academia, by type of position, degree field, race, and ethnicity: 1973–2010

(Thousands)

Position, race, ethnicity, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Asian or Pacific Islander, all fields	0.6	0.6	0.9	1.0	1.6	2.0	1.8	2.0	1.9	2.5	3.2	4.4	4.9	5.0	7.2	7.5	8.6	10.1
Physical sciences	0.2	0.1	0.2	0.2	0.5	0.6	0.6	0.5	0.4	0.8	0.8	1.3	1.1	1.1	1.4	1.6	1.4	1.5
Mathematics	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.3	0.3	0.5	0.5	0.7	0.8
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3
Life sciences	0.2	0.3	0.4	0.6	0.7	0.7	0.7	0.9	0.8	0.8	1.1	1.6	1.9	2.1	3.4	3.1	3.5	3.8
Psychology	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.5	0.6
Social sciences	0.0	0.1	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.4	0.6	0.5	0.8	0.8	0.8	1.0
Engineering	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.4	0.3	0.3	0.6	0.7	0.7	0.6	0.9	1.1	1.5	1.9
Underrepresented minority, all fields[b]	0.3	0.3	0.5	0.5	0.8	1.0	1.1	1.1	1.1	1.5	1.8	2.5	2.9	3.7	3.9	4.8	5.3	5.6
Physical sciences	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.5	0.5	0.4	0.5
Mathematics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Computer sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	S	0.1
Life sciences	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.9	1.1	1.1	1.4	1.5	1.7
Psychology	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.6	0.8	0.7	1.0	1.3	1.4	1.4	1.6
Social sciences	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.5	0.6	0.9	0.8	1.2	1.3	1.0
Engineering	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5

D = suppressed for confidentiality reasons; NA = not available; S = suppressed for data reliability reasons.

SEH = science, engineering, and health.

[a] Full-time faculty includes full professors, associate professors, assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time faculty includes full professors, associate professors, and assistant professors.
[b] Underrepresented minority includes blacks, Hispanics, and American Indians or Alaska Natives. Total includes those of other and unknown race or ethnicity not shown separately.
[c] Other positions include full-time positions such as research associates, adjunct appointments, lecturers, and administrative positions, as well as part-time positions of all kinds. From 1997 to 2010, other positions also include instructors. Part-time employment excludes those employed part time because they are students or retired.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-17

SEH doctorate holders employed in academia, by type of position, degree field, and citizenship: 2010

(Thousands)

Position and field	All doctorate holders	Native-born U.S. citizens	Foreign born: Naturalized U.S. citizens	Foreign born: Noncitizens
All positions	294.8	218.0	36.0	40.8
Physical sciences	43.7	31.8	4.7	7.2
Mathematics and statistics	18.7	11.9	3.1	3.7
Computer and information sciences	7.3	3.7	1.7	2.0
Life sciences	102.0	78.4	11.5	12.2
Psychology	35.4	32.3	1.8	1.2
Social sciences	54.9	43.1	5.7	6.1
Engineering	32.8	16.8	7.5	8.5
Full-time faculty[a]	206.9	157.2	26.9	22.7
Physical sciences	29.3	22.6	3.5	3.2
Mathematics and statistics	15.1	9.9	2.5	2.8
Computer and information sciences	5.7	2.8	1.4	1.6
Life sciences	66.7	53.9	8.0	4.9
Psychology	23.4	21.4	1.2	0.8
Social sciences	43.2	34.0	4.3	4.9
Engineering	23.4	12.7	6.2	4.5
Postdocs	22.8	11.6	1.2	9.9
Physical sciences	4.6	2.2	0.1	2.3
Mathematics and statistics	0.7	0.2	D	0.4
Computer and information sciences	0.3	D	D	S
Life sciences	12.2	7.0	0.7	4.3
Psychology	1.1	0.8	S	S
Social sciences	0.8	0.6	S	S
Engineering	3.1	0.7	0.1	2.2
Other positions[b]	65.1	49.2	7.9	8.1
Physical sciences	9.8	7.0	1.1	1.7
Mathematics and statistics	2.9	1.8	0.6	0.5
Computer and information sciences	1.3	0.9	0.3	0.2
Life sciences	23.1	17.4	2.7	2.7
Psychology	10.9	10.1	0.6	0.2
Social sciences	10.9	8.5	1.4	1.0
Engineering	6.3	3.4	1.2	1.8

D = suppressed for confidentiality reasons; S = suppressed for reliability reasons.

SEH = science, engineering, and health.

[a] Full-time faculty includes full professors, associate professors, assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time faculty includes full professors, associate professors, and assistant professors.

[b] Other positions include full-time positions such as research associates, adjunct appointments, lecturers, and administrative positions, as well as part-time positions of all kinds. From 1997 to 2010, other positions also include instructors. Part-time employment excludes those employed part time because they are students or retired.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical centers, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the 2010 Survey of Doctorate Recipients.

Science and Engineering Indicators 2014

Appendix table 5-18

Age distribution of SEH doctorate holders in full-time faculty positions at research universities and other academic institutions: 1973–2010 (corrected April 2014)

Age and institution type	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
	Thousands																		
All universities and colleges	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	173.0	178.1	180.8	190.6	193.1	199.1	206.8
Research universities	55.7	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	64.1	63.5	66.3	65.9	72.2	72.0	73.3	77.4
Other universities and colleges	47.6	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	107.3	109.5	111.8	114.9	118.4	121.1	125.8	129.4
	Percent distribution																		
All universities and colleges																			
All ages (years)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100.0	100.0	100.0
< 30	3.6	2.9	2.3	1.7	1.5	1.1	1.0	0.7	0.5	0.8	1.1	0.8	0.8	0.8	0.9	0.6	0.9	0.8	0.6
30–34	22.0	20.1	16.9	14.5	13.2	10.2	9.9	8.5	7.8	8.1	8.3	7.6	7.4	6.4	6.8	7	7.3	6.7	7.0
35–39	19.9	21.6	23.7	23.3	20.7	18.6	18.2	15.9	15.1	14.9	15.3	15.1	13.2	13.0	12.2	12.2	12.7	12.8	12.4
40–44	16.6	16.6	16.4	17.8	20.5	22.6	21.4	20.0	18.6	17.8	17.1	17.0	16.7	16.2	15.7	14.6	14.4	13.8	13.2
45–49	13.6	13.8	14.3	14.1	13.8	15.1	17.0	20.1	20.8	19.4	18.4	17.8	16.9	16.6	16.6	16.7	15.1	13.9	13.7
50–54	11.0	11.3	11.4	11.8	12.0	12.4	12.0	13.1	14.6	17.4	18.5	18.7	18.5	16.6	17.2	15.7	15.6	15.6	15.4
55–59	7.0	7.5	8.4	9.3	9.4	10.3	9.7	10.5	11.1	11.0	10.6	12.3	14.6	16.7	15.7	15.5	15.2	15.2	15.0
60–64	4.3	4.6	4.8	5.4	6.3	7.0	7.3	7.6	7.7	7.2	7.5	7.1	7.9	9.2	10.5	12.3	11.7	12.4	12.9
65–75	2.0	1.8	1.7	2.0	2.7	2.8	3.5	3.5	3.8	3.4	3.3	3.6	4.1	4.3	4.4	5.5	7.2	8.7	9.8
Research universities[a]																			
All ages (years)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
< 30	3.4	3.0	2.5	2.2	2.1	1.4	1.2	1.0	0.6	0.8	1.2	0.9	0.9	0.7	0.9	0.7	0.8	0.9	0.6
30–34	20.6	18.8	16.4	14.9	14.1	11.2	11.4	9.8	9.3	9.1	9.4	7.8	7.2	6.6	6.9	6.3	7.8	7.4	7.7
35–39	19.3	20.3	21.0	21.7	19.8	18.0	17.9	16.6	17.1	16.6	16.6	16.5	14.3	13.9	12.5	12.4	13.0	12.6	12.8
40–44	16.4	16.3	16.2	17.2	18.8	20.2	20.0	18.7	17.2	17.5	17.6	18.1	17.7	17.6	17.0	16.1	14.5	14.5	12.9
45–49	14.3	14.2	14.7	13.9	12.6	14.9	15.4	17.8	18.4	17.8	16.9	17.0	16.6	16.6	16.5	17.0	15.5	14.2	13.5
50–54	11.4	12.2	12.3	12.1	12.1	12.1	12.0	12.9	13.8	15.6	16.0	16.5	17.3	16.0	16.5	15.4	15.4	15.8	15.7
55–59	7.7	8.3	9.3	10.0	10.4	10.8	9.8	10.3	10.9	10.7	11.0	11.7	12.9	14.5	13.8	14.4	14.9	14.1	14.2
60–64	4.8	5.0	5.4	5.8	6.8	8.0	8.2	8.5	8.0	7.7	7.8	7.3	8.1	9.1	10.4	11.1	10.4	11.6	12.4
65–75	2.1	1.9	2.2	2.3	3.2	3.5	4.1	4.3	4.8	4.2	3.7	4.0	4.8	5.2	5.6	6.7	7.8	9.1	10.3
Other universities and colleges																			
All ages (years)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
< 30	3.8	2.8	2.1	1.2	0.9	0.8	0.8	0.4	0.4	0.8	0.9	0.7	0.7	0.9	0.9	0.5	0.9	0.7	0.6
30–34	23.6	21.4	17.5	14.1	12.2	9.4	8.2	7.1	6.3	7.1	7.3	7.4	7.5	6.3	6.7	7.3	7.0	6.5	6.6
35–39	20.7	23.0	26.5	25.1	21.6	19.1	18.5	15.2	13.1	13.1	14.1	13.9	12.5	12.5	12.0	12.1	12.6	12.8	12.2
40–44	16.8	17.0	16.6	18.4	22.3	24.9	22.8	21.3	20.1	18.1	16.7	16.0	16.1	15.4	14.9	13.7	14.3	13.5	13.4
45–49	12.8	13.3	13.9	14.3	15.0	15.2	18.8	22.5	23.4	20.9	19.9	18.6	17.1	16.7	16.7	16.6	14.9	13.8	13.7
50–54	10.5	10.3	10.4	11.6	11.8	12.7	12.0	13.4	15.4	19.2	20.8	20.6	19.1	17.0	17.7	15.8	15.8	15.5	15.2

Appendix table 5-18

Age distribution of SEH doctorate holders in full-time faculty positions at research universities and other academic institutions: 1973–2010 (corrected April 2014)

Age and institution type	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
55–59	6.2	6.5	7.5	8.5	8.4	9.8	9.6	10.8	11.2	11.3	10.2	12.8	15.5	18.2	16.7	16.2	15.4	16.0	15.5
60–64	3.6	4.2	4.2	5.1	5.8	5.9	6.3	6.6	7.4	6.8	7.1	7.0	7.8	9.2	10.6	13.0	12.4	12.9	13.2
65–75	1.8	1.6	1.2	1.7	2.0	2.2	2.9	2.6	2.7	2.7	3.0	3.2	3.7	3.7	3.8	4.8	6.9	8.5	9.4

SEH = science, engineering, and health.

[a] Research universities are 1994 Carnegie Classification Research I Universities for 1973 to 2003. Research Universities are 2005 Carnegie Classification Very High Research Universities for 2006 to 2010.

NOTES: Full-time faculty includes full professors, associate professors, assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time faculty includes full professors, associate professors, and assistant professors. Detail may not add to total because of rounding. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (SDR), 1973–2010. Special tabulations (2013) of 1997–2010 SDR.

Science and Engineering Indicators 2014

Appendix table 5-19

SEH doctorate holders employed in academia, by research priority, type of position, and degree field: 1973–2010

(Thousands)

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
All research priorities																		
All positions	118.0	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8
Physical sciences	25.5	29.2	28.8	29.9	29.9	32.2	32.8	33.6	33.8	35.0	35.8	37.5	38.7	38.6	39.9	39.6	39.9	43.7
Mathematics	9.7	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7
Computer sciences	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3
Life sciences	34.9	42.6	47.0	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0
Psychology	12.2	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4
Social sciences	23.4	31.1	33.6	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9
Engineering	12.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8
Full-time faculty	103.3	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	172.9	178.2	180.9	190.6	193.1	199.1	206.9
Physical sciences	20.8	23.6	23.5	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.5	26.3	26.1	27.7	26.9	27.5	29.3
Mathematics	9.3	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	12.9	12.4	14.0	14.0	14.8	15.1
Computer sciences	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.6	5.7
Life sciences	29.5	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.6	56.1	58.3	61.7	62.8	63.5	66.7
Psychology	10.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.4	20.6	21.2	21.5	23.2	23.0	23.4
Social sciences	21.6	28.8	30.3	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	36.9	38.2	38.3	39.6	39.2	42.0	43.2
Engineering	11.3	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.7	21.5	21.9	22.1	22.7	23.4
Research as primary/secondary activity																		
All positions	82.3	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5	179.3	183.7	187.1	198.2
Physical sciences	18.8	19.2	18.2	19.5	19.3	21.4	24.9	25.7	25.9	25.0	25.8	27.4	27.2	27.3	28.2	26.9	26.8	28.9
Mathematics	6.8	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8	10.7	11.4	11.7	12.3
Computer sciences	NA	NA	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6	3.9	4.1	4.8	5.1
Life sciences	26.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1	65.6	66.7	66.4	71.4
Psychology	7.3	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2	19.1	20.5	21.3	21.2
Social sciences	14.3	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4	31.5	32.7	33.8	35.2
Engineering	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2	20.3	21.4	22.3	24.1
Full-time faculty	72.0	71.6	74.1	83.8	86.9	95.1	121.4	125.8	131.4	121.7	121.6	124.8	126.3	130.4	135.2	133.7	138.6	142.6
Physical sciences	15.1	14.8	13.9	15.1	15.1	16.3	19.7	19.9	20.1	18.0	17.9	18.4	18.3	18.6	19.9	18.2	18.7	19.6
Mathematics	6.6	6.4	6.4	6.5	6.9	7.3	9.1	9.8	10.2	9.1	8.4	9.0	8.4	8.2	9.2	9.6	10.1	10.4
Computer sciences	NA	NA	S	0.2	0.3	0.5	0.8	1.2	1.6	1.8	2.2	2.3	2.3	2.3	3.3	3.6	4.1	4.1
Life sciences	21.8	22.9	24.7	28.7	29.6	31.9	38.3	39.0	41.0	38.4	39.5	40.3	41.4	43.5	45.1	44.3	44.5	46.1
Psychology	6.6	6.7	6.6	8.0	8.8	9.0	12.1	12.2	13.9	12.5	12.9	12.9	13.4	14.1	14.4	14.9	15.9	16.1
Social sciences	13.6	12.9	13.5	16.5	16.0	18.8	26.1	27.9	28.3	26.7	25.3	25.3	26.7	27.4	27.0	27.2	29.0	29.6
Engineering	8.2	8.0	8.9	8.8	10.2	11.4	15.2	15.7	16.2	15.1	15.5	16.5	15.6	16.5	16.2	15.8	16.4	16.9
Research as primary activity																		
All positions	27.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8	102.9	108.2	107.9	117.5
Physical sciences	6.6	8.9	8.5	9.4	9.2	11.0	12.3	13.3	13.1	14.7	15.2	15.6	15.1	15.0	16.2	16.3	15.7	17.5
Mathematics	1.5	1.8	2.1	1.9	2.0	2.7	3.2	3.5	3.5	3.4	3.3	3.5	2.9	3.3	3.8	5.0	5.6	5.7
Computer sciences	NA	NA	0.0	0.1	0.2	0.4	0.7	0.8	1.1	0.9	1.0	1.1	1.1	1.3	1.9	2.0	2.6	2.8

Appendix table 5-19

SEH doctorate holders employed in academia, by research priority, type of position, and degree field: 1973–2010

(Thousands)

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Life sciences	12.8	16.6	19.7	23.2	24.3	27.1	31.5	33.8	34.5	36.0	37.7	40.5	43.2	43.7	46.4	47.0	45.3	49.7
Psychology	2.0	2.8	3.4	4.1	4.4	4.6	5.2	5.9	6.2	6.7	7.4	8.0	8.6	8.7	10.0	11.2	11.1	11.4
Social sciences	2.8	4.1	4.2	4.5	4.9	5.7	7.5	8.2	8.4	10.7	9.8	9.8	11.1	11.7	13.0	13.6	14.0	15.6
Engineering	2.1	2.9	3.4	3.3	3.9	4.4	6.2	6.9	7.2	7.9	8.7	10.1	9.4	10.1	11.6	13.1	13.6	15.0
Full-time faculty	19.8	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.8	56.6	56.9	58.9	61.2	70.4	70.2	71.7	75.0
Physical sciences	3.5	5.0	5.0	5.4	5.4	6.5	7.8	8.0	8.2	8.7	8.4	8.1	8.0	8.0	9.7	9.3	9.4	9.8
Mathematics	1.4	1.6	1.8	1.8	1.8	2.5	2.7	3.2	3.2	3.1	2.7	2.9	2.3	2.3	3.4	3.9	4.6	4.6
Computer sciences	NA	NA	0.0	0.1	0.1	0.3	0.5	0.7	1.0	0.7	0.9	0.9	0.9	1.1	1.6	1.7	2.1	2.1
Life sciences	9.3	11.4	13.1	15.5	16.5	18.6	22.3	22.6	23.8	24.1	24.7	25.1	26.1	26.9	29.4	27.8	27.1	28.2
Psychology	1.6	2.0	2.2	2.5	2.9	3.3	3.9	4.5	5.0	5.3	5.4	5.7	5.9	6.1	7.0	7.8	7.8	8.0
Social sciences	2.5	3.6	3.4	3.8	3.8	4.6	6.3	7.1	7.1	8.9	8.3	7.4	9.0	9.5	10.7	11.3	11.8	12.9
Engineering	1.5	2.3	2.6	2.7	3.0	3.7	5.0	5.4	5.5	6.0	6.3	6.6	6.6	7.4	8.6	8.5	8.9	9.4
Teaching as primary activity																		
All positions	73.3	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0	105.9	109.4	114.0	120.6
Physical sciences	16.3	16.5	15.9	17.5	16.8	17.4	16.9	16.7	16.8	15.7	15.9	16.7	17.8	17.9	17.0	16.9	17.5	18.8
Mathematics	7.4	8.5	8.6	9.1	9.4	9.3	9.2	9.5	10.1	10.3	9.8	10.2	10.5	10.2	9.4	9.9	10.3	10.7
Computer sciences	NA	NA	0.1	0.2	0.3	0.3	0.3	0.6	0.7	1.4	1.8	1.8	2.1	1.9	2.5	3.0	3.2	3.8
Life sciences	16.6	18.1	18.1	20.5	21.1	20.9	20.1	20.3	20.9	20.2	21.8	23.4	25.1	25.7	25.2	27.6	28.2	30.6
Psychology	7.7	9.4	9.5	11.7	11.6	12.3	13.0	12.8	12.8	11.6	11.9	12.4	13.0	13.3	13.3	14.3	14.4	15.0
Social sciences	16.9	21.0	22.6	26.8	27.7	29.1	28.5	28.8	29.8	27.6	26.9	28.3	28.0	28.0	27.3	27.5	29.6	29.8
Engineering	8.4	8.7	9.1	10.1	10.8	11.7	11.3	12.2	12.2	11.6	12.1	12.6	12.1	11.9	11.2	10.2	10.8	11.9
Full-time faculty	69.9	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	92.1	95.0	93.8	89.9	88.4	93.5	96.7
Physical sciences	15.5	15.7	15.1	16.9	15.8	16.5	16.2	15.6	15.6	14.3	14.4	14.4	15.4	15.1	14.3	13.8	14.2	15.1
Mathematics	7.2	8.1	8.3	8.8	9.0	8.9	9.0	9.0	9.6	10.0	9.0	9.1	9.2	8.9	8.5	8.2	8.6	8.8
Computer sciences	NA	NA	0.1	0.2	0.3	0.3	0.3	0.5	0.7	1.3	1.7	1.6	2.0	1.7	2.2	2.5	2.8	3.2
Life sciences	15.7	17.1	17.1	19.6	19.6	19.5	18.7	18.7	19.1	18.4	19.8	20.0	21.6	21.8	21.0	21.8	23.1	24.4
Psychology	7.3	8.9	8.9	11.0	10.9	11.6	12.1	11.9	12.2	10.5	10.9	10.6	11.3	11.1	10.8	11.1	11.1	11.3
Social sciences	16.1	20.1	21.4	25.7	25.9	26.8	26.5	26.4	27.6	25.9	24.6	24.6	24.2	24.1	23.1	21.9	24.3	23.9
Engineering	8.1	8.5	8.9	10.0	10.4	11.2	11.0	11.7	11.8	11.0	11.5	11.7	11.4	10.8	9.9	8.9	9.4	10.0
Other primary activity																		
All positions	16.9	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8	49.5	55.2	54.6	56.6
Physical sciences	2.6	3.8	4.4	3.0	3.8	3.8	3.5	3.6	3.8	4.6	4.6	5.2	5.8	5.8	7.2	6.5	6.7	7.4
Mathematics	0.8	1.4	1.6	1.3	1.6	1.6	1.4	1.5	1.6	1.8	1.5	1.8	1.7	1.4	2.2	2.5	2.1	2.3
Computer sciences	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.5	0.8	0.8	1.1	0.8
Life sciences	5.5	8.0	9.3	7.6	9.4	10.6	9.7	10.7	11.5	12.0	12.2	13.4	13.6	14.8	17.6	20.9	20.8	21.6
Psychology	2.5	4.0	4.8	4.4	5.0	6.2	5.6	6.3	6.2	6.7	6.9	7.0	7.3	8.4	8.1	9.5	9.0	9.1
Social sciences	3.7	6.0	6.8	5.6	6.1	7.1	6.1	7.6	6.6	6.1	5.8	6.8	7.2	7.2	8.2	8.8	8.9	9.5
Engineering	1.9	3.1	3.3	2.7	3.5	3.8	3.7	3.7	3.4	3.7	3.0	3.8	4.0	4.7	5.5	6.2	5.9	6.0
Full-time faculty	13.6	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	23.9	24.2	26.0	30.3	34.6	33.9	35.1

Appendix table 5-19

SEH doctorate holders employed in academia, by research priority, type of position, and degree field: 1973–2010

(Thousands)

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Physical sciences	1.8	2.9	3.3	2.0	3.0	2.4	2.4	2.5	2.3	2.7	2.7	2.9	2.8	3.0	3.6	3.8	3.9	4.4
Mathematics	0.7	1.2	1.3	1.1	1.4	1.3	1.2	1.3	1.4	1.6	1.3	1.5	1.4	1.0	1.9	1.9	1.6	1.7
Computer sciences	NA	NA	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.5	0.7	0.4
Life sciences	4.5	6.4	7.1	5.8	7.4	7.4	7.2	7.9	8.2	8.3	8.3	8.5	8.5	9.6	11.3	13.2	13.3	14.0
Psychology	2.0	3.0	3.2	2.9	3.5	3.6	3.3	3.8	3.6	3.7	3.8	3.0	3.4	3.9	3.7	4.4	4.1	4.1
Social sciences	3.0	5.2	5.5	4.2	4.7	4.7	4.8	5.4	4.3	4.5	4.2	4.8	5.0	4.7	5.8	6.0	5.9	6.5
Engineering	1.6	2.7	2.8	2.0	2.9	2.9	3.3	3.1	2.7	3.1	2.2	2.8	2.7	3.3	3.5	4.7	4.4	3.9

NA = not available; S = suppressed for reasons of confidentiality and/or reliability.

SEH = science, engineering, and health.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes, excluding those employed part time because they are students or retired. Full-time faculty includes full professors, associate professors, assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time faculty includes full professors, associate professors, and assistant professors. Research includes basic or applied research, development, or design. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Total includes other and unknown race or ethnicity not shown separately. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-20

Early career SEH doctorate holders employed in academia, by Carnegie institution type, years since doctorate, and type of position: 1997–2010

(Percent distribution)

Carnegie institution type	1–3 years				4–7 years			
	Total	Full-time faculty	Postdocs	Other positions	Total	Full-time faculty	Postdocs	Other positions
All universities and colleges								
1997	100.0	37.6	41.0	21.4	100.0	62.8	14.8	22.4
1999	100.0	34.8	43.1	22.1	100.0	61.5	14.1	24.5
2001	100.0	40.1	39.0	20.9	100.0	58.9	13.3	27.9
2003	100.0	42.1	33.3	24.6	100.0	61.6	9.6	28.7
2006	100.0	35.5	45.3	19.2	100.0	58.7	15.5	25.8
2008	100.0	40.4	35.8	23.8	100.0	61.8	11.4	27.0
2010	100.0	35.1	41.2	23.7	100.0	60.3	12.5	27.2
Very high research universities								
1997	100.0	21.3	58.9	19.9	100.0	48.4	23.2	28.4
1999	100.0	18.6	62.1	19.3	100.0	47.8	23.3	28.9
2001	100.0	23.2	55.6	21.1	100.0	43.5	23.6	32.9
2003	100.0	24.0	50.6	25.3	100.0	47.8	17.4	34.8
2006	100.0	19.0	64.7	16.3	100.0	44.3	25.3	30.4
2008	100.0	24.0	54.5	21.6	100.0	46.9	20.0	33.1
2008	100.0	20.7	61.1	18.2	100.0	49.0	20.0	31.0
2010								
Other universities and colleges[a]								
1997	100.0	55.6	20.7	23.7	100.0	75.8	6.3	17.9
1999	100.0	55.8	19.2	25.0	100.0	74.1	5.0	20.9
2001	100.0	61.9	17.5	20.6	100.0	72.2	3.5	24.2
2003	100.0	63.3	12.9	23.7	100.0	73.5	2.7	23.7
2006	100.0	58.4	17.5	24.1	100.0	74.1	4.2	21.7
2008	100.0	60.8	12.8	25.7	100.0	74.4	3.5	22.0
2010	100.0	55.4	14.0	30.6	100.0	72.2	4.6	23.2

SEH = science, engineering, and health.

[a] Other universities and colleges exclude freestanding medical schools.

NOTES: Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes excluding those employed part time because they are students or retired. Full-time faculty includes full, associate, and assistant professors. Other positions include full-time positions such as research associates, adjunct appointments, instructors, lecturers, administrative positions, and part-time positions of all kinds. Institutions are designated by the 2005 Carnegie classification code. For information on these institutional categories, see The Carnegie Classification of Institutions of Higher Education, http://classifications.carnegiefoundation.org/index.php, accessed 2 July 2013. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-21

Academic SEH doctorate holders with federal support, by degree field, research activity, and type of position: 1973–2010

(Percent)

Field, research activity, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
All fields	44.5	40.5	39.7	38.2	35.5	39.8	31.4	46.5	47.9	48.5	36.1	39.4	38.6	45.7	45.1	45.9	46.9	44.5	45.1
Research primary/secondary activity	51.9	48.9	52.3	51.8	50.8	55.9	44.5	56.1	58.1	57.8	46.4	50.0	48.2	56.6	56.4	56.7	58.1	55.5	56.2
Full-time faculty	42.0	39.6	38.2	36.2	38.8	41.7	34.3	45.6	46.6	48.0	32.9	35.7	34.9	43.2	43.6	44.9	46.5	43.7	44.7
Other full-time positions	60.2	58.8	68.1	58.3	58.5	59.4	49.8	60.6	60.9	58.8	42.5	43.1	46.7	48.9	47.2	46.3	43.6	43.5	41.9
Postdocs	87.7	86.3	86.0	82.1	86.3	82.2	78.5	82.1	83.5	84.5	83.1	80.1	74.1	80.3	74.3	78.1	70.7	71.9	73.6
Physical sciences	47.3	44.0	43.8	42.8	42.1	46.5	38.2	54.1	57.9	57.0	45.7	49.3	48.6	57.0	55.3	56.5	56.4	53.6	53.9
Research primary/secondary activity	56.2	54.1	56.2	57.0	59.0	63.3	52.5	66.2	69.6	68.9	58.6	62.3	59.6	70.1	68.3	69.2	70.0	67.2	67.0
Full-time faculty	42.2	38.7	38.3	37.4	37.1	42.6	33.2	49.5	53.7	53.5	38.7	42.9	42.1	53.2	51.7	55.0	55.1	54.2	52.8
Other full-time positions	67.0	61.4	62.8	68.3	59.1	64.8	58.1	71.2	70.1	69.1	60.6	57.0	63.6	65.8	59.7	58.8	58.2	51.4	50.7
Postdocs	90.3	87.4	86.3	81.9	82.5	81.9	75.4	87.9	84.6	81.2	82.0	85.3	81.2	81.3	83.0	78.8	75.7	66.7	78.1
Mathematics	26.9	19.1	19.0	21.7	21.3	30.1	21.5	31.1	33.5	34.5	18.8	22.3	20.9	29.1	31.9	31.1	34.8	31.7	34.1
Research primary/secondary activity	32.4	23.6	25.0	27.0	27.0	41.3	26.4	36.9	40.8	40.6	24.8	27.0	26.9	35.3	41.7	38.6	43.4	38.5	42.2
Full-time faculty	26.8	18.8	18.0	20.4	21.0	29.9	21.4	30.4	32.8	34.0	18.3	21.1	19.3	27.7	30.1	31.9	34.8	31.8	35.3
Other full-time positions	33.6	33.5	46.9	54.6	30.1	43.4	29.1	47.8	52.8	67.2	40.6	34.6	40.0	37.5	54.5	23.1	25.0	29.4	25.0
Postdocs	48.8	35.8	55.1	43.2	56.3	66.3	48.5	34.4	53.4	80.4	S	45.3	35.6	54.7	61.9	65.9	64.2	60.0	64.2
Computer sciences	NA	NA	NA	34.8	29.7	44.6	45.0	61.7	52.4	49.4	39.9	43.2	41.1	55.6	47.2	48.9	44.0	43.5	50.7
Research primary/secondary activity	NA	NA	NA	34.8	26.9	44.9	36.1	55.6	52.8	54.3	41.1	46.0	46.3	59.3	57.9	54.9	53.8	54.2	61.4
Full-time faculty	NA	NA	NA	25.0	26.6	38.1	38.0	58.1	52.8	48.2	37.7	40.7	37.9	54.5	48.5	50.0	44.9	44.6	51.7
Other full-time positions	NA	NA	NA	S	25.0	67.9	80.6	79.7	47.1	67.7	59.1	62.9	50.0	66.7	33.3	50.0	42.9	44.4	50.0
Postdocs	NA	NA	NA	57.1	100.0	100.0	S	88.2	100.0	S	100.0	78.0	97.2	100.0	100.0	95.8	97.9	50.0	70.3
Life sciences	59.3	58.9	58.1	55.3	59.6	60.0	53.5	65.3	65.1	65.5	52.2	52.5	51.0	57.9	56.6	57.2	58.0	56.6	56.6
Research primary/secondary activity	65.8	64.2	66.8	65.2	63.3	68.3	57.8	72.3	73.1	72.0	62.7	63.6	61.6	69.5	67.9	68.0	69.4	69.3	68.7
Full-time faculty	57.1	56.4	54.9	51.4	55.6	57.8	50.5	63.4	62.1	63.7	48.6	49.0	47.8	55.2	56.3	57.0	58.4	56.1	56.1
Other full-time positions	68.1	70.9	72.1	64.8	68.5	68.5	58.4	71.0	74.1	67.2	45.8	46.3	47.4	50.0	46.3	46.9	50.0	51.2	50.3
Postdocs	88.8	87.7	88.4	84.6	86.0	82.6	78.3	82.1	86.8	84.4	84.1	81.9	77.7	82.6	77.6	81.3	71.5	77.7	78.3
Psychology	37.5	36.1	33.2	32.6	32.7	30.1	25.9	31.2	35.5	34.7	25.7	27.6	27.4	32.9	34.3	34.7	36.5	31.9	33.3
Research primary/secondary activity	45.4	41.7	41.9	42.7	41.9	42.6	36.6	39.8	46.6	43.5	37.0	39.5	40.5	46.5	48.1	48.2	52.2	43.2	46.6
Full-time faculty	36.4	34.1	30.6	28.3	27.5	27.3	23.6	28.3	34.0	32.9	25.2	25.1	25.3	31.6	33.6	34.5	37.5	33.9	36.5
Other full-time positions	48.1	41.6	65.4	46.3	52.3	40.3	32.7	37.1	39.6	36.3	23.8	30.7	30.2	32.6	38.8	35.2	29.8	25.0	23.0
Postdocs	84.9	86.4	82.5	86.8	92.0	84.2	70.8	88.1	66.3	95.8	71.7	71.4	71.8	71.8	59.2	69.0	69.4	60.0	79.3
Social sciences	25.5	23.7	23.3	20.4	21.8	23.7	17.2	27.2	27.7	28.4	14.2	16.1	15.2	22.9	21.5	21.8	23.1	20.6	19.7
Research primary/secondary activity	29.5	26.8	30.6	29.4	25.5	31.4	20.4	30.0	31.1	31.2	17.3	20.9	17.7	27.2	26.5	27.1	28.9	25.7	24.4
Full-time faculty	25.2	23.7	22.6	19.0	21.2	22.5	16.2	27.1	27.4	27.8	13.4	15.4	14.6	22.5	21.1	22.1	23.9	20.0	20.6
Other full-time positions	36.3	31.6	35.3	37.3	32.7	34.0	26.6	36.2	33.8	32.7	22.1	22.6	22.5	27.3	26.1	25.6	24.5	22.6	20.3
Postdocs	57.6	54.6	54.7	84.9	47.9	64.6	54.7	27.4	57.6	52.5	88.1	68.5	33.9	65.0	35.8	42.9	22.9	33.3	27.2

Appendix table 5-21

Academic SEH doctorate holders with federal support, by degree field, research activity, and type of position: 1973–2010

(Percent)

Field, research activity, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010
Engineering	53.5	50.6	51.1	49.1	51.0	54.7	43.0	57.1	56.3	63.2	42.6	49.9	49.7	56.9	56.8	57.4	58.7	58.6	58.2
Research primary/secondary activity	58.4	57.3	60.5	57.5	59.2	61.5	45.0	63.1	63.8	68.3	49.5	57.9	55.4	62.5	64.1	64.7	67.3	67.3	66.7
Full-time faculty	52.5	49.9	49.3	49.5	49.8	54.7	42.2	56.0	55.2	62.9	40.9	48.4	47.2	55.1	56.7	56.8	58.6	57.7	59.5
Other full-time positions	65.5	67.3	86.6	53.0	60.7	63.1	44.3	76.4	71.2	66.8	59.5	56.7	65.6	63.3	58.3	62.2	51.9	61.7	55.8
Postdocs	84.7	84.3	74.7	51.1	98.9	82.7	91.4	74.8	76.0	90.0	65.7	72.7	62.1	80.4	56.8	73.8	76.8	71.4	61.0

NA = not available; S = data suppressed for reliability reasons.

SEH = science, engineering, and health.

NOTES: Data for 1985 and 1993–97 are not comparable with other years and understate degree of federal support. In 1985 and 1993–97, the federal support question asks whether work performed during the week of 15 April was supported by the government; in other years, the question pertains to work conducted over the course of an entire year. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes. Full-time faculty includes full professors, associate professors, assistant professors and instructors from 1973 to 1995; from 1997 to 2010, full-time faculty includes full professors, associate professors, and assistant professors. Research includes basic or applied research, development, and design. Total includes part-time employment not shown separately but excludes those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Data beginning with 2008 include all U.S.-trained doctorate recipients who lived or worked in the United States on the survey date. These data correct for a slight undercount in prior years, when some U.S.-trained doctorate recipients who either planned to live abroad or were living abroad were excluded.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients (various years).

Science and Engineering Indicators 2014

Appendix table 5-22

SEH doctorate holders and full-time faculty with federal support, by degree field and Carnegie classification of employer: 2010

(Percent)

Position and field	All academic institutions	Research universities (very high research activity)	Research universities (high research activity)	Doctoral/ research universities	Masters-granting universities	Baccalaureate colleges	Medical schools	Other universities and colleges
All S&E doctorate holders employed in academic institutions	45.1	63.6	48.9	27.3	20.2	16.3	66.7	23.6
Physical sciences	54.0	77.7	62.5	30.8	25.9	27.1	60.0	26.2
Mathematics	34.2	59.4	33.3	28.6	14.0	9.5	75.0	11.1
Computer sciences	50.7	76.9	57.1	D	27.8	16.7	D	S
Life sciences	56.6	70.9	59.0	42.3	26.5	25.9	69.0	33.3
Psychology	33.3	51.8	47.1	9.5	14.1	13.2	72.2	11.4
Social sciences	19.7	30.6	19.0	16.7	11.6	4.8	50.0	12.8
Engineering	58.2	71.8	59.4	44.4	26.2	18.2	66.7	27.3
Full-time faculty[a]	44.7	65.2	49.8	29.2	21.1	16.7	68.7	26.8
Physical sciences	52.8	81.9	65.9	36.4	27.1	25.6	66.7	26.1
Mathematics	35.3	62.0	35.7	40.0	15.4	11.1	66.7	18.2
Computer sciences	51.7	77.8	66.7	D	31.3	20.0	D	S
Life sciences	56.1	73.6	56.8	40.9	27.7	25.0	68.7	36.2
Psychology	36.5	57.5	51.4	7.1	14.3	13.3	71.4	14.3
Social sciences	20.6	32.5	19.7	19.2	11.7	5.4	60.0	15.4
Engineering	59.5	75.9	63.6	57.1	26.3	20.0	50.0	27.3

D = suppressed for confidentiality reasons; S = suppressed for reliability reasons.

SEH = science, engineering, and health.

[a] Full-time faculty includes professors, associate professors, and assistant professors.

NOTES: Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes, excluding those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Institutions are designated by the 2005 Carnegie classification code. Engineering schools are included in master's-granting universities. For information on these institutional categories, see The Carnegie Classification of Institutions of Higher Education, http://classifications.carnegiefoundation.org/index.php, accessed 2 July 2013.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the 2010 Survey of Doctorate Recipients.

Science and Engineering Indicators 2014

Appendix table 5-23

Early career SEH doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2010

(Percent)

	1–3 years since doctorate				4–7 years since doctorate			
Field	All positions	Full-time faculty	Other full-time	Postdocs	All positions	Full-time faculty	Other full-time	Postdocs
All fields								
1973	44.1	32.9	72.5	87.1	47.1	42.3	55.3	80.8
1975	44.2	31.1	58.3	87.8	42.5	40.0	66.2	83.2
1977	44.5	28.8	61.2	87.0	42.2	37.8	71.6	85.3
1979	47.2	29.6	58.9	86.6	43.0	37.4	67.3	83.1
1981	51.0	30.8	63.1	87.9	46.5	41.2	64.8	86.9
1983	50.2	33.7	59.0	86.1	50.1	45.3	68.1	84.8
1985	43.2	23.9	59.3	79.1	42.4	36.2	63.3	81.0
1987	53.3	36.7	56.1	82.0	54.8	49.7	71.6	84.2
1989	57.2	38.7	58.7	84.7	57.8	53.5	70.0	89.1
1991	53.6	38.3	56.6	83.8	57.4	53.4	66.6	88.7
1993	43.5	20.8	43.7	80.7	41.1	34.0	46.8	87.3
1995	47.0	23.2	40.1	78.5	43.9	36.1	52.0	86.0
1997	45.2	20.2	39.5	74.8	41.9	33.7	49.6	78.5
1999	52.5	28.1	45.7	79.0	47.4	41.4	46.6	83.3
2001	48.2	29.2	43.2	73.6	46.1	39.8	50.7	78.6
2003	48.2	31.3	43.4	77.7	47.5	42.3	55.3	81.1
2006	49.1	30.1	46.8	68.6	47.2	41.7	46.5	76.0
2008	46.4	26.9	48.3	70.6	43.1	37.9	44.3	75.0
2010	47.6	27.5	41.0	72.3	46.4	41.1	51.9	79.0
Physical sciences								
1973	58.4	31.2	78.3	88.5	44.8	39.5	72.1	98.5
1975	64.1	27.9	60.7	93.2	43.8	36.6	77.3	85.1
1977	63.2	28.9	95.7	88.5	51.6	40.5	77.5	92.4
1979	59.1	25.5	73.7	84.7	52.0	39.0	72.1	91.7
1981	69.3	25.2	94.3	88.1	57.9	49.4	84.5	97.9
1983	70.4	33.8	82.7	88.2	66.2	56.3	85.3	84.8
1985	64.3	18.7	86.6	84.6	50.8	35.7	78.7	91.4
1987	80.9	66.7	69.9	90.2	68.7	56.0	97.1	93.1
1989	77.9	49.2	82.1	88.0	72.4	61.9	89.0	90.6
1991	69.9	44.1	78.8	87.2	67.2	55.1	88.5	100.0
1993	63.1	21.3	64.9	84.5	58.2	43.9	70.0	94.5
1995	62.8	21.0	41.9	84.1	53.9	37.8	60.2	86.7
1997	65.1	37.5	66.7	77.8	53.4	41.2	67.9	96.5
1999	67.5	44.4	60.0	83.3	57.0	46.7	65.5	89.4
2001	64.9	40.0	57.1	80.0	54.1	39.4	73.9	83.7
2003	62.5	40.0	66.7	78.9	54.8	50.6	63.1	70.2

Appendix table 5-23

Early career SEH doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2010

(Percent)

	1–3 years since doctorate				4–7 years since doctorate			
Field	All positions	Full-time faculty	Other full-time	Postdocs	All positions	Full-time faculty	Other full-time	Postdocs
2006	66.7	40.0	50.0	78.6	57.6	52.8	64.2	72.2
2008	56.8	36.4	62.5	65.2	52.8	48.4	58.3	75.0
2010	59.3	27.3	37.5	76.5	53.3	43.1	66.1	81.7
Mathematics								
1973	17.5	16.3	58.5	38.7	29.0	29.4	15.4	100.0
1975	14.5	13.0	37.6	28.3	18.9	18.5	31.8	57.9
1977	16.2	12.2	45.9	56.4	19.2	17.6	44.0	52.2
1979	24.8	22.5	52.9	42.5	32.3	30.2	64.9	46.9
1981	10.8	9.5	S	44.1	29.7	27.6	62.7	81.5
1983	31.8	29.8	S	73.4	39.8	39.8	51.3	100.0
1985	14.7	14.1	S	34.6	27.0	26.8	S	100.0
1987	15.6	7.4	S	37.6	34.9	35.5	7.3	S
1989	29.1	24.9	S	52.4	39.0	39.1	S	100.0
1991	39.8	35.8	54.9	80.4	28.3	28.6	S	S
1993	15.7	14.8	0.0	100.0	15.2	14.0	100.0	S
1995	17.7	13.4	0.0	40.0	25.6	19.6	S	70.6
1997	12.5	D	D	33.3	15.0	12.5	D	D
1999	33.3	16.7	D	75.0	33.3	31.3	D	D
2001	37.5	12.5	D	50.0	41.2	38.5	50.0	D
2003	33.3	20.0	D	66.7	34.8	36.8	D	D
2006	33.3	25.0	D	62.5	30.4	27.8	D	50.0
2008	26.3	18.2	25.0	50.0	28.6	29.4	100.0	D
2010	35.0	25.0	D	60.0	40.0	45.0	D	D
Computer sciences								
1973	NA	NA	NA	NA	NA	NA	NA	NA
1975	NA	NA	NA	NA	NA	NA	NA	NA
1977	NA	NA	NA	NA	NA	NA	NA	NA
1979	34.8	25.0	S	57.1	S	S	S	S
1981	27.7	24.1	25.0	100.0	52.4	52.4	S	S
1983	45.7	35.1	60.0	100.0	43.5	40.4	92.3	S
1985	54.1	46.4	77.2	S	36.7	31.0	100.0	S
1987	47.2	46.3	42.0	100.0	73.2	66.3	100.0	S
1989	33.0	29.3	50.0	100.0	70.8	78.0	35.7	100.0
1991	23.1	23.1	25.1	S	66.2	63.9	100.0	100.0
1993	44.7	39.5	100.0	100.0	30.7	30.9	27.3	100.0
1995	38.2	31.4	61.1	75.9	38.1	38.3	23.9	S
1997	37.5	40.0	D	100.0	36.4	40.0	D	D
1999	50.0	50.0	D	D	58.3	54.5	D	D

Appendix table 5-23

Early career SEH doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2010

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time	Postdocs	All positions	Full-time faculty	Other full-time	Postdocs
2001	33.3	25.0	D	D	50.0	57.1	D	D
2003	44.4	28.6	D	S	42.9	40.0	66.7	D
2006	33.3	33.3	D	100.0	42.9	45.5	50.0	D
2008	38.5	33.3	100.0	50.0	50.0	45.5	33.3	D
2010	30.8	12.5	S	66.7	62.5	58.3	66.7	D
Life sciences								
1973	60.8	48.3	77.0	89.0	59.7	57.3	75.1	89.2
1975	61.8	46.4	72.5	87.6	60.1	57.6	76.2	87.5
1977	61.6	38.1	70.4	88.9	59.6	56.6	73.3	90.2
1979	65.9	40.6	75.8	85.9	57.3	51.4	76.5	84.2
1981	71.8	51.7	76.5	88.1	64.0	58.8	70.8	85.7
1983	68.2	52.8	65.1	84.7	67.1	64.5	72.6	83.7
1985	59.6	34.1	67.2	78.9	61.1	55.6	72.3	81.7
1987	70.2	53.5	73.8	82.1	71.4	68.3	81.0	83.0
1989	74.5	50.2	79.3	89.1	71.9	67.5	79.1	89.3
1991	68.1	49.9	60.0	83.0	70.6	66.8	79.2	86.3
1993	61.2	32.2	44.8	81.9	55.7	46.4	52.0	86.7
1995	58.5	30.3	35.3	80.3	54.0	43.9	47.4	87.4
1997	58.3	24.0	42.9	78.5	52.3	42.4	48.4	78.8
1999	64.7	32.0	50.0	81.4	57.2	47.2	49.3	83.0
2001	59.3	35.7	37.5	76.9	56.4	48.9	49.5	78.8
2003	62.7	39.4	45.0	81.7	57.3	50.3	56.9	83.0
2006	55.6	32.3	52.9	67.1	57.5	49.7	49.6	77.0
2008	60.0	33.3	54.5	75.8	54.4	44.2	57.6	82.8
2010	60.6	37.1	48.0	76.6	54.5	45.8	57.8	80.8
Psychology								
1973	34.3	28.5	59.7	95.3	37.8	36.9	52.1	71.4
1975	35.0	25.5	53.7	88.5	35.3	34.9	32.8	71.2
1977	35.3	26.8	71.7	86.0	31.5	27.9	60.5	73.0
1979	35.2	22.5	22.2	95.5	39.3	31.4	76.5	87.6
1981	46.5	33.2	41.6	93.4	34.7	28.6	54.5	88.2
1983	31.2	19.8	34.2	89.3	32.3	28.2	37.1	87.2
1985	30.6	15.6	44.5	70.1	29.2	26.2	38.7	72.5
1987	37.5	28.5	28.8	82.7	33.2	25.6	40.3	97.9
1989	41.7	34.6	36.1	64.9	36.1	36.7	33.1	63.1
1991	35.9	23.9	24.3	100.0	38.8	38.6	24.8	86.9
1993	21.6	12.0	27.5	61.6	23.2	24.6	15.5	48.2
1995	33.5	17.5	40.6	63.5	26.1	21.8	36.0	82.1

Appendix table 5-23

Early career SEH doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2010

(Percent)

	1–3 years since doctorate				4–7 years since doctorate			
Field	All positions	Full-time faculty	Other full-time	Postdocs	All positions	Full-time faculty	Other full-time	Postdocs
1997	35.3	21.4	25.0	75.0	30.2	22.2	37.5	75.0
1999	32.4	20.0	25.0	62.5	35.4	35.7	27.3	100.0
2001	35.1	22.2	33.3	66.7	34.7	31.0	54.5	S
2003	30.8	26.7	36.4	57.1	37.0	34.3	41.7	100.0
2006	45.2	37.5	33.3	64.3	35.5	36.1	23.1	66.7
2008	35.0	29.4	27.3	62.5	26.8	27.3	20.0	50.0
2010	37.8	35.3	22.2	85.7	33.3	33.3	28.6	66.7
Social sciences								
1973	24.7	23.7	53.7	23.9	29.0	28.7	34.1	93.1
1975	23.1	22.5	29.0	61.7	26.2	26.2	42.4	39.2
1977	24.8	24.2	12.3	61.4	24.6	23.2	56.3	48.0
1979	26.6	22.8	37.6	97.5	20.8	19.2	52.2	70.8
1981	20.4	16.3	48.7	56.0	24.3	24.3	25.2	60.0
1983	28.2	23.6	49.0	77.9	28.1	23.6	57.5	93.8
1985	15.6	12.3	27.8	44.4	19.3	15.7	51.0	41.0
1987	22.5	20.9	34.5	21.4	29.9	27.7	54.0	S
1989	25.6	24.7	24.3	41.9	33.2	31.6	51.4	83.9
1991	21.7	19.5	38.8	31.7	36.6	33.8	44.2	100.0
1993	11.2	7.2	25.4	88.2	14.9	14.4	21.9	100.0
1995	15.9	10.7	28.8	80.8	17.8	16.0	41.8	49.8
1997	14.0	12.1	28.6	25.0	16.9	15.2	28.6	D
1999	22.0	15.4	25.0	66.7	22.4	22.6	25.0	D
2001	19.6	19.4	20.0	33.3	21.1	20.4	27.3	D
2003	18.9	15.8	28.6	33.3	22.2	23.6	22.2	D
2006	18.9	15.6	28.6	33.3	21.6	22.8	20.0	D
2008	17.3	13.2	28.6	50.0	20.0	20.3	21.4	S
2010	15.3	12.8	14.3	33.3	18.8	18.3	25.0	D
Engineering								
1973	50.8	45.2	74.2	87.1	50.7	49.9	78.6	S
1975	53.7	48.9	65.8	83.8	54.4	53.1	82.3	S
1977	55.2	47.2	84.8	72.9	52.9	52.3	64.8	64.9
1979	55.5	48.5	71.9	99.4	55.1	58.8	33.8	16.9
1981	54.4	43.2	100.0	100.0	65.6	61.9	83.9	S
1983	47.1	36.7	58.2	98.3	64.3	62.2	99.0	S
1985	43.9	37.8	66.1	94.5	47.6	46.3	66.4	S
1987	53.3	43.7	79.2	75.7	65.5	64.2	97.6	100.0
1989	56.0	48.9	71.9	73.3	70.8	68.6	91.8	100.0
1991	66.6	62.1	67.7	89.9	73.2	73.0	79.7	S

Appendix table 5-23

Early career SEH doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2010

(Percent)

	1–3 years since doctorate				4–7 years since doctorate			
Field	All positions	Full-time faculty	Other full-time	Postdocs	All positions	Full-time faculty	Other full-time	Postdocs
1993	43.4	32.1	65.1	68.7	51.2	49.4	65.9	70.3
1995	51.1	38.5	50.3	72.6	62.1	60.3	72.5	86.5
1997	51.6	37.5	60.0	63.6	52.3	48.5	50.0	66.7
1999	59.3	36.4	80.0	77.8	53.8	56.7	50.0	100.0
2001	55.6	50.0	80.0	57.1	57.9	57.1	44.4	S
2003	55.9	47.1	66.7	77.8	63.6	61.3	63.6	100.0
2006	59.6	42.1	50.0	75.0	64.4	62.1	57.1	83.3
2008	56.4	37.5	71.4	71.4	60.8	57.6	66.7	66.7
2010	52.9	41.2	62.5	62.5	64.3	67.6	63.6	80.0

D = suppressed to avoid disclosure of confidential information; NA = not available; S = suppressed for reasons of confidentiality and/or reliability.

SEH = science, engineering, and health.

NOTES: Data for 1985 and 1993–97 are not comparable with other years and understate the degree of federal support. In 1985 and 1993–97, the federal support question asks whether work performed during the week of 15 April was supported by the government; in other years, the question pertains to work conducted over the course of an entire year. Because of larger sample sizes, estimates of federal support are more accurate for life sciences than for other fields, especially mathematics and computer sciences. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Full-time faculty includes full, associate, and assistant professors plus instructors from 1973–95; from 1997–2010, full-time faculty includes full, associate, and assistant professors. Other full-time positions include positions such as research associates, adjunct appointments, lecturers, and administrative positions. Total excludes those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. The 2008 and 2010 figures reflect an integrated sample design that includes all U.S.-trained doctorates living or working in the U.S. on the reference. Previously, the survey excluded from the eligible sample U.S.-trained, non-U.S. citizen doctorates who indicated plans to leave the U.S., even if they were discovered to have been living or working in the U.S. The integrated design corrects for the slight undercoverage that resulted from this previous samplling practice.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2013) of the Survey of Doctorate Recipients.

Science and Engineering Indicators 2014

Appendix table 5-24

Regions and countries/economies in S&E publications data

North America	European Union (continued)	Africa	Africa (continued)
Canada	Ireland	Algeria	Uganda
Mexico	Italy	Angola	Zambia
United States	Latvia	Benin	Zimbabwe
Central America/Caribbean	Lithuania	Botswana	Asia
Antigua and Barbuda	Luxembourg	Burkina Faso	Afghanistan
Bahamas	Malta	Burundi	Armenia
Barbados	Netherlands	Cameroon	Azerbaijan
Belize	Poland	Cape Verde	Bangladesh
Costa Rica	Portugal	Central African Republic	Bhutan
Cuba	Romania	Chad	Brunei
Dominica	Slovakia	Comoros	Burma
Dominican Republic	Slovenia	Congo (Brazzaville)	Cambodia
El Salvador	Spain	Congo (Kinshasa)	China
Grenada	Sweden	Côte d'Ivoire	Georgia
Guatemala	United Kingdom	Djibouti	India
Haiti	Other Europe	Egypt	Indonesia
Honduras	Albania	Equatorial Guinea	Japan
Jamaica	Andorra	Eritrea	Kazakhstan
Nicaragua	Belarus	Ethiopia	Kyrgyzstan
Panama	Bosnia and Herzegovina	Gabon	Laos
St. Kitts and Nevis	Croatia	Gambia	Malaysia
St. Lucia	Iceland	Ghana	Maldives
St. Vincent	Kosovo	Guinea	Mongolia
Trinidad and Tobago	Liechtenstein	Guinea-Bissau	Nepal
West Indies Associated States	Macedonia	Kenya	North Korea
South America	Moldova	Lesotho	Pakistan
Argentina	Monaco	Liberia	Philippines
Bolivia	Montenegro	Libya	Singapore
Brazil	Norway	Madagascar	South Korea
Chile	Russia	Malawi	Sri Lanka
Colombia	San Marino	Mali	Taiwan
Ecuador	Serbia	Mauritania	Tajikistan
Guyana	Serbia and Montenegro	Mauritius	Thailand
Paraguay	Switzerland	Morocco	Turkmenistan
Peru	Ukraine	Mozambique	Uzbekistan
Suriname	Vatican City	Namibia	Vietnam
Uruguay	Yugoslavia	Niger	Australia/Oceania
Venezuela	Middle East	Nigeria	Australia
European Union	Bahrain	Rwanda	Fiji
Austria	Iran	São Tomé and Príncipe	Kiribati
Belgium	Iraq	Senegal	Marshall Islands
Bulgaria	Israel	Senegambia	Micronesia
Cyprus	Jordan	Seychelles	Nauru
Czech Republic	Kuwait	Sierra Leone	New Zealand
Denmark	Lebanon	Somalia	Niue
Estonia	Oman	South Africa	Palau
Finland	Qatar	Sudan	Papua New Guinea
France	Saudi Arabia	Swaziland	Samoa
Germany	Syria	Tanzania	Solomon Islands
Greece	Turkey	Togo	Tonga
Hungary	United Arab Emirates	Tunisia	Tuvalu
	Yemen		Vanuatu

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-25

Fields and subfields of S&E publications data

- Engineering
  - Aerospace engineering
  - Chemical engineering
  - Civil engineering
  - Electrical engineering
  - Mechanical engineering
  - Metals and metallurgy
  - Materials engineering
  - Industrial engineering
  - Operations research and management
  - Biomedical engineering
  - Nuclear technology
  - General engineering
  - Miscellaneous engineering and technology
- Astronomy
- Chemistry
  - Analytical chemistry
  - Organic chemistry
  - Physical chemistry
  - Polymers
  - General chemistry
  - Applied chemistry
  - Inorganic and nuclear chemistry
- Physics
  - Acoustics
  - Chemical physics
  - Nuclear and particle physics
  - Optics
  - Solid state physics
  - Applied physics
  - Fluids and plasmas
  - General physics
  - Miscellaneous physics
- Geosciences
  - Meteorology and atmospheric sciences
  - Geology
  - Earth and planetary sciences
  - Oceanography and limnology
  - Marine biology and hydrobiology
  - Environmental sciences
- Mathematics
  - Applied mathematics
  - Probability and statistics
  - General mathematics
  - Miscellaneous mathematics
- Computer sciences
- Agricultural sciences
  - Dairy and animal sciences
  - Agricultural and food sciences
- Biological sciences
  - General biomedical research
  - Miscellaneous biomedical research
  - Biophysics
  - Botany
  - Anatomy and morphology
  - Cell biology, cytology, and histology
  - Ecology
  - Entomology
  - Immunology
  - Microbiology
  - Nutrition and dietetics
  - Parasitology
  - Genetics and heredity
  - Pathology
  - Pharmacology
  - Physiology
  - General zoology
  - Miscellaneous zoology
  - General biology
  - Miscellaneous biology
  - Biochemistry and molecular biology
  - Virology
- Medical sciences
  - Endocrinology
  - Neurology and neurosurgery
  - Dentistry
  - Environmental and occupational health
  - Public health
  - Surgery
  - General and internal medicine
  - Ophthalmology
  - Pharmacy
  - Veterinary medicine
  - Miscellaneous clinical medicine
  - Anesthesiology
  - Cardiovascular system
  - Cancer
  - Gastroenterology
  - Hematology
  - Obstetrics and gynecology
  - Otorhinolaryngology
  - Pediatrics
  - Psychiatry
  - Radiology and nuclear medicine
  - Dermatology and venereal disease
  - Orthopedics
  - Arthritis and rheumatism
  - Respiratory system
- Medical sciences (continued)
  - Urology
  - Nephrology
  - Allergy
  - Fertility
  - Geriatrics
  - Embryology
  - Tropical medicine
  - Addictive diseases
  - Microscopy
- Other life sciences
  - Speech/language pathology and audiology
  - Nursing
  - Rehabilitation
  - Health policy and services
- Psychology
  - Clinical psychology
  - Behavioral and comparative psychology
  - Developmental and child psychology
  - Experimental psychology
  - Human factors
  - Social psychology
  - General psychology
  - Miscellaneous psychology
  - Psychoanalysis
- Social sciences
  - Economics
  - International relations
  - Political science and public administration
  - Demography
  - Sociology
  - Anthropology and archaeology
  - Area studies
  - Criminology
  - Geography and regional sciences
  - Planning and urban studies
  - General social sciences
  - Miscellaneous social sciences
  - Science studies
  - Gerontology and aging
  - Social studies of medicine

SOURCES: The Patent Board™, and National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR) database system, http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	588,488.0	602,430.0	610,203.0	630,459.0	629,386.0	638,381.0	661,789.6	688,691.0	710,294.0	740,417.0	758,603.0	783,358.8	788,728.0	799,598.9	827,704.9
North America															
Canada	22,780.9	22,200.7	22,125.4	22,701.3	21,945.2	22,341.5	23,554.8	24,234.3	25,861.6	27,206.9	27,833.9	28,636.7	29,031.5	29,022.3	29,113.7
Mexico	2,301.7	2,658.9	2,883.5	2,970.7	3,203.8	3,320.2	3,658.5	3,870.0	3,931.6	3,998.2	4,223.6	4,256.8	4,127.7	4,204.9	4,172.8
United States	189,751.9	190,431.4	188,004.1	192,745.6	190,597.4	190,496.1	196,463.7	202,105.8	205,565.0	209,278.5	209,916.4	212,907.6	208,755.3	209,542.1	212,394.2
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.8	0.5	0.0	0.1	0.2
Bahamas	0.8	1.4	1.2	2.5	3.1	2.0	2.8	1.4	1.6	1.3	4.6	3.1	2.5	2.8	2.5
Barbados	16.4	15.3	13.5	14.2	22.3	20.1	26.8	29.2	17.6	19.8	15.0	21.4	12.6	12.9	16.3
Belize	3.7	0.8	2.5	0.3	1.7	0.9	1.6	1.0	3.0	2.9	1.1	1.9	2.0	2.8	2.5
Costa Rica	76.5	72.7	69.2	80.0	90.3	89.1	88.9	84.9	105.6	80.1	100.2	107.0	98.3	102.1	106.4
Cuba	167.0	236.3	256.6	283.8	272.1	206.0	268.3	254.5	261.4	295.2	243.5	252.6	222.4	195.0	224.1
Dominica	0.0	1.5	0.0	0.1	2.0	0.7	2.0	2.3	2.7	2.7	2.1	2.5	3.0	3.2	2.1
Dominican Republic	6.2	7.6	5.5	12.9	5.8	5.2	5.1	6.7	4.6	5.4	8.1	7.7	6.1	6.9	9.1
El Salvador	1.9	0.0	1.1	3.4	3.1	7.6	1.2	4.3	5.8	5.7	4.5	2.9	5.5	5.0	8.6
Grenada	0.5	0.0	1.9	0.8	0.3	1.5	1.2	2.3	2.2	5.9	6.8	5.5	8.5	8.5	13.3
Guatemala	17.9	16.1	15.8	13.9	16.9	19.0	15.1	16.0	19.7	22.2	22.4	15.9	22.1	20.4	22.2
Haiti	1.7	2.7	0.7	4.7	3.0	4.8	3.2	6.4	3.2	8.7	4.3	5.2	7.0	5.8	14.0
Honduras	10.6	11.2	12.4	7.4	7.7	6.4	5.9	7.5	8.3	7.5	5.8	7.1	6.2	9.8	9.7
Jamaica	58.3	46.8	50.0	36.1	57.4	54.8	47.2	51.1	51.9	39.8	49.4	41.4	50.8	46.6	50.7
Nicaragua	13.1	6.5	8.3	10.3	7.1	6.8	9.5	11.0	14.2	18.2	10.6	16.4	11.9	13.7	17.1
Panama	38.2	34.4	44.3	38.2	50.9	49.9	49.7	60.7	54.1	57.5	77.7	75.0	72.6	82.0	66.9
St. Kitts and Nevis	0.0	0.0	1.5	1.5	0.0	0.1	0.0	0.0	0.0	1.8	0.3	0.0	1.7	1.1	0.4
St. Lucia	1.0	2.7	0.5	0.0	0.9	0.2	0.0	0.0	0.5	0.5	0.3	0.3	0.0	0.1	0.4
St. Vincent	1.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.5	0.3	0.0	0.0
Trinidad and Tobago	41.1	52.9	38.7	43.0	42.3	44.7	46.5	50.4	47.3	41.7	67.0	46.4	47.7	53.4	60.2
West Indies Associated States	2.3	2.2	5.5	6.3	3.8	5.6	8.4	2.5	5.8	6.2	7.3	12.0	11.5	9.6	8.0
South America															
Argentina	2,450.8	2,550.7	2,635.8	2,846.1	2,930.7	3,178.1	2,919.8	2,981.6	3,058.4	3,264.0	3,364.3	3,567.1	3,655.2	3,767.6	3,862.8
Bolivia	34.7	28.2	40.7	29.1	28.9	33.2	38.8	31.7	39.0	43.1	50.6	49.6	45.2	42.5	46.9
Brazil	4,497.6	5,234.1	5,859.3	6,407.3	7,052.3	7,881.1	8,330.2	9,573.0	9,896.7	10,799.5	11,890.8	12,909.3	12,307.3	12,529.5	13,148.1
Chile	954.3	991.8	1,058.9	1,115.1	1,159.4	1,311.4	1,406.4	1,464.1	1,559.3	1,630.4	1,741.2	1,784.7	1,867.8	1,867.2	1,979.2
Colombia	234.9	247.7	240.3	331.5	315.8	355.6	325.5	358.5	401.3	469.7	489.4	574.6	608.4	692.4	726.6
Ecuador	44.2	31.2	23.7	37.4	30.0	50.7	53.5	50.2	48.6	40.0	66.0	69.9	67.5	66.2	60.1
Guyana	6.3	3.0	4.2	4.1	4.5	8.6	2.8	3.0	9.2	3.8	6.4	3.4	2.8	8.2	2.9
Paraguay	6.9	9.4	5.3	7.5	7.2	7.9	9.9	8.8	8.0	4.7	12.4	5.9	11.1	11.0	9.2
Peru	75.0	65.6	61.8	79.3	93.8	87.6	130.3	106.2	134.4	134.8	153.4	161.1	158.6	147.1	161.7
Suriname	2.6	1.8	3.4	2.9	2.8	4.4	4.2	3.9	3.0	1.9	1.8	2.8	1.1	1.3	1.4
Uruguay	140.6	140.6	150.3	155.6	148.8	161.5	185.5	193.7	204.4	196.8	215.1	247.9	246.2	237.1	290.4
Venezuela	488.4	533.9	498.0	515.8	510.1	536.4	576.8	475.3	534.0	525.1	497.7	496.8	353.5	341.6	302.1

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	3,947.4	4,074.0	4,157.8	4,257.1	4,479.5	4,460.0	4,692.1	4,716.0	4,567.9	4,614.3	4,827.2	4,815.6	4,833.2	4,922.8	5,102.5
Belgium	5,531.8	5,687.7	5,712.5	5,735.4	5,827.3	6,036.7	6,303.8	6,625.4	6,847.2	6,736.1	7,077.8	7,298.1	7,221.9	7,389.4	7,483.9
Bulgaria	985.4	929.0	867.3	909.3	746.7	814.8	774.7	807.8	766.5	766.8	801.4	761.4	735.4	675.0	650.3
Cyprus	56.6	54.7	49.3	59.0	67.9	78.5	75.7	87.3	91.3	119.9	139.1	169.0	195.2	211.6	211.4
Czech Republic	2,304.4	2,263.5	2,359.9	2,483.3	2,571.2	2,746.6	2,820.4	3,178.4	3,172.1	3,565.7	3,689.7	3,936.2	3,948.5	4,163.5	4,126.5
Denmark	4,597.4	4,717.9	4,783.3	4,882.9	4,916.7	4,760.7	5,005.8	5,009.0	5,047.5	5,133.1	5,240.6	5,303.5	5,307.0	5,638.7	6,071.3
Estonia	229.8	304.9	340.6	327.5	346.0	321.2	354.6	389.1	439.0	456.9	502.3	477.2	518.1	526.5	514.2
Finland	4,452.2	4,513.4	4,719.4	4,843.8	4,930.0	4,904.3	4,899.4	5,018.7	4,813.4	5,088.0	4,989.6	5,112.5	4,951.8	4,868.5	4,877.6
France	30,321.9	31,393.1	31,345.4	31,427.1	30,601.5	30,530.9	30,307.0	29,892.8	30,340.2	31,220.5	30,752.6	31,982.8	31,756.6	31,367.6	31,685.5
Germany	41,414.6	42,955.0	42,962.9	43,509.6	42,677.7	42,436.0	42,230.4	43,016.8	44,194.1	44,549.8	44,428.7	44,915.1	45,017.3	45,337.8	46,258.8
Greece	2,434.0	2,611.3	2,625.9	2,976.1	3,203.8	3,447.1	3,586.9	3,928.3	4,292.0	4,874.1	4,981.7	4,953.4	4,881.5	4,631.2	4,534.1
Hungary	1,991.5	2,201.9	2,199.6	2,358.4	2,398.2	2,322.7	2,450.7	2,408.6	2,619.0	2,592.2	2,452.1	2,554.1	2,398.9	2,221.0	2,289.3
Ireland	1,330.8	1,520.5	1,458.9	1,580.9	1,588.3	1,628.9	1,681.1	1,935.9	2,120.4	2,302.6	2,498.4	2,661.9	2,799.9	3,055.8	3,186.4
Italy	19,401.6	20,056.0	20,327.1	21,409.4	22,092.9	22,482.6	23,764.5	24,759.4	24,663.2	25,804.9	26,561.3	26,853.7	26,769.7	26,347.6	26,503.4
Latvia	159.3	161.6	179.3	149.5	165.4	174.7	132.6	157.3	134.0	120.0	146.8	160.7	161.6	133.9	203.5
Lithuania	215.8	257.1	273.9	262.0	283.3	334.5	307.9	404.3	406.1	515.2	457.5	515.0	387.6	356.3	457.4
Luxembourg	33.6	32.1	28.9	40.1	45.5	39.4	38.4	61.7	58.8	65.0	73.4	111.2	136.8	149.4	204.1
Malta	22.6	20.2	18.6	17.7	20.6	23.4	38.9	21.0	25.5	20.1	22.5	44.9	38.2	33.4	45.8
Netherlands	12,444.3	12,500.4	12,168.2	12,340.7	12,117.4	12,481.3	12,661.5	13,240.7	13,894.1	13,991.7	14,215.7	14,637.2	14,868.4	15,506.2	15,508.3
Poland	4,565.5	4,785.8	5,100.2	5,505.6	5,629.4	6,019.3	6,581.8	6,672.3	6,853.8	7,232.3	7,137.5	7,529.1	7,358.6	7,157.2	7,564.2
Portugal	1,255.0	1,418.4	1,710.7	1,879.5	2,081.2	2,331.4	2,424.5	2,853.1	2,911.5	3,628.5	3,424.2	3,856.8	4,156.5	4,171.5	4,621.1
Romania	916.9	847.0	917.2	970.9	926.9	965.2	874.9	938.0	887.8	1,014.8	1,252.3	1,397.9	1,366.9	1,544.9	1,625.9
Slovakia	1,069.7	1,140.4	979.4	978.0	923.6	954.4	897.9	1,070.2	921.8	1,006.9	970.7	1,084.0	1,000.4	1,050.9	1,098.8
Slovenia	603.2	622.9	707.8	891.6	850.6	848.3	950.9	928.7	1,035.4	1,062.7	1,282.8	1,305.9	1,234.9	1,151.4	1,239.3
Spain	13,075.3	13,719.5	14,513.7	14,796.2	15,324.0	16,062.3	16,100.8	17,027.0	18,345.7	19,526.8	20,993.3	21,509.1	21,547.5	22,019.9	22,910.3
Sweden	9,655.1	9,835.0	9,889.7	9,883.4	10,022.3	9,872.2	9,676.5	9,853.6	10,016.5	10,105.3	9,917.5	9,681.7	9,480.1	9,418.5	9,472.9
United Kingdom	45,883.9	46,141.3	46,787.9	48,216.1	45,588.2	44,642.9	45,232.1	45,491.6	45,658.1	46,751.3	47,139.7	46,333.2	45,689.0	45,978.0	46,035.4
Other Europe															
Albania	10.4	14.5	15.9	6.7	10.3	16.8	8.9	7.3	9.0	10.2	12.3	13.5	8.0	18.3	26.9
Andorra	0.5	0.0	0.2	0.5	0.6	1.0	0.5	0.7	0.6	1.5	2.7	0.1	0.3	0.3	0.5
Belarus	596.3	583.4	578.6	572.3	502.7	492.3	520.6	496.8	490.6	446.7	411.5	387.0	380.2	335.2	341.6
Bosnia and Herzegovina	10.7	13.0	9.5	9.6	16.8	9.1	18.5	14.0	26.1	29.5	53.7	41.0	63.8	68.2	54.1
Croatia	580.5	624.6	647.1	678.0	696.4	719.1	798.3	868.0	953.0	985.7	1,101.6	1,188.3	1,164.1	1,246.5	1,288.6
Iceland	142.6	174.2	143.2	150.2	177.2	195.2	195.0	190.9	206.2	232.3	232.0	232.8	259.6	273.5	258.3
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	11.7	5.3	16.6	11.1	6.2	6.8	11.7	12.5	12.0	13.2	14.4	16.5	13.0	9.8	9.7
Macedonia	53.8	37.1	48.8	56.3	67.7	54.2	57.0	52.6	42.8	41.5	57.5	46.4	57.2	59.4	77.3
Moldova	108.3	92.1	93.4	98.7	72.7	73.6	83.1	67.6	89.1	85.3	69.8	73.2	79.8	64.9	76.2
Monaco	13.3	20.0	22.7	10.8	20.1	18.1	26.6	26.3	23.5	18.6	14.1	15.7	23.4	22.2	19.6
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.6	14.7	19.7	10.6	25.9	27.8

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	2,964.9	3,038.7	3,042.5	3,136.0	3,214.6	3,099.9	3,130.5	3,371.3	3,651.2	3,896.2	4,081.9	4,299.9	4,440.1	4,460.9	4,777.1
Russia	18,133.4	17,165.6	17,145.4	17,180.1	15,657.9	15,847.2	15,147.8	14,921.8	14,424.5	13,561.6	13,953.7	13,970.2	14,057.2	13,500.4	14,150.9
San Marino	0.8	0.8	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.6	0.8	0.3	0.6	1.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	435.3	1,057.0	1,043.0	1,172.6	1,165.3	1,269.1
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	849.3	395.3	NA	NA	NA	NA	NA
Switzerland	7,863.9	7,983.9	8,194.5	8,503.8	7,949.9	7,878.8	8,133.9	8,674.1	8,766.8	9,234.0	9,195.6	9,334.4	9,472.2	9,626.8	10,018.6
Ukraine	2,265.2	2,283.9	2,354.9	2,267.6	2,238.7	2,182.8	1,993.4	2,011.5	2,104.5	1,909.6	1,846.9	1,843.6	1,639.4	1,682.1	1,726.9
Vatican City	2.7	2.0	1.1	0.9	1.0	0.8	1.3	3.0	3.5	0.8	1.5	1.4	2.2	3.8	4.0
Yugoslavia	594.5	606.6	562.7	541.6	499.7	479.7	584.2	772.1	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	36.2	30.4	34.9	21.0	24.8	20.4	38.2	35.5	33.3	40.9	48.3	43.4	35.8	42.1	39.9
Iran	390.6	541.3	664.8	841.1	1,034.9	1,313.8	1,789.8	2,115.8	2,634.9	3,422.7	4,366.2	5,228.3	6,313.3	6,992.6	8,175.5
Iraq	40.4	24.7	22.9	28.7	32.5	24.0	25.6	27.3	39.1	66.5	73.3	68.2	70.0	68.1	95.6
Israel	6,047.4	6,020.3	5,928.8	6,290.3	6,234.5	6,381.0	6,524.7	6,462.0	6,322.0	6,558.5	6,632.2	6,609.4	6,306.2	6,139.2	6,096.0
Jordan	200.5	220.4	230.3	246.6	232.5	242.2	250.7	281.0	274.8	285.4	344.1	411.9	382.6	378.0	341.8
Kuwait	224.0	234.8	295.9	238.3	244.7	227.8	230.5	244.3	234.1	256.5	242.0	239.7	214.4	191.6	202.1
Lebanon	103.2	102.6	124.3	143.7	195.0	158.8	210.7	198.3	233.7	250.3	238.1	279.8	256.2	264.8	250.7
Oman	63.0	79.5	89.4	92.3	100.8	113.4	108.1	98.7	110.8	108.2	129.4	124.6	114.1	120.0	144.4
Qatar	22.2	28.5	22.8	17.3	20.7	12.8	20.9	48.1	39.0	42.1	48.3	59.9	64.2	104.4	111.3
Saudi Arabia	676.2	682.7	604.9	590.0	564.7	582.8	549.3	550.8	576.3	557.6	589.2	620.8	711.4	1,003.2	1,491.2
Syria	60.5	44.3	57.8	54.6	62.8	48.6	68.3	79.3	76.8	62.4	79.6	66.5	71.5	100.8	110.0
Turkey	2,480.7	2,795.0	3,222.7	3,484.1	4,150.9	5,226.1	6,038.8	7,434.3	7,816.5	8,180.5	8,640.7	8,543.0	8,307.1	7,950.0	8,328.4
United Arab Emirates	151.6	155.5	129.9	144.7	156.0	163.3	178.3	210.2	229.3	229.6	214.0	255.5	264.8	276.1	323.5
Yemen	13.6	9.1	10.7	9.9	14.4	11.5	9.5	20.8	8.3	23.9	18.2	12.5	25.4	20.9	33.3
Africa															
Algeria	159.6	156.4	185.4	211.3	220.5	229.7	280.7	344.0	350.3	413.4	480.7	536.6	607.5	598.3	599.3
Angola	2.6	0.8	3.4	4.4	5.0	4.6	1.1	2.6	3.5	2.6	3.2	2.2	6.2	6.9	6.0
Benin	21.4	19.3	21.2	25.1	21.1	29.4	27.5	30.8	27.9	29.9	43.1	43.6	47.7	47.0	51.2
Botswana	31.6	34.9	38.7	54.9	50.6	60.4	66.5	63.6	48.4	67.1	61.6	57.8	44.9	32.9	49.7
Burkina Faso	22.1	32.1	22.9	25.6	25.4	27.8	40.6	41.8	32.3	48.5	42.9	43.4	49.9	54.3	52.5
Burundi	11.5	2.2	5.1	0.7	2.9	1.3	5.1	3.1	2.5	1.2	3.2	2.0	2.6	5.9	3.4
Cameroon	83.3	74.2	70.6	73.3	76.1	107.4	120.4	126.8	130.9	151.2	154.2	161.1	145.1	149.5	159.2
Cape Verde	0.3	0.2	0.6	0.0	0.2	0.0	1.3	0.3	0.3	1.2	0.0	0.7	2.1	1.8	0.6
Central African Republic	5.6	6.4	4.2	2.6	2.9	4.3	6.0	6.5	8.5	6.1	3.9	7.8	4.0	5.5	4.2
Chad	1.9	2.0	2.8	2.8	2.0	4.4	5.4	2.8	7.2	6.1	3.3	3.1	2.3	1.7	1.7
Comoros	0.0	0.5	1.0	0.5	0.1	0.0	0.7	0.5	1.6	0.0	1.2	0.6	0.5	0.7	0.3
Congo (Brazzaville)	7.6	11.9	12.5	9.2	4.9	9.8	13.8	16.5	18.9	20.8	20.9	16.7	17.7	18.4	16.0
Congo (Kinshasa)	15.8	6.9	6.0	7.4	2.8	5.2	7.1	4.6	6.2	3.8	7.2	11.1	19.1	14.7	20.6
Côte d'Ivoire	40.0	53.9	47.9	48.7	45.0	36.2	52.6	41.6	39.4	41.1	37.4	38.9	56.0	46.1	44.4
Djibouti	0.0	0.7	0.3	0.0	0.3	0.5	0.5	0.9	0.9	0.3	0.6	0.5	1.6	1.9	1.3
Egypt	1,266.1	1,274.8	1,293.0	1,432.8	1,463.5	1,564.0	1,716.8	1,661.1	1,658.2	1,785.6	1,934.4	2,018.9	2,247.3	2,431.2	2,514.9
Equatorial Guinea	0.7	0.3	2.2	0.3	1.0	0.5	1.2	1.3	0.2	0.5	1.3	0.0	1.6	0.1	0.7

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.2	6.1	2.7	5.9	5.0	10.3	5.7	3.7	8.0	8.6	7.9	4.5	3.7	2.6	1.4
Ethiopia	95.4	79.1	109.5	89.9	77.9	101.7	92.0	106.3	87.6	121.2	148.5	158.6	175.3	169.5	170.0
Gabon	18.7	21.4	23.3	13.3	21.8	20.6	22.5	16.3	20.3	18.3	15.8	17.4	18.0	16.9	22.3
Gambia	30.0	23.4	19.7	25.7	27.9	23.0	19.8	23.7	22.7	24.4	17.2	18.5	19.5	19.2	12.5
Ghana	81.9	71.3	74.1	92.1	78.7	79.3	75.8	86.2	81.3	90.2	109.4	111.1	101.5	121.4	121.1
Guinea	2.8	3.0	2.1	2.0	3.8	2.9	1.2	2.9	4.5	9.5	4.2	2.0	3.4	5.5	4.0
Guinea-Bissau	4.3	2.2	6.9	4.0	4.5	7.2	7.0	7.3	5.8	5.9	9.7	5.0	5.5	2.3	4.5
Kenya	271.9	265.4	242.6	231.7	228.5	241.6	239.4	224.7	225.8	236.5	262.2	285.4	290.5	275.8	289.5
Lesotho	2.3	1.3	2.6	6.0	2.4	2.4	2.6	2.8	0.8	5.7	3.0	4.8	3.5	4.8	5.7
Liberia	0.3	1.3	0.0	1.0	1.0	1.3	0.0	1.1	1.3	2.3	0.0	1.4	0.0	1.8	4.4
Libya	16.2	20.6	17.8	15.8	21.4	19.5	24.9	17.1	19.7	26.2	30.4	37.3	33.6	33.3	17.9
Madagascar	16.0	19.9	20.9	28.7	30.0	23.0	36.0	27.8	33.5	46.2	47.9	38.0	34.9	40.5	32.7
Malawi	40.3	30.9	36.4	43.6	44.2	48.5	43.1	42.3	40.5	46.7	62.9	53.7	52.5	55.1	56.7
Mali	12.9	15.6	10.7	11.7	11.5	17.7	16.6	23.5	24.3	25.0	19.4	19.5	25.0	23.8	28.6
Mauritania	2.1	1.7	2.2	5.4	6.5	6.5	7.1	3.9	7.1	6.2	3.3	1.7	2.9	3.0	5.8
Mauritius	3.3	8.2	16.7	13.2	14.6	23.6	13.5	20.0	15.4	19.0	17.8	21.1	21.5	24.8	15.9
Morocco	297.4	376.0	437.8	466.1	457.5	466.0	400.3	417.1	443.2	399.5	378.6	413.3	390.7	350.4	385.8
Mozambique	9.5	14.6	13.9	9.9	14.3	12.6	9.1	12.9	24.2	20.9	23.9	24.7	28.6	24.1	37.9
Namibia	13.3	18.3	14.7	12.6	17.3	21.6	19.7	12.3	23.4	20.6	14.1	16.3	13.6	9.7	13.0
Niger	27.8	25.9	16.0	19.2	13.5	17.8	14.1	11.7	21.6	17.9	22.4	14.8	15.7	12.7	17.8
Nigeria	436.9	401.7	416.5	400.5	304.0	362.8	357.8	380.7	364.2	406.2	427.9	462.6	461.8	493.7	439.3
Rwanda	5.0	6.6	2.7	1.4	2.8	2.4	1.3	4.9	5.6	10.4	12.3	8.6	11.7	13.4	22.4
São Tomé and Príncipe	0.0	0.3	0.0	0.5	0.3	0.9	0.5	0.3	0.0	0.3	0.5	0.2	0.1	1.0	0.3
Senegal	61.8	67.3	75.5	73.6	58.8	51.4	76.7	63.2	82.8	53.3	68.4	59.9	56.3	61.0	79.3
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	1.7	2.7	1.7	4.5	3.0	1.5	4.2	1.9	2.8	2.9	4.0	3.6	4.3	2.9	5.7
Sierra Leone	9.3	2.2	1.3	2.8	4.3	1.8	0.6	1.0	2.1	1.6	2.6	2.0	2.9	6.0	4.0
Somalia	0.5	0.0	0.5	0.5	0.0	0.8	0.5	0.3	0.0	1.0	0.0	0.1	0.7	0.4	1.0
South Africa	2,222.9	2,224.7	2,302.5	2,220.7	2,291.4	2,328.0	2,204.8	2,319.5	2,395.4	2,642.7	2,808.0	2,915.5	2,863.8	2,971.8	3,124.6
Sudan	42.0	52.1	43.1	36.9	33.9	47.1	37.4	41.7	47.1	35.7	35.9	56.4	63.0	79.3	69.3
Swaziland	5.0	6.3	4.3	4.3	2.4	3.5	5.7	2.0	2.8	1.4	4.3	6.2	7.5	9.5	12.1
Tanzania	98.4	96.1	87.2	95.5	80.9	92.9	76.3	88.8	107.0	128.2	122.8	129.7	152.0	131.9	121.1
Togo	5.2	9.9	9.9	12.1	10.2	5.5	9.8	10.9	10.4	10.2	12.1	8.2	6.7	11.6	8.2
Tunisia	220.2	226.8	256.8	292.3	351.5	354.8	436.1	454.5	571.3	656.4	758.1	851.2	1,022.4	978.3	1,015.5
Uganda	51.5	63.9	71.1	77.5	82.9	72.8	87.6	120.1	93.4	113.7	164.6	126.1	143.2	153.6	158.2
Zambia	28.7	29.9	25.9	22.6	30.1	28.6	22.0	25.6	30.9	39.6	35.9	42.2	34.9	43.3	59.6
Zimbabwe	125.3	110.1	104.8	102.1	111.6	96.7	86.8	63.8	62.2	63.7	80.1	65.6	56.1	70.0	62.9
Asia															
Afghanistan	0.0	0.2	1.0	0.0	0.0	0.0	1.2	2.8	3.9	4.0	3.8	6.6	11.7	5.5	7.7
Armenia	172.3	165.9	163.9	175.4	156.7	172.8	184.1	191.2	179.9	179.5	174.8	190.7	164.2	183.4	184.6
Azerbaijan	85.8	92.0	65.7	78.6	67.9	78.1	110.3	110.1	115.9	116.4	96.8	100.2	150.9	144.7	148.7
Bangladesh	136.3	141.5	166.6	154.8	181.0	150.6	200.1	186.7	195.1	218.6	235.3	237.4	259.6	270.2	290.8

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	1.0	1.5	0.5	1.3	1.2	2.8	2.3	5.4	1.9	8.8	3.4	3.2	6.9	4.9	8.3
Brunei	9.7	15.2	21.3	22.2	10.3	11.5	19.2	14.8	13.0	10.7	16.2	11.9	10.6	10.0	14.6
Burma	4.3	5.3	9.9	7.3	5.8	6.7	6.4	8.7	11.2	15.5	13.4	10.0	10.2	7.5	9.1
Cambodia	4.3	3.7	7.2	5.5	7.2	10.5	12.7	18.5	21.0	26.1	25.5	23.4	26.9	22.4	32.5
China	12,171.6	13,781.3	15,714.7	18,478.7	21,134.1	23,269.1	28,767.9	34,845.6	41,603.6	49,575.1	56,811.2	65,300.5	74,034.4	79,991.3	89,894.4
Georgia	135.9	127.8	131.9	134.3	115.8	127.9	111.5	150.4	144.6	177.7	129.4	137.1	128.6	121.1	117.6
India	9,617.6	9,944.8	10,190.4	10,276.4	10,800.5	11,664.7	12,462.2	13,368.7	14,635.3	16,743.3	18,202.9	18,987.5	19,924.3	20,881.8	22,480.5
Indonesia	146.1	136.0	162.7	181.6	188.7	178.3	156.6	181.6	205.2	215.1	197.5	219.0	262.0	247.7	269.9
Japan	51,462.4	53,838.3	55,273.8	57,101.2	56,081.7	56,346.5	57,231.2	56,538.4	55,527.3	54,469.4	52,910.6	51,842.0	49,631.9	47,043.1	47,105.7
Kazakhstan	115.3	128.5	104.6	112.8	113.6	122.6	119.0	104.7	96.0	86.0	105.5	76.7	98.7	83.3	87.4
Kyrgyzstan	14.4	17.6	13.9	18.4	17.6	20.3	11.4	11.7	15.0	17.9	16.1	16.5	15.4	16.5	17.2
Laos	2.4	5.5	3.8	3.9	4.5	4.7	8.6	12.1	9.2	18.0	12.3	12.2	12.2	17.2	21.4
Malaysia	349.0	387.1	471.4	459.6	472.4	494.5	479.3	586.1	614.6	724.1	808.1	951.0	1,351.3	1,607.7	2,092.2
Maldives	0.0	1.8	2.0	0.0	1.8	0.5	1.1	1.0	1.0	2.2	1.5	0.7	2.6	1.5	0.3
Mongolia	16.9	8.6	12.2	12.1	19.0	16.1	18.4	20.1	21.5	21.1	21.6	26.9	41.8	38.9	24.8
Nepal	38.7	37.4	39.9	44.0	43.7	42.7	54.9	65.7	65.0	80.9	72.0	56.2	55.9	57.7	63.5
North Korea	0.5	2.5	2.2	1.6	0.0	1.0	3.8	5.7	4.0	2.5	10.0	10.6	8.3	12.3	4.4
Pakistan	268.1	268.1	295.9	267.1	279.4	342.5	359.7	413.1	493.1	600.7	741.2	947.6	1,043.4	1,109.6	1,267.9
Philippines	170.4	171.4	175.8	184.6	141.2	181.5	183.6	163.1	177.9	180.6	194.8	224.1	223.3	221.7	241.3
Singapore	1,338.5	1,584.2	1,897.2	2,361.0	2,434.3	2,631.9	2,939.4	3,384.3	3,611.2	3,838.0	3,793.3	4,069.3	4,187.8	4,377.3	4,542.8
South Korea	5,802.2	7,056.6	8,478.2	9,571.8	11,007.7	11,734.5	13,402.9	15,255.6	16,395.8	17,909.9	18,470.1	21,090.8	22,280.3	24,106.4	25,592.7
Sri Lanka	62.2	83.5	86.9	97.8	73.2	102.6	141.5	119.1	135.8	125.7	125.5	133.6	134.9	131.2	130.3
Taiwan	6,016.1	6,355.3	6,642.7	7,190.1	7,911.8	8,123.3	8,928.7	10,133.4	10,845.4	12,371.8	12,741.7	13,775.4	14,002.1	14,329.3	14,809.3
Tajikistan	25.3	16.1	26.0	16.2	21.1	29.1	18.3	19.5	16.2	15.9	21.7	13.5	12.0	22.3	18.4
Thailand	405.3	540.8	549.5	663.3	726.9	834.0	1,018.6	1,130.5	1,248.9	1,568.0	1,727.7	1,959.5	2,033.4	2,106.4	2,304.0
Turkmenistan	6.0	2.7	0.8	4.9	2.8	3.2	2.3	1.0	1.2	1.1	1.6	0.3	0.5	1.3	0.5
Uzbekistan	269.0	243.5	240.6	222.5	195.2	183.6	174.5	170.3	157.4	139.2	166.2	121.5	139.2	124.7	140.9
Vietnam	120.5	99.7	110.9	146.8	155.2	144.4	205.1	167.4	221.3	224.6	283.2	362.7	326.2	389.6	431.5
Australia/Oceania															
Australia	13,815.7	14,307.4	14,341.1	14,588.6	14,484.0	14,255.2	14,933.6	15,588.9	15,974.4	17,217.1	17,833.8	18,776.5	18,932.0	19,516.7	20,602.6
Fiji	12.5	10.7	14.1	9.8	16.1	13.6	15.5	22.9	22.4	29.9	35.2	33.1	30.9	18.7	22.6
Kiribati	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Marshall Islands	2.6	0.0	1.2	0.3	0.2	0.5	0.5	0.8	0.5	0.7	0.0	0.3	0.8	0.3	0.3
Micronesia	0.0	0.3	1.7	1.6	0.5	0.0	1.5	1.7	1.2	0.6	0.7	0.3	2.2	2.3	0.5
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	2,726.3	2,801.7	2,915.4	2,850.8	2,850.9	2,739.8	2,799.8	2,825.1	2,987.2	3,081.8	3,175.8	3,323.4	3,188.0	3,400.9	3,471.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	3.9	2.4	0.5	0.9	2.9	3.5	2.2	3.1	0.4	0.8	1.7	2.2
Papua New Guinea	28.9	33.8	32.8	26.8	32.4	26.4	22.1	18.4	15.9	15.0	21.3	19.2	17.2	15.5	21.1
Samoa	2.3	1.5	1.3	0.1	0.0	1.4	0.0	2.5	0.1	2.5	1.1	0.3	0.0	0.0	0.0
Solomon Islands	4.5	4.4	7.7	4.0	1.7	0.8	4.1	1.2	1.1	2.6	2.1	1.0	2.0	2.9	4.9

Appendix table 5-26

S&E articles in all fields combined, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	1.1	0.5	0.8	0.5	0.5	0.5	1.2	0.5	0.0	0.4	0.5	0.3	1.3	0.5	0.5
Tuvalu	0.0	1.0	0.0	1.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	1.9	0.8	3.6	3.0	1.3	3.9	2.8	4.1	4.6	1.8	1.6	2.2	3.6	1.7	4.7

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	12,180.0	12,390.0	12,219.0	13,041.0	12,570.0	13,843.0	13,790.0	14,185.0	14,822.0	16,188.0	17,877.0	17,651.0	17,983.0	18,395.0	19,127.0
North America															
Canada	872.0	835.4	728.4	816.9	711.2	754.6	753.9	770.1	729.0	886.5	892.2	848.7	885.9	865.7	887.7
Mexico	66.5	76.2	61.0	87.1	103.7	118.3	116.5	120.8	125.9	147.4	169.5	139.6	161.2	174.1	186.5
United States	3,521.0	3,435.1	3,171.5	3,412.8	3,388.4	3,717.1	3,600.7	3,673.3	3,585.7	3,825.9	3,712.2	3,671.3	3,469.2	3,403.9	3,441.6
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	1.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Belize	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Costa Rica	5.5	6.3	5.4	5.1	4.6	6.7	3.9	3.3	8.8	4.6	4.6	5.5	4.0	6.9	4.4
Cuba	1.3	3.0	3.5	5.2	8.7	8.0	5.8	5.2	5.7	4.5	6.8	6.2	6.2	9.2	14.2
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.3	0.5	0.3	1.8	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0
El Salvador	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.3	1.6	0.3	0.0	0.0	0.3	1.8	1.2	2.2	1.0	0.1	0.0	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Honduras	4.8	0.2	4.3	2.6	1.0	1.5	2.1	1.7	1.0	2.1	0.3	0.3	0.3	1.0	0.5
Jamaica	1.5	2.7	1.2	3.5	0.0	1.0	0.5	1.7	2.8	0.0	0.3	4.3	1.1	0.5	3.0
Nicaragua	1.5	0.0	0.3	0.0	2.0	0.0	0.6	0.4	0.9	1.0	0.5	0.5	1.0	0.4	1.3
Panama	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	2.2	1.6	0.9	1.3	1.9	4.0	1.1
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	1.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	7.0	9.3	2.5	3.7	2.3	6.7	1.8	2.0	6.0	6.0	9.5	3.2	5.4	2.3	4.3
West Indies Associated States	0.0	0.0	0.0	0.8	0.0	0.0	0.5	0.5	0.0	1.0	0.0	1.0	0.0	0.0	0.0
South America															
Argentina	118.1	110.2	113.6	121.0	154.0	184.2	123.3	152.8	161.4	197.0	197.9	214.2	204.3	238.5	246.9
Bolivia	1.5	1.0	0.5	1.3	0.0	0.5	4.0	1.5	1.0	2.4	0.8	3.8	2.1	2.0	1.5
Brazil	95.1	126.6	111.0	130.4	138.6	216.1	209.1	214.3	273.8	311.6	368.0	372.4	445.1	462.8	608.3
Chile	16.8	10.5	19.3	15.4	17.1	33.7	26.2	44.3	43.3	44.5	56.6	51.0	73.1	52.7	76.5
Colombia	18.7	14.3	9.4	13.5	13.3	15.4	14.1	10.5	14.8	17.4	18.6	19.4	28.4	31.6	23.9
Ecuador	1.3	1.6	0.5	1.0	0.8	3.3	2.1	1.4	1.6	0.9	2.7	4.4	2.8	0.7	1.3
Guyana	1.8	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.5	0.8	0.3	0.0	0.2	0.0	0.3	0.3	0.0	0.2	0.5	0.8
Peru	4.7	2.3	4.0	3.8	7.3	3.8	15.2	4.7	4.7	4.4	7.4	3.5	11.2	8.9	8.8
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	10.8	6.0	8.4	5.7	7.7	13.7	14.2	13.0	12.5	20.5	17.7	25.4	20.2	34.1	30.7
Venezuela	16.3	19.3	11.1	8.5	10.6	18.0	17.2	18.6	18.2	17.3	34.6	19.3	17.0	13.3	8.0

Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	47.6	40.6	55.8	51.3	55.4	59.1	49.9	42.6	54.2	80.9	72.2	67.5	78.6	98.9	84.0
Belgium	122.3	133.5	144.3	163.7	142.8	157.3	194.7	207.7	228.1	245.0	274.9	249.1	230.5	247.4	229.3
Bulgaria	22.3	12.0	16.5	12.9	8.7	8.7	11.6	9.5	14.2	17.0	14.7	13.5	18.2	13.9	15.6
Cyprus	2.3	1.0	2.0	2.3	0.5	1.5	1.3	2.0	1.8	0.1	2.3	2.5	4.4	4.6	2.6
Czech Republic	29.6	25.7	31.5	36.2	33.7	37.3	42.7	46.5	53.4	68.4	77.1	85.4	107.2	88.4	95.7
Denmark	157.3	186.4	187.3	208.4	225.3	194.6	233.2	250.0	229.8	228.1	289.3	233.1	198.6	244.9	239.4
Estonia	0.8	2.9	5.6	6.3	3.3	4.3	4.3	6.6	9.5	8.9	9.3	14.4	10.9	12.2	11.8
Finland	115.1	93.1	87.2	103.6	112.1	137.3	108.2	114.9	114.9	139.4	130.6	121.2	131.9	127.6	115.2
France	449.2	502.5	480.7	552.1	521.1	524.9	514.6	523.1	522.7	579.4	619.4	597.9	634.1	616.8	560.6
Germany	638.9	686.9	652.0	621.4	656.6	658.3	634.3	628.4	731.5	741.9	672.2	716.5	739.1	798.5	804.9
Greece	82.3	72.3	93.5	108.3	127.5	129.2	128.3	126.2	182.7	197.6	220.7	204.3	186.7	160.9	138.9
Hungary	23.7	43.1	35.2	39.8	25.4	40.0	48.0	28.2	66.0	50.7	36.1	31.3	67.2	36.3	41.1
Ireland	81.5	122.3	115.6	135.3	125.3	139.1	116.2	120.8	136.7	195.5	157.5	202.5	214.5	233.3	198.8
Italy	258.9	253.0	258.5	332.9	304.7	371.2	391.4	453.7	485.6	480.0	634.6	686.8	691.7	757.6	756.6
Latvia	1.0	0.0	0.5	0.0	1.0	0.0	0.0	0.5	0.0	1.8	0.1	4.0	2.2	3.0	3.5
Lithuania	2.5	4.8	2.0	3.3	7.7	5.6	9.2	4.5	7.7	12.2	11.5	8.7	7.5	4.5	17.2
Luxembourg	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.3	0.0	0.3	1.0	0.9	2.1	2.3	5.7
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7
Netherlands	336.9	308.3	305.2	307.7	239.6	300.6	327.8	285.1	281.9	310.7	338.5	303.6	261.0	291.4	315.7
Poland	70.4	83.9	92.0	89.6	80.9	123.7	125.8	141.1	154.5	140.5	204.2	190.5	179.0	198.3	221.1
Portugal	45.9	60.7	63.8	72.0	67.8	78.3	83.3	83.0	93.6	144.7	165.9	156.2	166.8	174.5	216.8
Romania	2.6	5.0	2.5	4.5	2.1	2.3	2.1	2.8	3.6	3.4	3.5	5.9	4.7	8.7	12.2
Slovakia	13.7	15.5	12.7	10.7	17.1	17.9	13.4	15.8	13.2	18.5	18.5	23.1	23.5	24.5	17.8
Slovenia	5.6	6.6	7.2	7.4	11.7	7.0	18.6	15.7	15.1	19.7	31.9	41.6	37.7	39.4	56.7
Spain	550.1	563.9	633.0	619.2	592.4	719.8	762.7	827.4	918.2	1,019.3	1,203.9	1,164.4	1,262.6	1,186.1	1,246.7
Sweden	156.2	169.4	172.7	161.9	144.9	147.1	155.7	179.6	153.4	152.3	172.2	150.0	148.8	141.7	174.0
United Kingdom	838.5	864.4	790.5	847.1	717.8	733.6	679.7	584.3	610.0	584.2	649.2	594.9	549.5	533.0	507.8
Other Europe															
Albania	0.5	1.3	1.1	0.5	0.5	0.0	0.0	1.0	0.0	0.0	0.7	0.4	0.0	1.0	1.8
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	4.0	5.0	7.0	7.0	2.1	2.5	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.5	0.5	1.0	2.0	0.7	1.0
Croatia	5.0	6.3	7.8	4.3	13.1	11.8	18.0	21.6	24.9	30.5	38.7	30.1	34.2	39.1	41.5
Iceland	6.3	0.0	2.8	2.9	7.0	4.1	2.5	7.5	4.9	6.9	5.7	5.6	4.6	13.0	10.9
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	1.0	0.0	0.0	1.0	1.0	1.7	0.3	0.0	0.0	0.7	0.3	0.1	0.7	0.4	4.6
Moldova	0.8	3.5	2.0	0.3	1.1	0.8	1.3	0.0	0.3	0.0	1.0	1.5	0.3	1.3	1.2
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.7	0.0	0.0	0.0	0.5
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.6	0.0	0.0	1.3

Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	63.1	61.3	97.1	72.3	84.2	77.7	85.8	106.6	122.5	120.9	130.1	116.4	116.0	111.0	130.7
Russia	186.0	181.7	159.7	192.8	168.3	160.0	17.4	16.7	16.1	22.9	24.2	16.8	17.8	7.1	18.6
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.7	38.4	27.1	29.3	48.4	68.5
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	15.8	13.3	NA	NA	NA	NA	NA
Switzerland	106.4	98.9	109.7	110.6	127.4	111.8	130.2	108.2	133.4	133.8	147.4	161.4	135.7	151.2	153.8
Ukraine	11.7	10.5	10.0	5.7	12.8	7.3	3.6	3.7	2.7	2.5	2.3	1.6	3.0	1.6	3.4
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	11.5	6.2	5.0	6.2	3.5	6.3	5.5	12.0	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	0.5	0.5	0.5	0.0	0.0	0.5	0.0	2.0	0.0	0.5	0.0	2.0	0.0	0.0	0.0
Iran	10.2	3.8	7.3	13.9	17.3	28.2	43.1	52.2	54.1	90.3	153.7	149.0	189.9	223.3	246.5
Iraq	2.0	1.2	1.0	1.0	2.0	3.0	0.0	2.0	1.0	2.0	4.3	3.5	1.0	1.0	1.8
Israel	94.2	96.7	101.2	118.5	98.1	110.2	104.8	106.3	100.9	85.1	104.7	93.5	110.2	83.6	100.5
Jordan	6.0	18.2	15.3	13.0	13.3	16.5	18.2	25.2	14.6	12.2	22.5	30.8	24.5	11.0	16.1
Kuwait	4.0	2.0	2.0	3.0	4.0	3.5	2.0	3.6	0.8	2.0	1.2	4.8	1.0	2.5	0.8
Lebanon	2.3	3.3	2.8	6.5	7.0	3.2	8.5	4.0	8.5	7.9	2.5	5.2	7.6	11.7	9.2
Oman	1.0	8.1	5.2	2.7	7.8	11.2	7.1	10.5	11.2	3.2	10.2	4.8	5.0	3.0	4.5
Qatar	0.0	0.0	0.0	1.0	0.5	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Saudi Arabia	14.7	16.0	13.0	14.3	7.6	8.1	3.8	5.8	4.8	2.0	4.6	4.9	3.3	15.7	22.4
Syria	18.4	13.6	10.8	22.8	14.8	5.3	14.5	13.4	14.8	14.8	11.5	11.7	14.5	14.4	14.7
Turkey	55.4	71.2	73.4	103.8	124.5	180.3	235.2	349.3	334.2	380.4	450.1	331.9	337.6	294.7	332.6
United Arab Emirates	2.5	2.0	2.0	3.5	2.8	0.5	2.5	3.3	7.7	10.7	3.3	8.6	5.6	4.4	4.0
Yemen	0.0	0.0	1.0	0.0	0.0	1.1	0.0	0.0	0.0	1.3	0.0	0.0	0.8	0.3	1.7
Africa															
Algeria	0.5	2.5	4.1	4.8	3.2	2.1	4.6	4.3	5.7	7.3	3.6	10.6	10.7	8.5	6.5
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	0.0	0.0	0.0
Benin	3.2	3.8	2.0	4.9	0.9	5.0	6.3	8.2	4.1	8.4	3.3	5.8	9.3	9.1	12.1
Botswana	1.3	1.0	2.6	7.5	3.3	3.5	3.5	5.8	4.4	1.5	4.7	2.8	2.8	2.8	1.6
Burkina Faso	3.7	6.6	4.7	2.7	1.3	1.3	3.4	4.1	8.9	5.3	7.6	3.9	1.4	5.9	3.7
Burundi	0.5	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.2	0.0
Cameroon	6.7	4.7	7.0	7.5	4.3	9.6	12.7	7.2	12.1	11.4	10.6	14.0	9.4	9.7	9.5
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Central African Republic	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.7	1.5	0.5	1.3	0.0	0.2	1.0	0.5	0.5	0.8	1.2
Congo (Kinshasa)	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.3	1.7
Côte d'Ivoire	5.3	7.9	4.8	6.6	7.8	6.8	6.7	1.2	1.0	4.1	3.4	3.4	5.8	6.7	3.2
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	47.1	50.2	49.4	49.0	44.6	48.3	37.1	30.7	31.2	46.1	50.6	48.5	62.4	70.0	92.4
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	0.0	4.0	1.5	0.0	0.0	0.3	0.0	0.0	0.5	0.0	0.0	0.0
Ethiopia	22.4	16.2	17.2	12.9	7.7	18.2	16.0	17.8	11.6	17.6	19.6	25.3	22.9	15.0	24.8
Gabon	0.0	0.0	0.0	0.0	1.5	0.5	0.5	0.3	0.5	0.3	0.3	0.0	0.0	0.0	0.3
Gambia	1.6	1.5	0.3	0.5	0.0	0.0	0.5	0.3	0.7	0.0	0.0	0.0	0.3	0.0	0.0
Ghana	12.7	10.6	10.2	11.5	9.3	13.1	10.0	13.6	6.9	11.1	13.8	10.7	10.4	14.4	10.5
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	24.9	21.9	24.9	25.7	25.6	29.4	32.9	26.3	31.0	33.0	33.7	36.6	30.2	30.2	31.6
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.4	0.3
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Libya	0.5	1.0	1.0	0.0	0.5	0.0	0.3	0.0	1.0	1.0	0.3	0.0	1.0	1.5	0.0
Madagascar	0.5	1.0	1.0	0.0	0.0	0.1	1.0	0.3	0.3	0.5	2.5	1.6	3.6	1.4	1.5
Malawi	5.7	5.6	4.3	3.5	3.2	2.4	3.1	1.0	0.6	3.6	4.1	2.2	1.3	2.7	3.5
Mali	0.5	2.8	2.7	1.8	1.1	1.7	4.7	4.0	3.7	2.2	2.6	1.3	1.5	1.2	1.9
Mauritania	0.0	0.0	0.0	0.9	0.0	0.0	1.1	0.0	0.0	0.8	0.0	0.0	0.0	0.5	1.5
Mauritius	0.0	1.0	6.5	1.8	0.0	1.5	0.9	0.3	0.7	0.0	1.5	0.0	0.5	3.2	1.3
Morocco	8.3	8.1	10.3	6.2	9.1	15.6	6.9	9.9	12.7	14.7	10.2	16.8	8.1	6.5	8.4
Mozambique	0.3	4.3	2.0	0.3	0.8	1.3	1.3	0.7	0.8	1.8	1.1	1.3	0.7	1.3	0.5
Namibia	0.0	0.0	0.5	0.0	0.8	0.0	0.0	0.0	0.0	0.8	0.9	0.0	0.5	1.8	0.0
Niger	8.3	9.7	3.0	7.4	2.2	8.4	2.8	2.8	5.7	3.8	0.9	2.1	1.4	0.9	4.1
Nigeria	82.1	85.3	96.0	69.2	66.4	78.0	84.5	81.7	61.1	68.4	80.1	71.3	55.9	66.2	51.0
Rwanda	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.3	0.6	1.0	1.1
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	6.2	8.2	5.7	6.2	7.5	10.1	8.4	7.3	4.5	2.9	5.9	4.4	4.4	3.3	4.0
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Sierra Leone	0.0	1.7	1.0	0.3	0.0	0.3	0.0	0.5	0.0	0.0	2.5	0.0	0.5	1.2	0.5
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
South Africa	56.2	55.6	46.0	53.7	47.5	64.8	72.3	68.3	84.6	78.3	89.1	92.0	89.5	110.2	112.2
Sudan	9.0	10.2	9.8	6.5	5.2	8.0	7.6	5.5	8.5	3.0	5.5	5.6	4.5	8.9	4.2
Swaziland	0.0	1.0	0.0	0.0	0.3	0.0	0.5	0.0	0.3	0.0	0.3	1.8	0.5	1.3	0.3
Tanzania	12.4	14.6	6.5	2.2	4.2	6.1	7.3	2.5	5.1	8.9	12.6	11.6	7.7	7.6	8.7
Togo	0.3	1.0	0.0	0.5	0.5	0.3	2.8	2.8	3.7	2.9	1.4	1.3	0.2	4.4	0.3
Tunisia	4.7	1.8	3.9	3.8	6.9	6.6	7.5	9.5	14.0	16.9	41.9	43.3	61.5	77.7	72.3
Uganda	3.2	6.9	5.1	4.9	6.5	2.9	10.4	8.8	7.7	7.7	4.8	8.6	8.6	8.5	9.4
Zambia	4.2	2.2	1.9	2.2	4.0	1.0	2.0	5.1	4.7	3.7	2.0	2.7	0.7	0.5	0.3
Zimbabwe	18.6	7.5	12.0	13.2	14.2	15.1	11.5	7.7	12.9	10.6	9.2	11.9	7.5	11.7	8.7
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.8
Armenia	1.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.2
Azerbaijan	0.0	0.0	0.0	0.5	0.5	0.0	1.0	0.0	0.0	0.8	1.3	0.0	0.0	0.0	0.6
Bangladesh	10.5	11.6	10.7	5.3	11.2	7.9	8.2	9.3	11.0	5.7	10.0	8.6	17.2	12.5	8.8

Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.3	1.2	1.0	1.0	0.3	0.6	0.3	0.0	0.0	1.0	0.5	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.0
Burma	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.3	0.3	0.4	0.2
Cambodia	0.7	0.0	1.0	1.3	1.0	0.1	0.5	0.3	1.0	1.2	3.3	0.3	0.5	0.0	0.5
China	61.7	95.1	117.3	127.8	149.8	201.7	232.2	338.8	458.5	695.7	1,129.9	1,206.4	1,396.9	1,594.7	1,879.4
Georgia	1.0	1.0	2.0	0.0	3.2	1.0	1.3	0.0	0.3	1.0	0.8	0.0	0.0	1.0	2.1
India	222.8	250.0	282.7	296.2	258.1	280.7	288.9	306.3	335.6	420.0	589.1	499.8	486.5	519.1	523.3
Indonesia	17.3	13.7	15.3	13.8	7.2	6.7	6.2	12.6	18.2	8.7	7.6	12.9	14.3	17.7	13.4
Japan	951.3	981.0	1,136.5	1,197.1	1,127.2	1,209.7	1,201.9	1,165.5	1,200.4	1,171.8	1,153.7	1,251.8	1,241.6	1,178.0	1,145.4
Kazakhstan	0.0	0.5	0.0	0.0	0.5	1.2	0.0	2.2	0.8	1.8	1.9	1.4	0.0	0.9	0.0
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.7	0.5
Laos	0.8	0.5	0.3	1.9	0.0	1.2	3.0	2.5	0.0	2.5	0.5	1.4	1.0	2.6	1.0
Malaysia	18.2	28.0	28.8	33.6	22.5	36.4	28.1	37.8	34.7	38.1	55.3	68.5	93.5	90.7	130.8
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.8	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.8	2.3	0.8	0.0	0.5	1.9	1.0
Nepal	5.6	7.2	4.5	4.0	3.4	4.4	3.1	5.2	4.6	6.1	5.4	0.9	2.7	2.7	0.5
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	1.6	0.8	0.0	0.0	0.0
Pakistan	15.7	20.3	18.7	15.3	24.6	20.1	29.9	35.3	33.2	38.6	73.6	67.9	67.7	57.0	69.7
Philippines	32.8	26.0	30.4	29.0	19.2	36.5	12.9	19.4	15.4	23.6	23.7	32.1	33.3	22.4	30.2
Singapore	6.2	3.9	5.7	3.3	5.6	14.9	6.6	16.6	13.8	24.0	21.0	17.7	18.3	20.6	19.7
South Korea	53.3	59.6	91.8	119.7	129.1	162.9	217.6	194.6	230.5	242.7	273.2	360.8	443.7	478.7	499.8
Sri Lanka	6.5	10.6	8.4	14.3	6.2	5.5	24.6	8.2	16.0	13.1	14.9	15.9	12.4	8.9	13.0
Taiwan	62.0	83.2	90.8	107.0	123.7	149.7	139.4	147.1	179.2	201.2	266.4	238.9	297.5	338.3	336.4
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	15.9	21.1	29.0	35.6	40.9	45.3	58.0	69.7	77.6	96.7	131.0	151.6	164.6	188.9	206.3
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.5	0.0	0.5	1.0	0.0	0.7	0.5	2.8	2.5	0.3	1.7	1.3	2.7	4.3	1.6
Vietnam	3.2	2.3	1.0	6.2	4.3	6.3	5.9	8.1	12.7	8.9	14.6	14.2	14.2	15.1	16.6
Australia/Oceania															
Australia	652.4	623.3	577.8	602.7	581.8	585.4	630.4	609.4	621.8	674.5	739.0	686.2	669.7	700.9	658.0
Fiji	1.8	1.5	0.5	1.0	0.5	0.0	0.0	0.0	0.5	0.3	0.2	1.6	1.0	0.0	1.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	251.7	249.4	269.6	254.7	233.7	233.4	240.0	250.8	241.4	237.0	248.7	284.2	226.9	232.1	233.7
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	1.5	8.0	1.0	3.0	1.0	0.8	0.0	0.0	0.0	0.7	0.8	1.8	0.0	0.8	2.0
Samoa	0.5	1.5	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-27

S&E articles in agricultural sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	0.4	0.0	1.2	0.8	0.5	0.7

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	7,084.0	7,554.0	7,788.0	7,392.0	8,359.0	7,891.0	8,607.0	8,756.0	8,546.0	8,766.0	9,415.0	9,302.8	9,983.0	9,844.6	10,560.9
North America															
Canada	169.6	180.5	195.7	191.2	158.3	176.3	207.6	217.4	206.8	211.5	237.4	246.4	233.0	260.2	255.4
Mexico	72.7	75.3	95.7	78.8	99.7	83.8	95.6	100.2	100.5	81.9	113.3	96.9	102.7	100.0	82.1
United States	2,445.5	2,491.9	2,602.1	2,557.0	2,783.5	2,612.9	2,771.3	2,916.8	2,838.9	2,796.1	2,997.5	2,862.4	3,186.7	2,996.3	3,040.8
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.1
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.0	0.0	0.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	1.3	0.4	0.8	1.3	0.0
Cuba	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.2	1.2	2.3	0.7	1.1	1.5	0.3
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Jamaica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.5	0.5	0.0	0.0	0.0	0.3	0.0	0.2	0.5	0.5	0.5	0.2	0.0	0.1	0.0
West Indies Associated States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2
South America															
Argentina	35.2	51.7	48.0	44.4	60.9	64.4	61.0	65.9	53.5	61.9	66.6	67.7	65.8	67.9	85.9
Bolivia	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.6	0.1	0.5	0.1	0.4	0.3
Brazil	87.8	82.2	86.3	112.6	82.5	83.1	83.1	86.2	87.2	107.0	109.7	110.8	100.7	106.4	124.9
Chile	62.2	48.3	53.6	60.3	68.3	94.9	85.9	96.4	93.1	113.7	103.9	104.7	105.5	116.3	128.4
Colombia	0.5	4.5	0.0	0.1	1.5	1.0	0.6	1.3	1.0	1.3	0.3	2.0	0.5	2.3	0.3
Ecuador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	1.5	0.0	0.2	0.9	1.3	0.3	0.0	0.0	0.7	0.0	0.6	0.5	0.3
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	2.1	1.0	0.7	0.7	0.8	0.4	0.3	0.6	1.2	0.0	0.0	1.7	1.2	0.1	2.0
Venezuela	4.7	26.7	9.0	5.0	7.0	6.0	5.9	9.1	11.0	3.8	5.5	4.6	6.4	3.3	4.3

Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	44.0	38.1	35.2	32.1	30.7	30.9	49.0	41.2	43.3	42.7	45.8	44.8	50.6	46.7	49.7
Belgium	48.1	61.7	50.2	49.9	59.6	55.7	70.3	58.6	82.6	62.9	84.9	80.5	84.6	86.4	91.7
Bulgaria	13.0	14.7	23.5	11.9	18.2	12.2	8.1	11.6	5.5	7.8	17.8	16.2	16.3	13.0	15.1
Cyprus	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.2	0.7	1.3	0.1	0.3	1.1	0.2	0.5
Czech Republic	30.1	27.3	36.9	29.5	30.6	25.4	26.7	27.3	45.4	44.0	47.4	53.8	54.8	49.5	52.2
Denmark	49.6	61.5	48.2	48.5	51.4	42.1	49.8	41.7	30.8	34.6	29.0	27.8	32.9	43.0	52.0
Estonia	5.6	5.9	9.1	6.7	7.7	11.5	6.5	2.1	8.1	8.5	5.7	4.3	5.4	5.6	6.7
Finland	30.7	37.3	38.4	39.8	47.5	47.6	40.9	48.6	39.1	45.7	40.6	41.4	47.8	37.3	48.5
France	418.5	414.7	440.1	450.6	501.3	467.6	506.7	506.1	495.4	498.7	543.3	576.2	581.6	608.3	609.7
Germany	592.8	579.7	565.2	525.7	639.9	601.6	704.0	679.3	593.4	632.1	712.7	726.4	709.9	757.8	829.0
Greece	27.9	27.6	34.5	34.2	54.1	43.0	45.0	48.4	51.4	62.3	40.7	46.3	60.0	43.0	48.6
Hungary	14.6	20.7	18.7	22.2	21.8	23.3	20.7	24.2	16.2	26.5	47.2	22.0	29.7	22.0	29.9
Ireland	8.7	11.0	17.0	12.1	6.1	11.9	16.0	17.8	26.3	15.7	24.7	30.1	30.2	24.5	34.7
Italy	381.9	396.2	434.0	386.6	478.6	454.6	546.9	519.0	497.5	532.3	573.7	526.3	573.3	577.9	584.8
Latvia	4.7	4.1	4.0	1.8	1.0	0.0	0.5	0.0	0.8	0.5	0.2	2.0	0.7	2.9	0.9
Lithuania	3.3	2.6	2.6	2.1	3.1	14.0	2.5	2.2	1.1	0.9	1.2	2.0	1.1	1.1	2.0
Luxembourg	1.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.7
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Netherlands	178.4	166.7	211.3	167.4	198.2	183.5	209.9	188.8	199.5	186.1	180.8	178.3	186.2	188.3	205.5
Poland	77.5	87.4	100.9	103.0	96.4	85.6	123.2	112.9	109.6	105.4	103.0	103.4	113.0	104.2	116.0
Portugal	7.7	32.2	9.1	18.8	15.2	15.0	28.2	25.1	22.1	26.8	28.2	30.0	30.0	29.0	33.4
Romania	7.5	3.0	3.6	3.4	3.9	4.0	5.4	5.7	4.5	4.9	6.8	6.3	9.7	9.5	9.5
Slovakia	8.1	9.3	5.9	7.6	9.9	8.6	10.0	6.7	10.0	12.3	11.1	18.9	13.8	16.3	19.6
Slovenia	2.3	0.8	0.0	1.3	1.0	1.5	3.2	1.6	4.1	2.0	1.9	3.3	2.3	3.7	5.9
Spain	225.9	281.0	211.3	194.7	277.6	208.7	236.7	248.6	243.7	269.0	285.7	284.9	334.8	375.1	348.9
Sweden	61.3	55.5	55.7	60.8	60.7	75.1	62.6	66.3	62.3	64.9	62.2	64.7	68.7	83.5	88.9
United Kingdom	591.3	679.1	681.0	597.6	722.6	717.3	792.6	770.9	750.9	766.6	782.7	743.9	802.0	817.6	845.8
Other Europe															
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.5	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0 *	0.0
Belarus	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.3	0.0	0.0	0.3
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	1.3	2.4	3.1	4.6	5.3	5.8	2.5	5.8	5.1	3.9	9.3	5.9	6.7	6.5	11.0
Iceland	0.0	0.2	0.0	2.0	0.7	1.5	0.1	2.9	1.1	2.2	2.1	0.0	0.4	0.9	3.5
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.5	0.0
Moldova	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.5	0.3	0.0	0.0	0.0

Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	11.1	12.0	14.7	10.1	13.7	6.3	14.8	16.1	19.9	19.5	20.3	15.4	26.3	15.9	24.1
Russia	327.5	312.3	342.1	300.9	368.5	326.9	326.5	324.6	306.7	295.1	333.8	338.0	358.0	331.3	366.9
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.2	11.9	12.3	8.5	16.1	11.9
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	11.3	4.4	NA	NA	NA	NA	NA
Switzerland	61.5	78.6	86.7	68.0	73.4	94.7	94.0	116.7	106.8	96.8	111.3	93.1	101.2	104.0	121.8
Ukraine	65.4	53.7	54.8	57.6	61.5	57.2	57.3	38.4	51.9	54.7	36.8	59.8	45.3	25.1	39.7
Vatican City	0.3	1.0	0.0	0.0	0.0	0.0	0.3	0.3	1.1	0.8	0.5	1.1	1.5	3.0	3.2
Yugoslavia	5.8	13.2	6.6	3.8	10.1	9.2	13.9	13.8	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.5	1.0	0.0
Iran	3.0	2.5	1.7	5.8	9.2	9.7	14.2	12.8	11.2	18.9	17.2	17.7	23.5	28.4	60.7
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Israel	52.6	45.2	58.1	52.9	54.9	61.7	64.5	64.5	58.6	68.2	62.2	73.2	75.6	71.1	74.2
Jordan	1.0	3.0	0.0	2.5	0.3	0.0	0.3	0.0	0.1	0.0	1.0	0.5	0.5	0.2	0.3
Kuwait	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	0.3	0.1	0.0
Lebanon	0.0	0.0	0.3	1.0	0.7	1.5	0.0	0.8	0.0	0.0	0.5	0.4	2.1	0.5	1.3
Oman	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.8	1.2	0.8	1.0	0.3	2.5	1.0
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3
Saudi Arabia	0.0	3.0	2.3	1.4	2.0	0.8	8.0	2.5	2.3	1.0	2.0	1.1	0.6	2.7	7.9
Syria	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	14.8	11.2	6.5	11.6	22.0	14.0	25.7	26.5	40.3	44.4	36.1	29.9	36.6	38.2	44.0
United Arab Emirates	0.3	0.0	0.0	1.0	1.5	1.5	0.5	0.0	0.7	1.0	2.3	1.0	1.5	0.3	0.8
Yemen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0
Africa															
Algeria	1.0	0.6	1.2	1.3	0.8	1.3	0.0	0.5	2.2	1.8	2.6	2.0	2.8	5.1	11.7
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Botswana	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Burkina Faso	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.4
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	1.5
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Kinshasa)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Côte d'Ivoire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	2.8	11.2	3.2	6.1	4.7	10.3	9.2	7.5	8.4	2.8	9.9	9.3	8.3	15.3	13.7
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethiopia	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.5	1.2
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.5	0.0	0.0	0.0	0.0
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	0.5	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Madagascar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.3	0.0	1.0	1.5	7.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Morocco	0.7	1.0	0.1	4.8	1.9	1.5	0.8	3.5	2.2	2.1	2.5	2.8	0.7	2.2	1.3
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.3	0.3	0.4	0.5	0.2	0.3
Niger	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nigeria	2.0	4.2	1.5	0.3	0.3	2.5	1.0	0.0	0.5	1.3	2.5	4.6	4.3	12.2	8.8
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	37.7	42.8	43.5	29.4	33.9	40.0	39.2	31.9	33.2	35.6	44.3	39.1	44.9	53.5	46.9
Sudan	1.5	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.5	0.0	0.7	1.0	1.0	6.5	0.6
Swaziland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tanzania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	0.5	0.5	0.0	0.0	0.0	0.0	0.0	2.0	0.8	2.2	2.3	1.0	1.8	1.2	0.7
Uganda	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.2
Zambia	0.0	0.0	0.0	0.1	0.1	0.0	0.0 *	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Zimbabwe	0.0	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Armenia	7.9	3.9	26.2	6.7	6.8	6.4	12.2	10.0	6.2	7.6	9.4	6.5	9.7	7.3	7.1
Azerbaijan	1.2	2.0	0.0	1.0	3.0	1.0	2.3	2.3	1.8	3.0	2.3	1.8	2.8	2.7	2.0
Bangladesh	0.0	2.0	0.5	0.5	0.0	0.0	0.0	1.5	0.0	1.0	0.0	1.0	1.0	0.0	1.5

Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burma	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	114.7	148.6	132.0	156.5	221.6	183.8	197.4	209.8	294.1	384.3	420.0	410.4	484.5	453.6	569.5
Georgia	5.3	4.2	5.9	3.0	8.2	5.1	5.0	4.7	9.1	6.9	8.8	7.8	10.4	11.6	10.2
India	127.1	120.0	119.8	151.6	155.7	152.2	148.0	119.4	149.8	194.2	170.5	211.7	210.9	219.3	298.3
Indonesia	1.4	0.2	4.5	0.8	2.6	1.4	2.0	1.7	1.1	0.0	1.5	0.9	1.0	0.5	1.7
Japan	306.8	448.1	473.8	415.1	412.6	366.8	423.9	421.1	352.5	354.4	436.9	485.1	466.4	410.8	475.2
Kazakhstan	1.5	3.5	3.2	2.3	3.6	4.2	1.2	1.2	0.5	0.3	0.1	1.4	0.9	1.5	1.4
Kyrgyzstan	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.5	3.0	4.7	2.7
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0
Nepal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.5	0.3	0.3	0.5
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Pakistan	1.0	1.5	0.0	0.1	1.0	0.3	0.5	0.2	0.1	2.2	0.8	2.5	2.6	9.3	17.8
Philippines	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Singapore	1.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.8	0.5	0.2	0.8	0.2
South Korea	27.2	32.7	44.7	38.1	41.6	45.1	43.1	49.6	61.0	59.6	80.4	74.7	100.6	91.2	104.2
Sri Lanka	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Taiwan	8.5	11.1	14.5	16.0	22.1	18.7	22.6	33.3	21.7	26.2	46.1	50.2	61.1	57.5	61.9
Tajikistan	1.0	0.3	0.5	0.8	2.0	1.5	3.8	3.0	0.0	0.0	1.8	1.7	1.7	0.0	1.0
Thailand	1.0	0.0	1.0	0.0	0.0	3.1	3.9	2.2	3.8	3.5	4.7	3.0	3.8	2.1	3.9
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	6.5	7.0	6.4	2.7	8.9	2.2	1.7	3.3	6.0	2.7	3.8	1.8	3.3	3.5	3.9
Vietnam	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.6	1.0	0.0 *	0.0 *	0.8	0.6	1.6
Australia/Oceania															
Australia	157.4	173.7	185.8	156.3	193.1	166.3	179.1	257.5	220.7	210.6	182.1	187.4	204.6	204.5	266.8
Fiji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	7.7	9.6	12.1	13.3	8.3	10.8	7.7	11.1	9.9	7.4	4.3	6.1	9.2	12.1	13.5
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-28

S&E articles in astronomy, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = rounds to zero. NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	141,863.0	145,556.0	144,485.0	147,031.0	144,465.0	146,119.0	149,296.7	154,509.0	156,226.0	157,420.0	159,217.0	159,740.0	157,391.0	160,031.0	161,652.0
North America															
Canada	5,838.3	5,779.7	5,583.6	5,730.7	5,616.2	5,620.1	5,783.8	5,856.4	6,153.5	6,216.5	6,403.6	6,228.2	6,085.4	6,145.7	5,885.9
Mexico	587.6	663.6	638.9	663.7	706.1	747.6	848.1	911.0	942.9	919.5	985.6	1,011.3	921.6	947.1	988.3
United States	51,821.3	51,769.9	50,844.6	52,165.4	51,495.3	51,155.1	51,530.1	53,560.9	53,133.1	52,637.9	52,593.2	51,593.4	49,670.0	49,345.9	49,413.2
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	0.5	0.0	0.0	0.0
Bahamas	0.5	0.9	1.2	0.7	0.3	0.3	0.6	0.5	0.2	0.7	1.1	1.0	0.4	0.0	0.5
Barbados	5.8	6.3	3.9	3.4	3.5	4.9	4.8	2.5	2.3	3.7	1.5	5.8	1.1	1.9	1.6
Belize	1.1	0.3	0.9	0.3	0.7	0.9	0.8	0.3	1.4	2.4	0.6	0.0	0.5	1.2	1.4
Costa Rica	39.8	40.0	32.4	38.1	48.2	41.9	51.0	47.7	58.7	33.2	50.8	51.5	45.2	45.7	42.0
Cuba	57.4	85.5	71.7	85.5	94.0	65.9	93.6	92.6	78.9	99.7	68.9	74.5	71.3	52.3	64.3
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.3	0.5	1.6
Dominican Republic	3.1	2.8	1.1	3.3	2.0	1.4	2.4	2.5	0.3	1.3	1.1	2.4	1.2	2.0	2.0
El Salvador	0.8	0.0	0.0	0.5	0.5	0.9	0.5	1.3	2.6	0.8	2.4	1.4	1.4	0.9	1.2
Grenada	0.0	0.0	0.0	0.5	0.0	0.0	0.6	1.3	1.0	3.2	2.8	0.7	3.6	2.0	3.8
Guatemala	11.5	9.3	5.7	7.7	9.7	12.4	5.2	9.3	6.7	4.5	8.7	6.2	9.3	7.3	6.1
Haiti	0.2	0.5	0.3	0.8	0.7	0.8	1.9	0.5	0.0	1.6	1.1	0.7	2.6	0.8	1.9
Honduras	2.6	6.1	1.6	2.0	2.5	2.4	1.1	1.2	2.3	2.0	1.9	0.4	1.4	2.4	2.8
Jamaica	18.3	9.8	12.8	10.4	14.5	15.3	8.6	13.6	10.5	15.1	8.1	5.4	6.3	7.2	12.3
Nicaragua	4.2	1.0	3.3	2.5	0.8	0.5	2.5	3.7	5.1	3.0	4.0	4.1	2.6	5.2	5.6
Panama	28.7	25.0	31.9	25.4	37.2	38.2	34.3	43.0	35.5	39.1	54.2	47.5	48.4	55.0	42.8
St. Kitts and Nevis	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.4	0.5	0.3
St. Lucia	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	16.8	15.5	9.0	13.0	9.6	8.1	18.4	15.0	10.5	6.0	11.7	10.8	8.0	15.6	10.8
West Indies Associated States	0.8	1.0	0.8	0.5	1.9	0.5	1.2	0.8	0.6	2.1	2.7	5.4	1.9	3.5	3.2
South America															
Argentina	735.8	774.8	720.3	828.6	855.4	936.6	947.2	867.1	902.3	1,022.8	994.8	1,061.0	1,102.9	1,085.1	1,153.5
Bolivia	16.0	9.8	13.5	16.4	11.1	16.0	16.9	13.8	17.2	20.1	26.3	17.4	21.9	16.5	22.7
Brazil	1,292.3	1,462.1	1,606.8	1,691.8	1,732.2	2,124.6	2,284.0	2,637.2	2,454.3	2,771.8	2,920.2	3,345.0	3,139.7	3,309.6	3,471.2
Chile	211.4	221.9	230.3	210.0	223.0	258.6	275.0	315.9	334.5	288.9	352.7	352.4	337.7	351.2	357.4
Colombia	58.7	58.3	72.1	82.4	89.1	107.7	99.2	115.6	115.7	113.2	114.6	113.3	121.2	153.4	145.9
Ecuador	12.4	10.0	6.1	12.0	6.9	14.4	15.0	19.1	15.8	15.0	26.9	22.3	27.8	21.1	23.4
Guyana	0.5	1.0	0.8	1.7	1.3	4.2	1.1	0.7	2.1	0.2	2.6	0.6	0.0	0.0	0.2
Paraguay	3.2	3.1	3.0	2.9	4.0	3.7	5.4	3.4	5.7	1.4	4.9	4.3	5.1	2.5	4.0
Peru	24.7	25.6	15.6	24.2	30.6	32.7	41.9	34.9	41.2	43.7	62.1	49.3	47.2	44.5	52.2
Suriname	2.1	0.9	2.5	0.9	0.5	1.2	1.6	2.3	1.5	0.9	0.1	1.0	0.0	0.0	0.5
Uruguay	40.3	40.6	45.6	49.6	48.6	46.7	72.3	74.9	69.8	65.9	62.4	68.7	82.0	66.6	92.7
Venezuela	136.7	138.3	131.0	136.3	140.6	139.0	136.8	137.2	133.2	123.0	139.0	135.6	78.7	75.8	62.1

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	894.2	901.8	944.7	884.7	982.5	980.2	958.9	1,043.4	1,006.7	981.8	1,003.3	983.4	1,005.3	1,074.9	1,036.3
Belgium	1,477.4	1,456.0	1,495.3	1,413.3	1,430.5	1,448.5	1,492.9	1,580.1	1,638.0	1,511.7	1,543.8	1,584.6	1,598.1	1,632.2	1,638.9
Bulgaria	209.0	160.6	162.0	182.7	140.2	151.7	140.4	145.7	136.9	123.1	136.7	140.7	129.6	100.9	103.0
Cyprus	8.8	7.9	10.9	11.6	7.9	9.3	4.6	9.8	7.5	11.7	12.1	13.8	17.3	21.0	22.0
Czech Republic	531.3	545.4	603.4	601.8	629.3	688.7	733.7	792.9	797.8	808.6	892.2	974.0	919.1	1,003.6	897.3
Denmark	1,296.3	1,290.2	1,304.8	1,392.7	1,362.6	1,314.5	1,391.7	1,403.2	1,293.1	1,333.6	1,303.2	1,306.2	1,263.2	1,357.5	1,330.9
Estonia	54.4	80.4	92.5	93.0	85.4	83.7	80.3	100.8	128.8	123.0	132.0	103.9	144.8	133.0	150.9
Finland	1,049.3	1,202.3	1,244.7	1,266.1	1,263.2	1,241.1	1,242.4	1,267.2	1,220.7	1,251.7	1,213.1	1,240.7	1,109.3	1,104.5	1,102.6
France	7,689.5	7,736.5	7,606.8	7,537.3	7,211.8	7,031.7	6,881.4	6,794.9	6,781.4	6,613.9	6,527.7	6,453.4	6,288.8	6,162.7	6,053.1
Germany	8,958.2	9,482.3	9,284.5	9,303.5	9,082.2	9,027.1	8,871.4	9,111.8	9,389.4	9,141.7	9,099.5	8,984.7	8,818.9	8,918.1	8,687.8
Greece	378.7	448.8	389.8	539.8	507.9	562.5	567.5	621.1	711.8	792.1	742.1	828.2	746.7	745.3	715.2
Hungary	438.0	518.2	500.2	500.4	503.7	526.3	549.5	593.0	585.1	625.8	559.3	614.9	552.6	546.5	575.4
Ireland	299.8	354.9	372.1	352.3	355.3	365.3	373.7	401.2	462.0	462.6	513.1	512.1	554.2	616.0	639.3
Italy	4,388.5	4,386.9	4,354.0	4,501.9	4,392.0	4,562.4	4,773.9	4,876.7	4,947.2	5,105.1	5,074.9	5,109.9	5,075.5	4,879.7	4,811.9
Latvia	24.0	22.1	23.7	20.0	23.5	31.0	19.7	24.9	17.4	19.4	21.5	24.4	20.1	17.4	28.0
Lithuania	32.3	31.2	40.2	31.5	55.3	48.0	62.0	51.4	62.1	63.0	60.9	56.1	50.1	61.8	59.1
Luxembourg	10.5	16.3	9.8	17.1	19.1	14.5	15.7	25.0	17.3	23.3	21.9	31.3	37.8	33.6	50.2
Malta	4.5	3.3	1.5	1.0	2.8	3.3	13.8	9.2	1.4	2.9	3.8	6.3	7.6	3.4	5.9
Netherlands	3,058.1	3,040.0	3,000.5	2,957.0	2,826.6	2,951.7	2,869.6	2,948.6	2,986.5	2,862.5	2,899.8	2,976.3	2,860.1	3,028.0	2,943.3
Poland	670.6	703.0	741.4	834.0	802.7	914.3	1,087.9	1,000.9	1,142.3	1,243.7	1,175.1	1,163.1	1,157.9	1,227.1	1,287.5
Portugal	266.1	248.9	340.8	413.8	431.1	466.4	565.7	576.2	574.0	668.1	666.4	736.7	817.2	757.2	864.1
Romania	43.3	54.3	42.4	47.9	44.3	40.2	51.3	50.9	43.1	53.2	61.9	63.3	66.6	102.0	117.2
Slovakia	212.5	211.7	249.5	217.3	202.1	226.8	194.5	224.0	179.0	215.8	225.0	232.7	208.7	212.7	220.8
Slovenia	108.9	122.3	139.2	239.8	157.4	134.5	175.9	145.7	207.1	180.4	221.3	238.7	218.0	202.1	213.7
Spain	3,229.5	3,304.0	3,536.1	3,436.6	3,545.5	3,737.9	3,843.8	3,818.3	4,121.1	4,183.9	4,233.6	4,332.3	4,425.3	4,457.9	4,488.9
Sweden	2,528.1	2,659.9	2,615.2	2,548.8	2,634.9	2,553.3	2,531.1	2,459.2	2,422.6	2,429.9	2,345.7	2,256.1	2,113.0	2,041.6	1,947.1
United Kingdom	11,201.0	11,385.8	10,884.1	11,059.9	10,479.0	10,460.9	10,369.8	10,404.6	10,083.3	9,919.4	9,846.1	9,704.4	9,431.8	9,647.2	9,084.7
Other Europe															
Albania	0.3	2.5	1.8	1.7	2.9	1.1	2.3	1.1	3.7	2.6	3.0	1.8	1.8	2.6	4.8
Andorra	0.5	0.0	0.0	0.5	0.3	1.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Belarus	92.4	63.3	79.2	73.1	53.7	55.4	53.1	55.8	49.1	31.8	38.0	29.5	33.5	22.8	25.6
Bosnia and Herzegovina	2.4	2.8	0.0	0.5	2.1	0.9	2.7	3.5	5.5	8.3	4.4	3.7	7.2	6.7	10.5
Croatia	74.1	78.3	98.4	93.9	101.8	99.6	125.5	131.2	154.2	182.1	167.6	169.5	176.9	182.1	189.1
Iceland	28.5	45.4	35.4	32.4	38.7	38.9	50.6	51.4	53.3	41.6	51.5	43.7	46.8	46.3	47.1
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2	0.5	0.3	0.5	0.6	0.0	1.3	1.2
Macedonia	2.5	3.6	1.7	2.6	7.5	2.9	1.9	5.8	7.1	3.6	6.8	7.2	4.8	8.0	11.0
Moldova	8.6	4.1	6.2	8.0	6.0	4.5	4.8	5.4	2.8	3.8	1.9	3.2	4.3	1.7	2.4
Monaco	1.9	6.8	2.2	1.7	2.4	2.1	6.4	3.1	2.6	4.3	1.3	1.1	2.5	3.0	2.7
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	1.4	1.5	1.0	1.3	1.7

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	673.9	703.1	704.8	746.9	788.4	742.6	723.0	758.0	794.7	841.1	832.5	812.7	836.5	804.2	845.2
Russia	3,236.5	3,129.3	3,244.0	2,365.8	1,489.2	1,653.2	1,705.1	1,653.1	1,570.0	1,188.5	1,155.1	971.4	937.6	911.3	934.8
San Marino	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	69.7	152.7	184.9	146.0	175.8	176.3
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	165.3	68.8	NA	NA	NA	NA	NA
Switzerland	2,080.8	2,076.5	2,157.2	2,155.7	2,031.4	2,043.2	1,998.3	2,104.4	2,054.6	2,129.6	2,073.6	2,013.9	2,094.7	2,102.5	2,161.6
Ukraine	190.5	170.0	151.6	96.2	80.1	124.8	105.6	103.5	84.6	71.2	86.5	69.7	49.4	63.8	73.6
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	72.4	101.6	97.2	92.8	80.7	71.3	99.5	135.2	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	2.5	1.6	1.0	5.0	4.3	3.5	10.3	6.2	8.3	9.3	7.3	9.9	4.0	8.0	5.4
Iran	66.8	74.5	76.5	101.9	121.5	160.6	247.7	275.8	356.8	397.7	606.7	573.0	641.8	694.2	851.2
Iraq	9.7	7.3	4.5	3.9	4.5	2.0	4.8	2.1	3.4	9.0	5.1	4.4	2.8	3.9	6.6
Israel	1,372.8	1,351.1	1,310.3	1,456.5	1,403.6	1,479.5	1,477.9	1,465.5	1,385.8	1,387.0	1,408.9	1,398.4	1,280.0	1,280.8	1,244.1
Jordan	29.4	39.8	31.1	42.0	35.9	35.9	41.2	36.7	35.5	34.8	40.2	40.8	43.5	44.8	42.5
Kuwait	40.7	50.2	65.6	51.5	52.0	41.3	55.1	48.8	56.7	38.9	48.1	43.8	42.3	41.7	42.0
Lebanon	27.7	28.4	25.0	25.2	48.4	38.5	51.3	40.4	36.8	34.7	39.4	44.7	36.2	38.4	37.9
Oman	11.3	19.7	12.7	13.4	10.5	12.7	18.9	12.9	17.3	13.4	11.4	11.9	9.9	21.7	18.3
Qatar	3.0	6.2	1.5	1.6	3.0	0.3	1.0	6.1	2.9	5.5	4.3	7.5	9.7	14.9	18.3
Saudi Arabia	132.7	110.9	98.0	88.0	96.6	100.9	105.5	87.3	79.1	75.6	83.4	75.5	99.8	141.3	240.4
Syria	12.2	14.0	15.1	8.4	14.6	9.6	20.2	17.7	12.1	8.9	12.7	12.2	11.9	19.8	20.2
Turkey	332.7	376.7	414.2	447.1	510.0	717.3	887.6	1,007.0	1,084.3	1,134.6	1,109.0	1,010.9	903.1	931.7	1,009.7
United Arab Emirates	34.1	25.5	27.7	27.9	24.0	27.6	42.0	46.8	52.1	55.4	44.2	55.1	41.2	46.7	53.8
Yemen	2.6	3.9	1.2	3.5	4.6	3.3	4.5	3.0	2.8	5.2	1.7	0.5	2.9	5.7	6.5
Africa															
Algeria	8.9	8.7	16.5	8.5	12.9	17.9	20.1	17.3	16.6	23.5	27.8	33.5	37.5	36.7	40.6
Angola	0.9	0.5	1.4	2.0	2.6	0.8	0.9	1.0	1.4	0.9	2.0	0.5	0.9	3.0	2.6
Benin	12.2	8.7	7.6	9.9	11.1	13.8	9.4	9.6	13.0	10.3	10.6	19.8	20.2	14.5	21.3
Botswana	7.0	10.5	5.0	4.7	5.1	9.5	19.4	10.7	11.2	13.3	16.9	8.4	13.5	7.2	9.8
Burkina Faso	7.4	11.8	6.0	8.8	10.7	9.2	18.6	15.3	12.3	20.1	14.1	15.8	24.5	20.2	21.6
Burundi	1.2	0.8	1.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.2	0.7
Cameroon	25.4	29.8	24.3	23.5	29.1	34.6	39.1	42.6	32.3	41.1	51.4	39.7	33.6	44.8	49.3
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.5	0.4	0.5
Central African Republic	1.6	1.2	2.4	1.2	1.7	1.4	3.7	3.1	3.1	3.0	3.0	2.5	3.1	3.6	3.3
Chad	0.1	0.0	0.3	0.5	0.3	0.7	0.8	0.3	2.8	1.5	0.7	0.7	1.5	0.0	0.8
Comoros	0.0	0.5	0.0	0.0	0.0	0.0	0.7	0.2	1.0	0.0	0.3	0.3	0.0	0.5	0.2
Congo (Brazzaville)	6.4	5.1	8.7	5.8	0.9	4.3	4.5	8.7	7.7	7.6	5.0	7.6	7.1	8.5	6.9
Congo (Kinshasa)	4.8	1.6	4.3	2.6	0.9	1.4	1.5	1.7	3.7	0.3	2.3	3.9	5.6	6.1	6.9
Côte d'Ivoire	13.8	12.9	15.9	17.4	15.6	13.9	22.8	18.2	16.5	16.0	17.8	15.2	20.7	17.5	16.3
Djibouti	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.4	0.2	0.3	0.0	0.5	1.0	0.0
Egypt	149.0	178.1	181.1	175.9	187.2	207.8	217.0	195.2	198.4	197.0	196.2	214.3	264.8	294.1	378.2
Equatorial Guinea	0.3	0.3	0.0	0.0	0.0	0.2	0.9	0.5	0.2	0.0	0.7	0.0	0.3	0.1	0.1

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	1.3	1.3	3.2	0.0	2.1	1.3	0.5	1.1	3.1	0.6	0.8	0.3	0.0	0.1
Ethiopia	20.3	17.9	20.0	19.3	24.6	33.1	36.5	24.2	29.0	30.7	37.7	27.2	37.7	34.0	43.3
Gabon	7.1	13.6	15.3	6.1	13.3	14.6	12.6	12.0	12.5	11.2	9.4	11.3	12.3	10.4	10.3
Gambia	11.2	11.0	7.1	9.4	9.7	8.3	7.6	9.5	9.0	13.0	8.9	10.3	12.4	10.3	4.0
Ghana	11.6	10.6	20.4	20.2	19.3	21.1	18.0	20.2	25.4	23.8	29.9	31.1	23.8	29.3	16.5
Guinea	1.0	1.5	1.4	1.0	1.1	0.5	0.2	1.1	2.4	3.3	1.5	1.4	1.5	1.3	2.5
Guinea-Bissau	2.2	1.6	2.6	2.0	4.1	3.1	2.2	4.2	4.3	3.3	3.4	2.8	2.7	1.6	1.8
Kenya	94.7	92.6	70.6	78.8	90.8	97.7	95.7	88.1	90.0	106.1	102.6	117.4	119.9	102.5	108.7
Lesotho	0.0	0.0	1.0	2.5	1.2	1.0	0.3	0.0	0.0	0.0	0.0	0.2	0.9	0.9	2.2
Liberia	0.3	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.5	0.9	0.0	0.5	0.0	0.0	0.7
Libya	2.5	6.6	4.7	0.8	7.6	4.7	3.8	0.9	4.6	5.6	3.9	3.4	4.5	6.8	3.4
Madagascar	6.9	8.3	13.4	17.5	16.9	13.1	17.3	18.1	21.2	21.8	24.2	17.7	18.7	23.2	17.3
Malawi	7.5	7.1	7.8	10.5	12.9	14.7	14.0	9.8	12.2	15.4	14.4	16.6	12.6	14.4	14.2
Mali	3.1	3.5	3.3	5.5	5.9	6.2	5.5	11.2	12.5	12.7	7.1	10.3	10.4	10.8	11.5
Mauritania	0.6	1.4	0.9	2.2	0.9	0.5	1.2	1.2	1.0	1.3	0.3	0.5	0.5	1.1	1.1
Mauritius	0.5	4.0	3.3	4.3	4.9	6.7	4.6	10.8	4.4	7.9	5.0	3.4	4.0	5.2	1.6
Morocco	41.0	56.6	65.8	50.6	58.4	62.4	43.7	54.4	49.0	42.1	41.1	40.3	38.8	38.7	45.4
Mozambique	0.5	2.5	2.6	2.4	3.7	3.1	2.9	3.3	11.0	4.2	5.5	6.3	9.2	8.9	14.7
Namibia	7.0	10.7	5.8	9.1	11.7	9.0	12.5	7.8	14.5	10.0	5.6	7.8	6.9	3.7	6.7
Niger	7.4	7.5	7.4	4.3	3.2	4.3	1.3	2.0	3.2	5.1	8.1	3.9	5.6	5.0	6.1
Nigeria	91.7	89.0	94.5	110.3	85.1	86.4	95.3	79.9	70.9	76.9	89.6	84.5	81.9	99.0	89.0
Rwanda	2.0	3.4	1.0	0.4	1.1	0.8	0.6	1.6	2.7	1.5	3.9	2.4	3.0	3.7	6.9
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.2	0.0	0.0	0.0
Senegal	23.5	24.2	31.1	27.2	20.8	16.8	23.4	28.2	34.4	21.1	25.9	19.2	13.3	18.9	24.0
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	1.0	0.7	0.3	1.3	2.5	0.3	3.8	1.0	0.5	1.6	2.3	1.1	1.9	1.2	2.6
Sierra Leone	1.6	0.0	0.0	0.3	2.3	1.3	0.1	0.0	0.3	0.0	0.0	0.6	0.5	1.3	0.9
Somalia	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.5
South Africa	672.5	692.2	675.9	722.7	733.9	712.9	666.4	698.0	751.8	761.1	762.7	830.8	798.6	824.5	829.9
Sudan	8.1	14.2	15.7	12.7	11.0	11.4	11.2	13.4	11.4	13.5	14.8	13.4	15.1	22.5	16.4
Swaziland	3.0	3.6	1.0	1.0	0.5	1.0	2.0	0.0	0.5	1.0	0.9	2.2	2.8	3.4	5.3
Tanzania	22.0	20.6	23.3	28.2	22.2	28.9	24.5	29.3	31.6	36.8	40.3	42.3	43.7	38.6	32.2
Togo	2.9	2.5	4.0	1.4	0.5	1.1	3.4	0.7	3.1	4.3	2.4	0.9	2.6	2.3	4.5
Tunisia	35.9	31.7	36.1	41.1	63.1	66.3	67.8	82.8	114.0	150.0	195.5	214.0	246.5	242.2	279.1
Uganda	18.9	20.8	24.8	28.2	31.0	24.3	33.9	62.0	33.8	40.8	95.7	53.6	57.9	60.3	54.2
Zambia	7.7	7.4	4.7	5.9	8.9	7.9	8.1	8.0	9.1	13.5	12.2	13.8	9.6	13.7	19.4
Zimbabwe	37.2	36.9	36.8	31.6	32.4	37.4	31.4	17.4	20.3	18.9	31.7	21.5	22.5	18.9	20.4
Asia															
Afghanistan	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.6	0.3	0.3	1.1	0.5	0.2	2.1
Armenia	22.0	18.2	17.7	15.1	11.7	19.4	13.6	13.4	13.9	18.5	10.6	12.4	6.0	7.7	13.0
Azerbaijan	8.5	10.3	7.7	6.0	1.1	3.3	3.7	7.2	11.5	3.6	3.6	0.3	2.3	1.8	4.7
Bangladesh	27.4	27.5	30.7	27.7	28.2	27.4	39.4	40.1	35.1	40.4	42.3	42.3	47.7	49.3	46.1

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.5	0.5	0.0	0.0	0.0	1.0	1.3	0.3	4.6	1.4	1.3	2.8	2.1	3.4
Brunei	4.2	3.5	4.3	6.5	3.3	1.6	1.3	2.5	1.8	2.7	6.7	3.7	2.3	2.8	3.5
Burma	0.1	2.7	1.2	2.5	2.1	1.5	3.2	1.3	3.2	5.2	3.6	2.2	5.0	2.6	3.3
Cambodia	0.7	1.3	2.0	1.0	1.3	1.6	6.4	4.7	8.7	8.6	6.4	6.2	9.4	11.8	9.0
China	1,219.9	1,906.2	2,018.4	2,222.7	2,597.8	2,819.5	3,684.9	4,485.6	5,538.8	6,832.8	7,945.2	9,009.9	10,518.4	11,885.6	13,329.6
Georgia	17.5	11.1	4.6	13.0	7.1	9.1	6.3	11.3	15.2	13.6	7.4	13.4	6.8	21.3	15.6
India	1,863.1	1,963.6	2,033.3	1,976.4	2,118.9	2,252.2	2,517.1	2,633.9	2,822.9	3,037.4	3,206.6	3,246.1	3,361.3	3,500.8	3,813.9
Indonesia	37.3	51.1	48.9	58.9	48.9	55.6	46.7	55.7	56.7	60.2	57.6	60.1	67.8	54.5	61.5
Japan	12,048.2	12,725.8	12,560.5	13,089.7	12,485.9	12,398.7	12,327.9	12,322.5	11,984.3	11,519.6	11,344.8	11,159.6	10,376.3	10,015.9	9,738.4
Kazakhstan	12.8	14.4	9.5	6.9	6.8	7.7	10.5	9.0	5.7	3.4	7.4	4.2	5.9	6.0	7.8
Kyrgyzstan	2.0	2.0	0.5	1.0	0.4	0.2	0.5	1.1	0.4	1.5	1.0	1.3	1.2	0.7	1.4
Laos	0.5	4.0	0.0	1.1	1.7	0.3	1.3	3.3	4.5	3.8	3.1	1.5	5.8	6.4	4.6
Malaysia	74.6	76.3	90.3	91.9	87.0	93.9	93.0	114.9	129.4	118.2	125.0	139.2	183.5	234.2	264.2
Maldives	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	1.0	0.0	0.0	0.0	1.3	0.0	0.2
Mongolia	7.3	2.7	3.6	1.1	4.5	2.1	5.9	3.6	5.1	6.7	7.5	9.7	17.2	17.1	7.5
Nepal	10.5	5.9	11.8	9.6	13.1	10.3	15.7	17.4	16.6	24.1	18.8	13.8	15.5	11.3	14.3
North Korea	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.3	0.0	2.8	1.2	3.0	0.5	0.7
Pakistan	72.9	72.9	83.7	56.0	63.6	66.7	77.5	90.3	92.0	108.5	111.5	164.4	191.5	191.5	213.7
Philippines	56.2	48.4	54.5	51.4	36.8	44.0	51.3	44.1	56.6	41.7	41.3	53.2	55.1	57.1	58.2
Singapore	197.4	216.9	255.8	291.6	275.4	340.3	386.3	475.5	530.4	547.8	544.3	555.4	633.2	682.9	646.4
South Korea	721.3	1,085.3	1,254.7	1,548.1	1,643.9	1,871.1	2,232.1	2,618.4	2,822.7	2,973.8	3,158.0	3,246.4	3,416.5	3,767.6	4,105.2
Sri Lanka	19.8	20.6	30.0	23.1	23.4	33.3	42.2	35.0	37.0	32.2	25.5	27.4	27.8	36.1	25.9
Taiwan	918.9	973.8	896.7	1,010.8	1,128.9	1,131.2	1,198.0	1,487.7	1,559.3	1,694.3	1,669.8	1,925.4	1,832.3	2,002.1	2,013.0
Tajikistan	10.3	6.0	12.5	4.5	2.1	1.8	0.5	0.8	0.0	1.0	0.2	1.5	0.2	1.0	0.6
Thailand	116.6	165.8	166.1	193.0	197.4	234.3	287.8	332.9	344.5	393.9	466.8	499.5	489.8	526.1	557.7
Turkmenistan	1.8	1.2	0.5	1.7	1.3	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Uzbekistan	12.3	19.6	17.7	10.5	8.0	5.1	8.3	5.5	7.7	10.4	8.1	8.2	4.7	4.3	7.0
Vietnam	21.1	21.9	26.8	23.0	35.4	26.4	32.8	36.6	40.6	52.4	45.0	42.5	50.5	53.0	63.4
Australia/Oceania															
Australia	3,663.2	3,804.5	3,831.0	3,768.1	3,861.0	3,800.7	3,798.9	3,915.2	3,945.4	4,130.5	4,118.2	4,195.2	4,189.2	4,324.4	4,405.9
Fiji	1.5	1.5	1.5	0.8	3.3	6.7	2.4	2.5	4.8	6.5	4.7	5.0	4.4	5.3	3.6
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	2.6	0.0	0.0	0.0	0.0	0.5	0.0	0.8	0.0	0.3	0.0	0.0	0.0	0.3	0.3
Micronesia	0.0	0.0	0.7	1.3	0.5	0.0	0.8	0.0	0.9	0.0	0.0	0.0	1.2	1.3	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	710.1	767.0	767.3	816.5	778.8	765.9	772.8	760.1	820.2	845.7	827.8	801.9	829.3	936.1	899.9
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.9	0.5	0.4	1.5	0.0	0.0	0.0	0.3
Papua New Guinea	8.1	7.7	9.5	8.8	15.8	10.4	13.1	7.4	7.9	7.0	7.9	9.7	9.3	6.7	10.0
Samoa	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.2	1.0	1.8	0.8	0.0	0.3	1.0	0.2	0.4	0.8	0.1	0.0	0.0	0.7	0.3

Appendix table 5-29

S&E articles in biological sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Tuvalu	0.0	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	1.2	0.5	0.0	1.0	0.1	1.4	0.7	0.5	0.8	1.0	1.0	0.7	1.9

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	72,073.0	73,538.0	74,803.0	75,679.0	76,563.0	78,072.0	81,413.0	87,695.0	89,757.0	93,709.0	95,693.0	98,587.0	102,857.0	107,538.0	115,188.0
North America															
Canada	1,906.7	1,914.8	1,792.8	1,828.8	1,789.2	1,754.3	1,911.7	2,042.6	2,178.4	2,342.8	2,277.6	2,310.4	2,444.3	2,432.4	2,600.5
Mexico	256.9	270.5	294.4	280.3	333.0	324.4	349.3	451.7	488.8	391.5	485.3	455.7	491.3	507.1	499.0
United States	14,537.0	14,424.2	14,236.3	14,378.5	14,308.2	14,469.3	15,298.2	15,949.9	16,204.4	16,594.8	15,780.7	16,155.6	16,430.8	17,447.6	17,461.3
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.1
Barbados	1.6	4.9	1.3	3.0	2.5	0.5	4.3	2.8	2.5	2.5	1.3	2.0	0.0	0.9	1.8
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	8.8	7.6	7.7	12.8	10.0	7.8	1.5	4.3	3.3	1.4	4.1	5.5	1.6	2.6	4.3
Cuba	30.1	43.3	54.3	51.0	45.8	33.8	35.0	39.4	51.0	46.6	41.8	38.1	28.2	32.3	28.6
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.6
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	12.5	6.3	6.7	7.0	10.2	13.0	8.8	7.5	9.2	4.4	7.6	3.3	10.0	6.3	6.6
Nicaragua	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.8
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.6	0.8	1.4	0.7	0.9	0.9	0.0	0.5
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	1.0	3.2	4.2	3.4	4.6	3.8	1.2	3.4	5.0	0.0	2.3	2.3	2.3	2.7	5.2
West Indies Associated States	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
South America															
Argentina	319.4	343.2	372.8	361.7	383.8	397.6	393.2	364.8	436.1	406.4	392.6	490.1	474.3	497.8	491.8
Bolivia	0.5	0.5	0.3	1.0	1.2	0.6	0.7	1.6	0.3	0.5	1.4	3.1	0.8	1.0	2.1
Brazil	541.9	581.3	692.7	860.2	983.9	1,102.3	1,082.7	1,257.8	1,415.6	1,483.0	1,398.2	1,560.8	1,549.9	1,497.5	1,622.6
Chile	161.7	155.9	157.6	184.6	187.6	192.4	224.9	192.2	208.6	191.3	187.7	191.8	213.9	215.6	235.8
Colombia	17.7	26.6	22.6	26.6	27.5	36.9	25.5	41.5	46.9	47.7	48.2	86.0	85.4	103.0	98.1
Ecuador	0.5	0.2	0.8	1.0	0.0	2.3	4.0	0.6	0.8	1.6	2.3	2.0	1.6	2.6	1.0
Guyana	0.0	0.0	0.0	0.0	1.5	2.5	1.0	1.0	6.0	1.0	2.0	1.0	2.0	3.0	1.0
Paraguay	0.0	0.0	0.5	0.7	0.5	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.5	3.0	0.4
Peru	1.0	2.7	2.0	0.8	2.9	2.7	7.2	1.3	7.7	1.7	1.7	3.5	4.3	2.9	4.5
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	15.1	20.3	20.0	15.3	13.8	9.7	13.7	18.8	16.2	17.3	27.6	27.0	27.9	27.1	45.5
Venezuela	101.9	90.2	91.7	98.4	90.0	104.5	110.8	100.5	104.8	80.1	82.5	94.0	77.7	75.9	68.7

Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	439.5	419.8	422.3	413.7	461.3	397.4	431.5	493.0	455.0	442.0	473.3	480.2	518.4	524.3	540.0
Belgium	753.2	639.1	666.4	656.2	648.6	699.0	697.7	766.7	790.0	701.6	753.0	731.5	766.7	802.7	867.7
Bulgaria	265.7	237.8	224.8	237.1	189.5	211.9	200.7	217.5	185.5	239.3	213.4	183.2	174.9	168.1	162.6
Cyprus	0.7	3.3	3.8	4.9	8.6	13.0	5.3	15.2	15.9	20.0	25.3	19.2	37.8	27.1	40.3
Czech Republic	636.9	644.7	598.7	631.5	585.1	642.9	612.4	680.9	675.5	825.4	769.4	792.7	842.0	910.1	1,040.1
Denmark	345.9	369.5	355.8	355.6	384.6	334.8	366.1	366.2	405.8	355.1	355.1	356.8	417.3	429.0	495.0
Estonia	37.9	42.0	34.8	33.9	32.0	35.4	39.1	48.9	44.5	56.6	44.2	49.0	54.6	58.9	53.8
Finland	339.2	327.4	378.1	379.0	382.8	400.4	378.3	420.0	388.8	400.8	401.6	385.9	410.8	431.0	423.8
France	4,252.8	4,589.1	4,395.5	4,012.8	3,964.9	3,907.6	3,967.2	3,967.9	3,981.8	4,068.4	4,095.2	4,289.5	4,254.9	4,398.8	4,441.5
Germany	6,333.7	6,480.1	6,280.0	5,921.1	5,549.7	5,325.6	5,412.1	5,724.9	5,743.1	5,723.5	5,729.0	5,984.8	6,158.9	6,482.6	6,693.2
Greece	323.3	322.9	327.3	338.6	414.8	435.0	430.4	464.3	480.7	570.4	533.9	505.1	519.9	491.5	491.1
Hungary	610.0	593.2	618.0	585.6	573.9	526.2	494.9	500.3	521.5	519.0	469.6	475.9	432.1	399.4	417.8
Ireland	133.6	148.6	135.9	120.9	142.7	151.1	178.9	180.6	199.3	206.8	243.6	275.5	277.9	385.1	381.1
Italy	2,286.7	2,419.7	2,498.3	2,459.2	2,665.9	2,647.3	2,747.5	2,784.1	2,907.8	2,772.9	2,933.9	2,863.1	2,957.4	2,947.5	3,094.6
Latvia	56.4	51.8	58.2	50.1	38.6	50.6	45.6	45.5	33.1	25.4	43.3	30.7	37.9	29.7	37.1
Lithuania	44.9	77.2	49.7	73.1	48.6	68.9	47.5	66.4	56.0	81.5	68.6	64.8	64.6	57.0	62.9
Luxembourg	1.8	2.3	1.0	0.0	0.5	2.2	1.8	1.8	3.0	4.1	6.0	9.8	10.6	12.3	24.0
Malta	1.8	2.0	0.0	0.0	2.0	2.8	1.0	0.5	1.8	0.3	1.5	0.0	0.0	0.0	0.0
Netherlands	1,163.4	1,107.2	1,101.1	1,017.4	1,095.5	1,016.5	1,034.3	1,114.6	1,172.3	1,073.1	990.8	955.4	1,111.3	1,115.6	1,112.0
Poland	1,251.4	1,430.6	1,464.6	1,510.3	1,474.5	1,610.6	1,673.5	1,751.4	1,787.8	1,702.7	1,815.1	1,830.2	1,774.0	1,629.2	1,712.5
Portugal	258.5	266.5	308.2	338.2	431.9	417.7	416.1	509.2	572.1	627.3	654.2	728.8	754.5	870.3	847.6
Romania	346.0	332.0	347.5	329.3	335.4	349.4	303.5	294.0	313.1	324.4	361.2	403.4	415.8	437.6	483.4
Slovakia	283.1	415.1	233.9	235.5	204.6	189.8	179.5	207.3	203.0	204.3	200.2	193.9	192.7	190.8	303.3
Slovenia	142.7	118.3	116.7	133.8	140.6	152.1	151.9	143.8	180.3	146.5	195.2	195.1	199.7	175.3	181.7
Spain	2,457.0	2,487.9	2,695.2	2,750.2	2,880.6	3,023.5	2,871.6	3,150.2	3,292.7	3,366.1	3,647.1	3,320.2	3,468.5	3,625.6	3,766.3
Sweden	802.2	847.1	764.1	790.7	855.2	817.9	851.3	935.8	863.5	920.4	842.2	758.9	778.9	835.0	815.1
United Kingdom	4,426.2	4,294.8	4,188.6	4,255.3	4,020.9	3,976.4	3,899.6	3,962.4	3,741.2	3,942.3	3,729.5	3,695.3	3,786.2	4,110.4	4,104.0
Other Europe															
Albania	2.3	1.3	1.7	1.7	2.2	5.3	1.0	0.8	1.2	0.7	0.0	0.0	0.0	0.5	0.5
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	151.1	137.3	153.0	150.3	143.5	140.8	139.0	149.8	119.2	145.5	106.4	106.0	100.0	107.3	82.2
Bosnia and Herzegovina	1.5	1.0	0.0	2.0	0.3	0.5	1.6	0.8	1.8	1.2	2.9	0.0	1.0	0.5	1.9
Croatia	148.0	138.5	165.3	147.6	135.6	140.5	146.5	158.5	184.5	164.0	178.7	178.0	185.5	171.3	176.1
Iceland	6.4	7.8	4.8	7.5	5.8	8.2	6.5	6.7	1.3	4.4	9.0	8.2	8.1	12.1	10.4
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	5.3	2.5	7.0	1.0	3.5	2.0	2.3	2.0	1.5	3.2	1.8	3.2	4.3	0.3	2.2
Macedonia	24.6	14.5	28.9	27.5	34.0	19.1	24.7	16.6	17.4	13.0	19.4	13.7	14.1	11.3	13.3
Moldova	24.3	22.3	24.1	40.5	27.6	22.9	21.6	26.2	26.7	33.8	21.9	21.8	28.8	15.7	24.8
Monaco	1.3	1.5	4.8	1.7	8.1	2.5	0.8	3.0	5.1	0.2	0.5	0.0	2.0	3.8	0.9
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	1.6	0.0	0.8	1.3	1.7

Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	224.2	261.0	245.8	222.8	206.2	163.6	167.6	219.0	249.9	282.4	256.7	238.9	233.0	244.2	266.9
Russia	4,277.0	4,055.1	3,929.6	4,328.5	4,246.2	4,190.0	4,161.9	4,255.6	4,049.5	3,919.6	4,330.6	4,300.6	4,201.9	4,013.2	4,227.7
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	67.6	209.7	145.0	194.1	176.5	222.1
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	144.8	73.2	NA	NA	NA	NA	NA
Switzerland	1,029.0	982.7	1,110.1	1,059.4	1,021.2	960.7	1,050.6	1,154.7	1,118.5	1,103.9	1,029.7	1,081.6	1,109.1	1,233.0	1,208.6
Ukraine	519.3	511.1	510.4	479.3	432.3	492.9	433.1	495.1	498.0	465.0	473.9	498.4	440.0	466.4	438.1
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	122.8	114.1	116.1	105.5	96.2	81.9	120.2	155.3	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	2.5	4.5	3.0	3.0	0.5	4.1	5.5	2.0	0.3	2.0	1.0	1.5	2.0	1.3	2.3
Iran	122.8	213.2	288.5	329.1	427.8	518.2	712.8	837.3	993.4	1,120.4	1,320.8	1,475.9	1,649.6	1,787.2	2,107.8
Iraq	6.3	6.0	4.8	5.5	9.5	8.5	4.5	8.1	11.1	8.0	13.2	11.9	10.7	13.9	13.9
Israel	425.5	430.5	421.7	459.9	501.4	494.4	490.5	486.5	508.7	520.7	498.3	551.1	520.4	540.9	555.9
Jordan	34.7	22.2	38.7	20.4	22.4	34.2	30.7	32.8	38.0	58.0	58.6	68.3	61.7	55.2	49.2
Kuwait	33.2	31.0	31.3	22.9	26.4	28.5	18.5	26.5	34.3	42.8	41.7	32.9	24.7	25.8	19.8
Lebanon	2.5	1.8	4.8	9.5	7.9	8.7	7.7	10.2	13.4	16.0	10.2	21.3	18.7	14.1	22.7
Oman	2.9	5.1	3.7	6.5	4.6	8.6	9.5	9.5	7.7	15.0	7.1	15.1	9.3	11.2	10.5
Qatar	8.3	6.3	4.3	4.0	1.7	3.2	3.0	13.5	9.5	4.2	5.8	7.6	7.0	14.7	10.9
Saudi Arabia	66.9	62.7	63.0	74.6	72.2	90.4	90.3	93.1	94.0	80.8	103.2	85.1	112.4	180.1	291.3
Syria	8.4	5.6	6.5	5.9	4.8	9.1	11.8	12.8	10.8	9.5	6.8	8.7	6.2	11.4	17.1
Turkey	371.5	390.4	461.7	496.2	581.1	651.6	684.8	860.2	892.8	964.6	1,095.5	1,014.7	1,029.9	1,115.2	1,192.7
United Arab Emirates	9.5	6.0	7.8	10.8	9.6	15.8	10.7	11.4	20.1	17.5	27.4	14.7	22.7	33.4	30.7
Yemen	4.5	0.0	1.3	1.9	3.5	0.3	2.3	7.7	0.3	3.5	4.5	2.0	4.5	2.8	7.6
Africa															
Algeria	42.0	28.6	43.5	47.0	32.1	47.6	48.0	66.1	52.2	79.6	84.1	90.8	93.6	108.2	96.1
Angola	0.0	0.0	0.0	0.5	0.3	0.8	0.0	0.3	0.0	0.0	0.5	0.0	0.3	0.9	0.6
Benin	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.2	0.3	0.0	1.3	0.0	0.0	0.5	0.6
Botswana	7.5	4.0	5.3	11.0	9.3	8.4	11.0	18.2	8.0	11.2	7.8	10.2	6.2	3.8	6.0
Burkina Faso	0.0	0.5	0.8	0.5	0.0	1.5	0.0	4.6	0.0	0.5	2.8	0.3	2.2	1.2	2.3
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.5	1.0	1.5	0.3
Cameroon	3.8	4.7	4.0	2.8	3.2	4.0	4.7	3.7	5.8	7.3	6.8	11.8	10.5	8.7	12.3
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	1.0	0.5	0.0	0.8	0.0	0.7	0.3
Congo (Kinshasa)	0.8	0.5	0.5	0.5	0.0	1.0	1.5	0.0	0.5	0.0	0.0	0.0	0.5	1.0	1.8
Côte d'Ivoire	0.0	4.0	4.5	3.2	2.8	3.7	2.8	5.2	5.2	4.7	2.4	4.7	4.8	3.5	5.4
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0
Egypt	418.6	418.7	387.8	474.0	426.1	513.5	542.0	518.2	507.9	559.1	622.5	598.0	579.2	607.4	576.4
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
Ethiopia	6.2	6.8	1.8	3.5	4.5	1.2	2.3	3.2	1.7	4.7	3.8	2.0	2.7	4.5	9.1
Gabon	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.5	0.0	0.4	0.0	0.0	0.5	0.0	1.0
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Ghana	1.0	4.3	1.9	4.3	4.5	1.5	4.6	2.2	2.3	5.2	2.2	4.2	2.7	4.3	9.3
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.0	3.3	3.0	4.0	6.0	2.3	3.7	6.6	3.2	1.8	1.1	2.0	3.7	4.1	5.9
Lesotho	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.3	0.8
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	2.3	2.0	3.0	0.5	2.6	4.0	2.6	4.3	5.6	5.2	7.7	9.2	2.7	9.2	1.7
Madagascar	1.1	0.0	0.7	1.1	1.1	0.7	0.5	1.8	3.8	2.6	1.0	1.0	1.1	1.9	0.8
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.2	0.3	0.0
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.3	0.3	0.0	0.3
Mauritania	0.0	0.0	0.0	0.0	0.3	0.8	0.6	1.5	1.0	0.8	0.0	0.8	1.0	0.3	0.0
Mauritius	0.5	0.0	3.5	3.0	3.5	3.0	3.0	3.0	2.8	4.0	5.7	1.2	3.8	2.9	2.0
Morocco	80.2	118.9	104.7	121.3	107.1	116.4	91.4	83.0	66.5	61.6	75.2	64.6	60.9	66.8	67.2
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.3	0.5	0.7	0.3
Namibia	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.7
Niger	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.5	0.5	0.3	2.0	0.0	0.0	0.0	0.8
Nigeria	26.9	19.2	17.8	22.3	11.7	16.7	22.4	23.4	30.0	19.5	28.5	23.8	26.9	31.2	26.6
Rwanda	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	1.7	2.7	3.0	3.2	1.3	1.6	6.9	4.1	5.0	1.3	6.3	3.0	3.6	1.9	3.6
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	222.4	204.2	209.1	194.4	212.8	227.3	235.2	254.3	222.9	257.7	256.0	253.3	255.7	319.8	354.5
Sudan	1.3	2.0	1.2	2.0	0.0	1.8	1.3	1.0	0.8	1.5	0.3	1.0	4.9	5.0	9.0
Swaziland	0.0	1.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.8
Tanzania	1.0	0.0	1.7	0.8	0.0	0.0	1.3	1.0	3.0	1.0	1.3	0.0	2.2	0.8	2.7
Togo	0.0	0.0	0.2	0.0	0.0	0.3	0.0	1.2	0.0	0.0	1.0	0.3	0.0	0.3	0.3
Tunisia	54.7	58.4	65.4	65.3	51.4	69.1	81.9	86.8	85.7	102.4	101.9	89.8	94.8	123.6	123.0
Uganda	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.8	0.0	0.7	1.0	0.8	0.5	0.2
Zambia	0.0	1.0	0.0	0.5	0.3	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0
Zimbabwe	2.8	3.1	2.8	1.7	3.3	0.5	1.5	0.0	0.0	2.7	1.5	0.0	0.0	1.0	0.0
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Armenia	35.2	28.3	31.2	41.0	26.7	23.7	35.5	41.1	52.2	44.3	46.9	47.2	35.0	45.8	35.4
Azerbaijan	34.0	28.8	16.9	29.8	24.8	27.2	34.4	45.0	51.7	49.2	37.8	39.9	66.9	63.9	50.3
Bangladesh	20.2	15.9	26.2	14.1	30.7	22.8	27.7	29.3	28.9	32.0	29.8	27.1	33.5	25.2	35.6

Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.3	4.1	2.5	1.0	1.6	0.9	1.3	3.0	1.0	1.3	0.0	0.3	0.3	1.3	3.7
Burma	1.0	0.5	1.0	0.5	0.0	0.0	0.9	0.8	2.4	0.3	0.8	0.3	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.3	1.4	0.2
China	2,749.6	3,102.5	4,111.0	4,771.1	5,571.2	6,250.5	7,395.1	9,319.4	10,494.3	12,510.1	13,924.5	15,722.1	17,762.7	19,078.2	22,342.6
Georgia	23.8	19.8	28.3	30.4	22.1	21.9	13.5	19.4	21.2	37.1	25.7	19.7	17.3	13.5	9.6
India	2,549.3	2,625.4	2,661.8	2,514.8	2,729.8	3,113.0	3,298.3	3,759.7	3,910.5	4,593.4	4,804.9	4,704.6	4,946.0	5,444.8	6,178.1
Indonesia	14.2	7.9	13.6	12.4	18.3	11.1	15.7	16.6	23.7	15.6	19.9	19.2	23.5	22.7	26.1
Japan	8,148.1	8,511.6	8,599.8	8,768.0	8,448.3	8,392.7	8,579.6	8,800.2	8,675.3	8,345.3	8,494.4	8,249.0	8,253.7	7,646.9	8,139.1
Kazakhstan	43.7	50.3	40.5	48.3	41.0	50.6	51.7	40.4	47.6	40.2	36.3	30.3	39.2	35.1	19.5
Kyrgyzstan	2.5	1.8	2.5	2.5	1.3	2.0	1.0	0.5	3.6	2.0	1.3	1.3	3.0	1.5	1.6
Laos	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.3	0.3	0.3
Malaysia	108.5	117.8	145.7	128.3	149.8	106.9	88.1	110.3	92.7	109.6	128.1	139.8	190.1	257.8	301.9
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	1.3	0.3	1.3	1.5	3.5	2.7	0.7	2.0	2.3	0.5	1.0	2.2	2.6	2.0	1.3
Nepal	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.7	2.9	1.5	1.3	0.5	2.2	2.4	3.5
North Korea	0.0	0.0	0.8	0.0	0.0	0.0	1.0	0.0	0.0	1.3	0.0	1.3	0.8	2.7	0.0
Pakistan	38.2	40.2	53.1	50.9	49.5	78.8	75.8	92.5	111.7	119.5	124.4	135.7	171.6	224.6	223.8
Philippines	1.0	3.9	4.5	4.3	2.0	5.4	7.6	3.1	7.4	5.6	5.5	11.5	8.2	14.8	16.7
Singapore	158.9	224.2	272.6	273.6	296.2	333.2	391.3	505.2	474.2	521.2	512.8	623.2	742.7	821.3	1,004.3
South Korea	1,314.1	1,456.9	1,666.8	1,752.1	1,943.6	2,135.8	2,280.9	2,474.6	2,394.6	2,641.4	2,799.1	3,247.7	3,327.9	3,816.8	4,098.2
Sri Lanka	3.9	8.8	5.5	9.3	8.9	6.8	6.8	10.5	14.7	12.3	7.7	6.0	7.6	7.5	8.9
Taiwan	892.2	896.7	1,109.7	1,029.6	1,162.3	1,164.6	1,253.3	1,423.0	1,469.7	1,719.7	1,588.2	1,718.9	1,813.3	1,864.1	2,122.9
Tajikistan	10.0	6.8	7.0	4.0	5.8	6.3	5.0	5.0	3.9	6.5	6.5	5.5	4.5	4.3	5.8
Thailand	33.7	42.6	49.3	84.3	103.9	129.0	160.0	170.6	202.4	249.3	252.2	287.9	304.5	305.7	352.4
Turkmenistan	3.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	141.8	120.2	119.9	97.8	85.1	71.4	61.8	79.1	57.5	44.5	43.2	32.1	29.2	31.6	55.4
Vietnam	6.6	7.4	7.7	7.6	13.8	6.7	10.9	11.7	15.4	13.1	12.5	16.0	24.2	41.0	62.1
Australia/Oceania															
Australia	1,112.3	1,103.6	1,093.6	1,069.0	1,014.2	945.0	1,107.8	1,121.3	1,141.8	1,209.2	1,184.8	1,230.4	1,409.3	1,560.6	1,739.6
Fiji	0.0	1.0	0.7	0.3	0.0	0.3	2.0	2.0	6.0	1.0	2.1	3.0	5.9	2.6	2.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	201.6	218.3	189.2	186.8	155.3	159.9	160.1	148.8	173.1	163.4	190.8	166.6	190.6	207.9	240.3
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	1.8	0.6	1.0	0.5	0.2	0.0	0.2	0.4	0.5	0.0	1.6	0.5	0.4
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0

Appendix table 5-30

S&E articles in chemistry, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	4,399.0	4,801.0	5,039.0	5,422.0	5,625.0	5,527.0	6,139.0	6,220.0	6,521.0	7,307.0	7,573.0	8,088.0	7,821.0	8,638.0	9,266.0
North America															
Canada	196.7	192.2	177.8	228.4	214.9	228.4	277.0	265.1	295.2	341.2	351.0	358.9	398.0	368.2	371.5
Mexico	6.2	7.5	5.3	14.3	12.7	12.0	21.3	17.8	10.9	16.2	24.3	16.0	28.5	25.4	25.4
United States	1,924.2	1,948.9	2,039.7	2,070.7	2,027.8	2,012.2	2,173.1	2,248.8	2,332.1	2,533.8	2,398.1	2,282.9	2,188.3	2,171.7	2,253.6
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cuba	0.0	0.0	0.5	0.8	1.3	0.0	2.0	0.0	1.5	2.5	2.8	1.3	2.7	4.9	1.8
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
West Indies Associated States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South America															
Argentina	5.2	1.2	2.8	1.3	7.8	11.2	3.8	4.1	11.0	8.2	6.5	10.7	11.0	8.8	13.0
Bolivia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brazil	14.7	12.2	19.2	27.8	30.5	34.4	42.7	36.8	45.6	53.5	64.7	51.6	65.4	81.0	84.4
Chile	8.3	7.5	3.2	7.0	12.2	6.3	12.1	11.6	11.3	5.7	13.1	18.9	15.1	10.6	22.2
Colombia	0.0	0.5	2.0	0.8	0.0	1.2	2.8	0.5	0.0	1.5	2.0	6.1	1.9	3.5	10.2
Ecuador	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.0	0.0	0.0	0.0
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.5	0.0
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	1.0	1.3	1.0	2.0	2.0	0.8	1.2	1.3	2.5	3.3	2.8	1.3	2.0	0.5
Venezuela	3.0	2.8	2.0	2.2	4.2	3.0	3.2	1.8	1.1	0.3	3.2	3.5	0.6	2.4	1.3

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	27.9	31.1	27.2	26.0	41.9	38.0	54.7	41.9	32.9	46.9	54.1	53.0	57.3	62.9	67.9
Belgium	52.6	43.6	46.6	32.8	48.1	50.2	70.6	52.0	61.2	71.6	84.1	81.4	77.5	81.8	84.3
Bulgaria	1.8	7.0	4.7	3.8	5.1	3.3	6.3	5.8	4.5	1.0	1.6	8.0	1.0	10.0	4.5
Cyprus	1.3	1.5	0.5	1.0	2.5	2.9	1.5	1.7	3.0	6.5	5.9	4.3	5.6	6.6	8.9
Czech Republic	10.5	10.9	14.5	20.8	23.1	21.1	30.6	29.7	33.1	33.2	39.5	43.8	50.2	53.2	65.4
Denmark	22.4	23.5	32.2	23.9	34.5	25.6	34.0	31.2	29.1	37.9	39.7	39.2	26.1	33.1	38.3
Estonia	1.0	0.0	0.0	0.0	1.8	2.0	2.5	0.5	0.3	3.2	2.0	3.2	3.0	2.0	3.8
Finland	25.1	31.6	31.7	38.5	42.2	42.9	42.0	36.2	48.5	58.9	60.1	54.6	52.4	56.9	49.6
France	183.1	204.4	209.6	241.3	250.4	275.3	322.2	282.5	289.7	346.4	301.3	383.5	357.4	386.0	443.3
Germany	208.1	234.8	239.6	259.3	269.4	249.9	286.6	256.7	283.3	304.6	296.3	292.6	298.2	320.9	383.0
Greece	28.5	29.7	46.9	48.0	49.2	72.8	73.1	74.7	73.0	95.8	102.4	113.5	105.3	127.1	115.2
Hungary	17.1	32.4	33.6	22.9	26.5	32.8	30.0	16.1	28.4	21.6	26.2	32.5	19.1	28.2	33.9
Ireland	3.2	12.0	10.3	9.2	11.8	13.8	13.7	28.3	40.4	43.2	47.8	34.5	27.7	36.1	25.8
Italy	149.9	184.6	226.6	223.4	235.8	220.5	249.0	233.5	235.2	262.8	285.8	314.0	299.4	301.3	296.1
Latvia	0.5	0.2	2.3	3.3	3.3	0.3	0.7	0.0	1.0	2.2	1.0	3.7	5.3	5.5	3.0
Lithuania	1.5	0.5	0.0	3.0	1.0	1.5	2.2	2.5	2.5	4.7	1.7	5.0	3.5	3.9	3.5
Luxembourg	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.7	1.3	0.3	2.1	2.0	2.8	3.2
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.6	1.0	0.0	0.5
Netherlands	78.5	68.9	76.5	91.7	98.4	87.1	120.3	94.4	114.3	130.1	119.2	127.0	130.1	126.2	151.3
Poland	17.0	32.2	24.1	25.5	35.0	36.7	31.4	41.2	33.5	49.2	31.7	46.8	49.6	65.9	58.1
Portugal	8.7	14.2	12.5	14.8	18.7	18.4	34.2	26.6	27.8	32.0	26.9	37.1	30.8	48.1	41.8
Romania	5.2	6.9	3.5	7.5	10.2	9.0	7.7	10.4	8.2	10.4	11.2	19.2	24.3	31.3	32.1
Slovakia	6.0	5.2	13.3	6.8	10.2	3.7	7.7	11.3	12.8	6.5	8.7	11.9	12.6	15.2	21.0
Slovenia	4.0	8.3	9.2	6.5	10.2	8.0	14.0	10.3	15.5	11.3	17.6	14.4	14.8	18.9	14.5
Spain	72.9	80.1	99.5	121.4	171.8	162.9	172.4	192.7	198.9	215.9	235.0	279.0	325.9	335.3	358.2
Sweden	43.1	60.1	60.2	34.1	55.4	65.1	65.5	55.3	46.1	64.6	54.5	58.4	62.8	61.6	73.1
United Kingdom	206.3	252.6	273.1	272.1	311.0	304.6	324.0	321.2	321.5	426.4	395.5	438.2	364.7	395.2	419.3
Other Europe															
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	2.3	3.7	2.5	3.0	2.7	3.0	0.3	2.0	1.8	1.0	0.5	1.2	0.3	0.5
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	2.2	1.3	1.5	1.0	3.5	1.8	3.9	4.3	2.5	1.3	2.6	1.3	6.9	4.8	4.3
Iceland	1.5	0.3	0.5	0.7	1.8	1.0	1.2	1.1	1.3	0.7	1.0	1.9	2.6	2.7	3.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.0	0.0	1.0	0.0	1.5	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.3	0.5	4.0
Moldova	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.8	0.0	0.0	0.6	0.3	0.8
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	1.0	0.0

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	24.6	14.7	22.3	22.8	28.2	20.7	27.3	34.6	39.9	37.6	34.0	42.6	49.1	48.9	39.3
Russia	47.7	25.3	29.3	27.1	23.7	20.2	20.7	20.5	22.3	14.8	13.9	23.3	17.0	22.4	20.7
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.8	10.5	14.1	17.7	32.8	28.7
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	10.5	6.0	NA	NA	NA	NA	NA
Switzerland	33.8	44.5	41.2	44.3	55.9	38.9	65.4	61.8	75.6	90.8	93.3	113.2	91.6	103.3	110.9
Ukraine	3.0	5.5	53.1	92.0	4.7	4.2	2.5	0.8	2.5	0.8	0.8	3.0	0.5	0.8	2.2
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	10.1	11.5	7.1	16.5	11.8	5.3	6.8	12.8	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	2.0	0.0
Iran	5.3	2.0	2.5	6.8	6.8	8.3	11.7	6.4	18.7	22.3	47.9	73.6	78.3	123.1	122.3
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	1.1
Israel	113.8	127.5	115.4	124.8	128.2	125.5	121.1	144.4	146.0	174.0	170.3	201.2	185.8	173.7	184.4
Jordan	0.0	3.0	1.3	4.5	5.7	2.5	2.0	3.3	1.5	4.1	6.8	8.3	5.8	9.5	8.8
Kuwait	3.5	1.6	7.0	2.7	2.5	2.3	2.5	2.0	3.5	2.5	4.5	1.5	3.5	5.2	6.9
Lebanon	2.5	0.0	0.0	3.0	1.5	1.7	2.3	2.5	2.8	4.2	3.1	5.3	5.5	4.1	5.1
Oman	2.5	3.0	1.5	2.5	1.3	1.5	1.5	0.5	1.0	0.4	0.7	1.3	2.0	2.2	2.0
Qatar	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.2	0.0	1.8	1.5	2.1	1.5	1.4	4.2
Saudi Arabia	6.3	9.3	4.5	8.2	7.3	8.8	4.5	4.3	3.5	8.2	3.9	6.7	4.8	12.4	27.0
Syria	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	13.3	20.5	18.8	30.2	28.2	28.1	29.3	43.0	42.6	60.5	98.2	87.7	84.7	127.8	125.6
United Arab Emirates	2.0	2.5	1.0	1.0	1.5	3.5	4.8	4.7	4.3	7.8	5.0	6.9	3.1	9.1	7.1
Yemen	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Africa															
Algeria	1.0	2.0	0.5	2.5	2.8	3.3	3.0	3.5	5.2	4.0	4.5	6.2	3.5	8.0	9.8
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Botswana	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Burkina Faso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	1.0	0.0	0.0	0.0	0.0	0.0	2.3	1.0	1.3	1.0	0.0	1.0	2.0	0.0	0.0
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Kinshasa)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Côte d'Ivoire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	16.5	18.3	11.5	17.3	15.7	10.6	7.7	9.4	8.5	12.6	17.2	23.9	24.6	31.4	25.8
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Ethiopia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Madagascar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Morocco	1.0	0.0	2.3	0.0	3.5	1.8	1.0	1.2	0.0	1.5	0.8	3.3	3.6	2.8	2.2
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Niger	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nigeria	0.0	0.0	0.0	1.0	1.5	3.0	0.0	2.5	0.0	0.0	0.0	0.5	1.0	0.0	1.8
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.3
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	7.8	3.5	6.7	9.5	10.3	10.2	13.8	11.2	12.1	18.3	11.0	16.8	8.2	18.3	12.5
Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Swaziland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Tanzania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	5.0	4.0	2.2	2.2	1.7	7.0	4.8	7.2	1.8	2.7	3.5	4.0	3.9	3.8	12.2
Uganda	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0
Zambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zimbabwe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Armenia	0.0	0.0	0.0	1.0	0.0	0.0	1.0	3.0	0.5	0.0	1.0	1.0	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.3	0.0	1.8
Bangladesh	1.0	0.5	0.0	1.8	0.0	1.0	1.0	1.7	1.5	0.0	0.0	0.4	1.2	1.0	1.8

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3
Burma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	123.6	193.8	210.2	252.6	302.6	357.2	384.5	485.9	494.9	554.4	764.2	961.4	941.8	1,295.7	1,491.9
Georgia	0.5	0.0	1.0	0.0	1.3	1.0	0.8	0.5	5.3	4.5	1.0	1.5	1.7	0.7	2.0
India	92.0	92.1	87.6	96.9	93.2	82.0	86.4	101.8	82.8	112.4	125.6	146.9	123.1	162.8	165.0
Indonesia	1.0	0.5	0.5	0.0	0.0	0.3	0.5	0.0	0.0	1.3	0.0	0.7	0.3	0.5	0.4
Japan	164.8	215.8	187.8	239.1	201.7	209.2	204.6	192.8	208.0	194.9	186.1	163.6	173.1	169.1	161.6
Kazakhstan	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.7
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	2.3	0.8	1.7	1.0	4.0	4.0	5.5	5.7	9.3	7.3	10.4	10.7	7.2	21.2	36.3
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nepal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.3	0.0	0.0	0.3
Pakistan	0.0	2.5	1.5	0.3	0.5	0.0	0.5	1.0	1.4	3.0	8.5	11.8	11.7	30.5	32.7
Philippines	0.0	1.5	0.3	0.8	0.0	0.5	0.6	0.0	0.3	0.5	2.5	0.2	0.0	0.0	0.0
Singapore	31.8	45.5	57.0	54.0	64.7	76.5	80.7	84.5	113.4	120.0	99.1	113.2	90.3	99.5	111.5
South Korea	80.1	108.6	90.7	115.4	162.2	117.7	153.7	157.4	176.0	185.9	206.2	234.7	253.0	309.0	317.4
Sri Lanka	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	2.3	1.3	0.3	0.0	0.0
Taiwan	162.7	180.5	193.1	223.4	223.0	179.2	199.9	228.1	229.0	215.7	338.3	359.4	300.0	312.7	335.0
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	1.3	1.3	3.3	3.9	5.7	6.0	4.3	3.5	7.5	16.8	18.3	12.5	12.5	15.9	20.2
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.2
Uzbekistan	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.7
Vietnam	1.5	1.8	0.5	0.0	3.5	2.5	2.0	2.0	0.3	0.7	6.2	1.7	1.6	3.5	6.2
Australia/Oceania															
Australia	88.1	85.4	100.3	104.5	105.9	98.0	109.8	102.2	105.5	130.7	124.0	138.4	153.0	145.7	190.8
Fiji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	0.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	8.0	15.6	13.5	7.5	18.4	19.3	23.3	16.6	15.3	19.6	20.2	19.2	15.3	20.6	28.3
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available, country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	43,609.0	45,829.0	48,907.0	53,846.0	54,161.0	55,170.0	58,445.0	63,045.0	68,102.0	71,598.0	72,024.0	76,578.0	80,005.0	81,789.5	88,773.0
North America															
Canada	1,732.9	1,691.3	1,760.2	1,812.2	1,726.4	1,738.2	1,931.7	2,077.8	2,433.4	2,559.5	2,631.8	2,805.6	2,917.6	2,965.2	3,012.7
Mexico	138.0	175.8	222.9	225.4	289.9	323.8	326.0	384.7	351.2	447.4	416.6	457.5	479.4	480.8	504.0
United States	11,724.4	12,248.1	11,772.5	12,951.2	12,388.8	12,056.7	12,888.4	13,307.2	14,064.5	14,036.7	14,561.5	14,612.4	14,612.1	14,491.7	15,181.5
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	1.0	0.5	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	2.8	0.5	2.7	4.0	1.0	4.1	3.4	3.2	0.8	1.6	2.5	4.4	2.1	2.4	5.8
Cuba	16.2	19.6	29.0	28.8	26.3	26.7	25.5	30.4	29.2	28.5	27.1	20.1	18.8	12.1	21.1
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.3	0.0	0.0	0.3	0.5
El Salvador	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.8
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Jamaica	0.0	3.5	1.0	0.0	0.0	1.0	0.5	0.0	0.0	2.0	1.5	3.8	1.6	0.0	1.0
Nicaragua	0.5	0.5	0.3	0.3	0.0	0.0	1.3	0.3	1.0	0.3	0.3	0.0	0.0	0.8	0.8
Panama	0.0	0.0	2.0	1.5	0.0	0.5	0.0	0.8	0.6	0.3	1.3	0.0	0.3	0.3	1.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.0	2.5	2.0	1.5	6.1	4.7	3.8	7.5	11.3	3.0	8.1	3.5	3.2	7.0	7.2
West Indies Associated States	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
South America															
Argentina	134.0	128.0	167.2	179.2	193.7	191.2	182.3	210.5	220.8	223.9	228.3	257.0	231.9	341.4	263.3
Bolivia	0.8	0.3	0.5	0.0	0.8	0.3	1.0	0.3	1.3	1.9	0.5	0.8	0.8	1.1	1.3
Brazil	295.7	381.1	574.1	602.8	663.2	676.8	808.1	820.3	949.5	906.8	881.9	985.6	1,017.0	1,039.0	1,083.9
Chile	28.0	38.8	57.2	66.9	65.8	66.1	113.1	89.6	119.6	99.2	116.0	124.9	159.0	147.4	124.7
Colombia	10.9	9.4	16.0	11.9	15.3	30.0	17.6	16.4	24.9	29.0	41.8	46.4	68.5	82.3	88.0
Ecuador	2.5	1.7	0.5	2.9	3.5	1.3	2.8	0.3	0.6	0.5	1.0	1.5	2.3	0.0	2.0
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Paraguay	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.6
Peru	4.7	4.5	4.8	0.8	4.9	2.5	6.0	6.1	6.3	5.0	5.1	4.2	4.7	8.0	2.6
Suriname	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	1.3	3.2	2.9	3.9	4.3	7.3	2.8	7.5	7.5	7.2	14.8	11.7	15.0	10.8	8.1
Venezuela	35.3	31.0	41.2	35.5	41.3	55.7	52.7	30.4	36.3	34.5	38.3	51.1	36.0	34.4	30.6

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	219.9	203.1	218.6	247.7	275.5	276.2	291.7	315.3	330.0	323.8	373.7	390.2	388.2	422.1	421.2
Belgium	312.9	355.0	360.5	401.9	420.3	486.3	430.4	505.4	549.8	520.8	602.5	613.5	592.9	651.8	666.0
Bulgaria	109.4	125.3	118.0	123.0	85.3	107.3	138.4	102.5	110.7	86.9	93.1	80.3	90.6	84.5	96.3
Cyprus	6.3	6.0	6.3	7.3	14.3	6.1	6.7	12.3	8.9	13.1	22.3	29.1	25.7	36.9	32.3
Czech Republic	182.4	146.1	158.4	174.5	206.5	196.5	234.3	271.1	289.5	257.6	256.7	296.8	344.4	315.0	350.8
Denmark	200.8	204.1	237.7	220.2	260.6	225.0	222.7	284.2	294.7	302.3	286.0	338.4	311.7	321.8	405.6
Estonia	7.2	11.1	33.7	40.7	38.1	39.3	37.9	40.9	54.1	43.5	53.0	47.5	60.9	41.3	50.7
Finland	249.0	293.0	326.1	343.2	364.5	386.7	369.8	399.9	415.7	465.8	413.8	407.7	432.1	427.8	469.3
France	2,066.8	2,019.5	2,222.4	2,390.8	2,406.9	2,576.9	2,450.6	2,622.6	2,712.9	2,948.0	2,839.8	3,169.4	3,255.6	3,040.3	3,388.8
Germany	2,912.3	2,865.7	3,208.3	3,334.9	3,413.5	3,155.9	3,190.1	3,152.0	3,332.5	3,379.7	3,284.4	3,221.2	3,294.6	3,349.2	3,757.3
Greece	243.0	327.3	315.0	344.0	324.7	427.9	404.8	498.5	438.7	531.0	653.2	645.1	641.8	617.9	633.1
Hungary	94.2	100.7	128.5	139.9	118.6	136.0	152.8	155.5	221.6	155.9	139.5	126.0	155.3	131.9	144.7
Ireland	68.0	107.7	102.6	113.8	107.4	115.5	140.7	162.0	212.8	189.5	244.4	221.1	253.7	255.2	270.7
Italy	1,218.6	1,352.5	1,441.7	1,737.4	1,807.0	1,746.0	1,853.5	2,069.4	2,042.6	2,230.0	2,255.3	2,335.7	2,447.9	2,329.1	2,670.4
Latvia	12.3	17.7	25.7	14.8	17.7	27.0	14.7	19.2	18.7	12.3	23.2	23.7	32.8	10.7	43.9
Lithuania	15.4	22.1	42.5	30.1	30.8	47.3	36.1	44.9	47.5	64.2	49.2	55.5	46.2	55.8	55.0
Luxembourg	2.1	1.8	2.0	1.0	3.9	2.4	3.5	2.7	5.9	4.7	4.6	12.2	9.8	22.0	21.8
Malta	1.5	2.0	3.0	1.0	1.7	2.0	2.5	0.5	3.1	2.7	3.2	5.8	5.9	6.6	6.2
Netherlands	623.6	709.7	683.5	821.6	775.3	772.0	733.5	799.6	864.0	813.3	902.5	904.0	924.3	971.7	960.1
Poland	359.1	386.0	408.3	499.2	597.4	612.6	584.7	710.1	627.2	716.7	658.6	745.8	706.2	652.7	758.0
Portugal	164.8	223.8	228.3	321.3	279.0	422.8	317.4	590.1	470.9	740.9	457.1	503.8	540.9	554.0	637.6
Romania	124.4	95.7	112.9	149.2	119.6	133.4	102.9	153.8	122.2	140.6	147.0	174.7	181.6	238.8	283.1
Slovakia	79.8	53.0	63.3	65.6	77.5	69.7	57.0	101.1	100.1	79.5	76.8	78.9	77.7	77.9	81.2
Slovenia	79.5	77.5	110.3	118.1	141.8	142.6	129.4	155.3	136.1	160.0	182.4	179.0	170.3	161.0	205.3
Spain	759.6	846.2	909.4	948.6	1,126.5	1,305.2	1,181.5	1,317.0	1,575.7	1,738.5	1,866.7	2,058.3	2,068.9	2,126.6	2,407.5
Sweden	577.6	570.0	683.5	811.4	733.3	784.7	685.5	798.2	847.8	848.9	804.8	805.5	773.8	822.0	870.5
United Kingdom	2,922.2	3,176.7	3,396.7	3,663.1	3,381.9	3,025.3	3,221.4	3,224.5	3,416.9	3,365.3	3,333.0	3,183.8	3,271.7	3,139.4	3,315.6
Other Europe															
Albania	0.3	2.8	1.7	1.8	0.5	2.0	1.0	0.3	0.0	0.3	2.3	0.0	0.7	1.7	2.1
Andorra	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Belarus	43.0	59.0	50.5	52.0	43.6	59.1	55.7	47.8	42.7	43.2	32.5	37.4	34.4	32.8	27.2
Bosnia and Herzegovina	0.5	3.0	1.8	0.0	3.0	0.5	1.0	2.0	2.9	0.8	5.2	4.0	4.3	5.8	7.9
Croatia	23.0	27.3	26.2	51.3	31.1	34.0	42.1	53.2	53.5	51.3	48.8	59.9	70.0	80.4	72.8
Iceland	3.3	4.7	3.8	3.5	4.7	5.2	4.3	2.7	5.8	6.4	7.6	8.8	8.9	12.7	16.8
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	4.3	0.3	5.0	8.7	1.8	3.3	3.7	5.3	3.3	5.2	7.5	3.3	3.3	2.1	2.0
Macedonia	8.3	4.1	4.0	8.3	4.0	6.0	7.0	5.8	1.8	7.6	8.2	3.0	10.6	8.4	11.9
Moldova	9.1	4.0	6.2	5.7	6.1	6.2	5.6	3.1	5.1	4.5	6.7	5.0	6.1	10.4	5.2
Monaco	0.0	0.6	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.3	1.5	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	3.2	8.5	3.5	11.0	9.5

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	144.6	145.5	154.7	188.9	185.0	193.9	173.7	187.4	226.7	249.3	266.0	285.6	354.0	348.9	368.8
Russia	1,471.9	1,282.5	1,407.3	1,458.9	1,479.9	1,425.3	1,208.6	1,152.4	1,171.1	970.5	955.2	929.3	964.7	887.9	1,064.9
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	105.8	147.7	150.6	198.4	209.4	229.7
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	151.9	59.8	NA	NA	NA	NA	NA
Switzerland	387.2	434.7	473.5	486.0	475.7	515.6	510.8	609.7	590.7	697.7	671.4	726.1	708.8	710.0	802.6
Ukraine	338.7	357.8	370.3	363.5	399.1	350.9	326.4	339.2	380.0	333.9	177.3	193.9	153.2	148.8	196.6
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	116.2	110.0	89.5	126.7	82.1	79.8	110.8	167.4	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	12.3	8.5	18.5	5.8	9.8	4.0	9.7	11.7	9.0	6.8	16.6	6.5	10.5	6.7	7.2
Iran	42.7	51.3	69.0	103.3	124.0	145.0	235.2	270.8	354.5	511.8	655.8	959.7	1,359.9	1,723.2	2,080.0
Iraq	6.0	3.5	4.5	12.5	2.5	1.5	4.5	6.0	5.0	10.4	12.5	5.6	10.0	8.3	18.6
Israel	356.3	376.1	397.9	423.8	422.7	388.3	402.6	407.5	410.1	465.8	484.5	431.8	438.2	394.2	379.0
Jordan	36.3	41.8	49.9	51.7	59.2	39.8	50.9	63.2	58.7	45.1	67.5	77.7	71.8	74.0	54.4
Kuwait	47.8	47.6	64.7	52.4	54.9	49.7	42.5	48.7	39.7	45.8	43.2	47.7	42.4	43.2	45.9
Lebanon	9.5	12.5	6.5	9.3	12.3	14.9	18.4	15.8	16.6	24.7	20.7	24.2	27.1	22.1	31.0
Oman	9.5	9.2	14.9	15.5	18.8	27.2	19.4	21.0	22.3	21.2	35.8	20.8	26.8	26.4	28.0
Qatar	2.3	2.5	4.8	5.5	5.3	4.2	3.0	5.0	5.7	8.2	7.3	11.7	12.3	22.0	25.3
Saudi Arabia	103.0	129.7	119.8	119.8	93.4	93.5	95.2	111.3	104.4	121.3	110.8	114.3	136.3	184.4	289.5
Syria	1.5	1.5	4.3	2.5	3.5	5.0	3.3	7.7	8.2	4.0	9.8	6.2	2.3	13.6	12.8
Turkey	280.7	314.8	357.0	398.1	469.2	648.9	700.8	1,060.8	894.6	980.1	915.8	1,227.9	1,256.7	1,239.8	1,328.2
United Arab Emirates	14.8	14.2	12.4	21.2	24.9	29.2	33.1	38.8	41.7	32.8	30.6	43.9	64.3	59.8	86.4
Yemen	0.8	0.0	0.3	1.2	2.0	3.0	0.0	0.0	1.0	2.8	1.5	1.7	2.8	3.3	2.9
Africa															
Algeria	27.5	30.2	34.9	48.7	47.4	40.9	75.4	97.1	87.5	96.0	127.7	144.9	171.9	155.3	183.3
Angola	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0
Benin	0.0	0.0	0.0	1.5	0.5	1.8	2.0	0.0	1.2	0.0	1.5	0.0	0.3	0.8	0.0
Botswana	0.0	0.0	2.0	1.0	0.3	0.3	1.7	1.3	0.3	2.9	1.3	3.3	1.0	2.5	3.8
Burkina Faso	1.3	0.5	0.5	0.5	0.5	0.0	1.5	0.5	0.0	0.8	0.3	1.0	1.3	1.6	2.0
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Cameroon	1.0	1.2	1.3	1.0	1.7	1.8	3.7	4.2	3.8	5.9	7.2	9.2	8.8	11.1	10.3
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Central African Republic	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	2.0	0.0	0.5	0.0	0.8	0.0	0.1
Congo (Kinshasa)	1.0	0.0	0.0	0.0	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.7
Côte d'Ivoire	0.0	1.0	0.1	0.5	1.5	0.0	3.0	2.4	1.3	0.0	1.5	0.5	3.9	1.0	1.3
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	175.8	176.6	165.2	212.3	223.9	250.0	266.4	278.8	285.8	271.2	294.7	303.0	395.1	405.6	420.1
Equatorial Guinea	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Ethiopia	2.0	0.0	2.3	0.0	0.3	0.5	1.0	0.8	0.7	0.9	2.2	1.0	2.1	0.7	0.5
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.0
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Ghana	6.7	5.5	3.5	0.0	2.5	2.8	2.0	2.0	4.2	2.6	2.3	2.7	13.3	10.9	19.7
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	4.0	0.0	3.5	2.5	1.3	2.7	3.5	2.3	2.8	4.0	1.8	3.0	2.4	2.3	1.3
Lesotho	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.0	0.0	0.3	0.7	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	3.1	4.6	3.8	5.5	4.5	1.0	9.5	6.3	4.6	2.3	11.7	11.3	3.8	3.8	2.5
Madagascar	0.0	0.3	0.0	0.0	0.0	0.0	1.0	2.0	1.5	3.7	2.0	0.7	1.0	0.2	0.0
Malawi	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	0.0	3.9	0.0	1.0
Mali	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.3	0.0	0.0	1.0	0.0	0.0	0.6	0.0
Mauritania	0.0	0.0	0.0	0.8	0.0	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5
Mauritius	1.0	0.3	0.5	0.0	0.0	0.0	0.5	1.0	1.3	0.5	0.0	2.0	1.0	1.0	2.3
Morocco	20.1	31.3	41.4	37.0	56.4	49.0	44.8	60.5	47.5	44.8	50.8	54.3	49.5	49.8	58.8
Mozambique	0.0	0.5	2.0	0.0	0.0	0.0	0.3	0.5	0.3	0.0	0.5	0.0	0.0	0.5	0.5
Namibia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.5	0.0	1.0	0.0	0.0	0.2
Niger	0.0	0.5	0.0	0.0	2.5	0.3	1.3	0.5	0.5	0.5	2.3	0.5	0.7	0.5	0.0
Nigeria	25.0	19.1	29.1	22.3	19.4	22.9	21.3	32.8	28.6	39.0	37.7	44.5	49.3	49.4	41.6
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.3	0.0	0.3	1.0	1.3
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	2.6	0.5	0.0	1.5	1.3	1.3	2.5	1.5	0.5	2.7	0.9	0.8	1.1	1.2	1.5
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	97.7	121.3	120.6	154.0	153.9	149.1	158.7	149.5	180.6	199.6	239.3	219.6	218.7	254.9	291.2
Sudan	0.5	0.5	1.0	1.0	1.5	1.7	0.0	0.3	0.7	1.7	1.0	4.3	1.5	0.4	8.7
Swaziland	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.3	0.7	1.5
Tanzania	0.3	1.7	3.2	2.3	2.3	0.7	0.0	1.5	0.0	4.8	4.2	5.7	4.5	2.2	0.5
Togo	0.3	0.0	0.0	0.0	0.5	0.3	0.5	1.5	0.0	0.0	1.0	2.3	0.0	0.0	1.3
Tunisia	12.9	18.5	24.2	44.4	47.4	50.9	72.2	81.8	95.4	94.9	122.0	138.7	178.7	148.2	139.0
Uganda	1.0	1.0	0.5	0.0	1.0	0.0	1.0	2.5	0.0	1.0	0.6	1.0	0.0	1.0	1.2
Zambia	1.8	1.0	2.5	0.0	1.0	0.2	0.0	0.0	1.5	0.0	0.0	0.0	0.5	0.0	0.0
Zimbabwe	3.0	2.3	6.8	3.8	9.0	2.5	2.5	0.7	3.2	0.8	0.8	0.0	1.3	1.8	0.5
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Armenia	9.8	7.7	4.5	5.0	9.7	10.3	7.7	8.4	9.3	6.4	12.7	11.7	15.0	8.2	10.2
Azerbaijan	8.3	8.3	6.0	6.0	6.3	4.5	10.2	3.2	3.0	4.8	3.5	4.9	6.3	18.1	12.9
Bangladesh	13.3	17.2	21.0	26.5	18.0	21.8	25.2	25.9	29.6	42.4	30.1	26.0	36.5	47.6	41.7

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.0
Brunei	0.5	2.0	1.3	0.0	0.0	1.8	0.0	2.0	0.5	0.0	1.0	0.0	1.3	0.5	1.0
Burma	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.5	1.5	0.2	0.0	0.0	0.0	0.3	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
China	1,725.0	1,961.2	2,368.7	3,104.7	3,345.0	3,812.0	4,641.6	5,560.3	7,415.9	8,240.6	9,101.8	10,728.6	12,237.3	13,523.7	15,208.9
Georgia	2.0	7.0	10.1	6.3	7.8	8.5	12.6	13.2	11.5	7.7	7.4	7.0	9.2	8.4	9.6
India	1,153.4	1,181.1	1,337.2	1,360.1	1,497.5	1,497.3	1,647.2	1,802.2	1,962.8	2,417.2	2,965.8	3,156.6	3,301.1	3,471.0	3,778.3
Indonesia	9.9	8.1	11.1	13.1	23.4	16.0	11.3	17.9	14.6	30.2	16.5	20.2	23.4	23.9	43.6
Japan	5,410.2	5,661.9	6,192.7	6,353.0	6,276.6	6,687.3	7,006.7	6,932.0	6,962.0	6,996.2	5,885.8	5,462.4	5,549.6	4,968.6	5,203.7
Kazakhstan	10.1	10.8	5.0	11.7	9.0	18.7	4.8	15.6	5.5	4.6	14.4	8.8	5.6	8.6	6.9
Kyrgyzstan	0.3	0.0	1.0	0.0	2.0	0.3	0.2	0.0	0.3	0.0	0.8	3.0	0.8	1.0	2.0
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Malaysia	32.0	42.1	62.0	51.6	59.3	66.3	81.4	130.0	143.9	242.9	193.2	233.2	383.7	461.9	677.9
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Mongolia	0.3	1.5	1.3	3.1	2.0	2.4	1.6	3.3	1.7	2.6	1.0	0.2	1.3	0.0	2.4
Nepal	0.5	0.0	0.5	0.5	0.0	0.3	0.5	0.3	0.8	2.3	1.4	1.6	1.2	3.4	2.6
North Korea	0.0	2.5	0.3	1.1	0.0	0.7	0.8	2.7	0.2	0.0	1.2	3.8	1.8	2.3	0.3
Pakistan	28.2	23.1	20.0	24.4	25.4	28.0	29.0	39.5	57.3	64.4	110.3	149.9	151.2	164.8	188.2
Philippines	4.4	1.8	1.8	4.3	5.9	5.5	8.5	5.6	7.9	6.2	4.7	6.4	10.7	13.8	13.3
Singapore	332.9	412.2	465.2	674.1	701.7	689.3	807.7	826.4	979.5	959.3	944.9	1,009.2	888.2	970.1	978.7
South Korea	1,103.5	1,367.0	1,663.8	2,076.4	2,271.7	2,446.6	2,895.0	3,453.3	4,012.9	4,124.1	3,649.9	4,563.9	4,680.5	5,061.9	5,429.3
Sri Lanka	0.7	1.5	4.6	3.2	1.5	3.5	7.9	4.8	5.3	3.8	3.5	7.8	5.7	6.1	13.2
Taiwan	1,212.5	1,219.7	1,281.4	1,490.7	1,577.1	1,574.3	1,887.7	2,010.4	2,197.9	2,702.6	2,685.7	2,912.5	2,990.3	3,032.8	3,040.4
Tajikistan	0.0	1.0	0.5	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5	0.0	2.4
Thailand	34.4	46.2	43.3	59.6	67.8	91.8	104.9	142.2	150.6	211.5	240.6	295.0	312.9	353.9	403.8
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Uzbekistan	8.0	9.0	8.3	9.2	9.8	13.6	5.3	5.0	4.8	8.1	15.2	10.3	10.9	6.1	8.4
Vietnam	5.8	5.0	8.3	15.9	10.0	5.2	10.2	8.2	18.9	18.5	17.4	30.1	29.6	58.6	50.0
Australia/Oceania															
Australia	774.3	795.9	878.1	920.9	913.6	898.8	978.0	991.3	1,090.4	1,209.0	1,264.3	1,325.4	1,397.0	1,490.2	1,708.8
Fiji	0.5	0.0	1.0	0.0	0.8	1.5	2.0	6.8	2.5	4.5	4.2	3.0	1.7	0.9	3.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	116.7	125.4	130.2	111.6	153.4	120.7	143.6	152.9	138.0	157.8	164.3	198.7	172.2	189.3	179.6
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Papua New Guinea	1.2	1.0	2.3	0.0	1.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0

Appendix table 5-32

S&E articles in engineering, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	28,331.0	29,948.0	29,838.0	31,578.0	33,339.0	33,254.0	35,221.0	36,136.0	37,227.0	40,244.0	40,800.0	43,618.0	45,248.0	44,785.0	46,218.0
North America															
Canada	1,932.7	1,800.6	1,872.2	1,905.2	1,822.3	1,866.4	1,836.2	1,941.8	2,069.7	2,179.1	2,075.8	2,293.9	2,246.0	2,203.4	2,286.3
Mexico	158.2	222.3	219.5	280.6	250.2	296.4	341.8	380.8	316.1	344.5	313.7	320.7	342.8	388.4	336.6
United States	9,423.7	9,899.5	9,516.7	9,897.6	10,211.0	10,077.4	10,735.0	10,634.7	10,730.5	11,398.5	11,558.3	12,101.3	11,623.1	11,787.5	11,702.8
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Bahamas	0.3	0.5	0.0	1.5	0.5	0.1	0.0	0.6	0.2	0.2	1.2	0.3	0.3	0.7	1.4
Barbados	1.5	1.0	1.8	3.1	2.2	0.1	1.3	1.5	1.8	2.3	0.5	2.0	0.5	1.7	1.7
Belize	0.5	0.0	1.0	0.0	0.4	0.1	0.8	0.7	1.5	0.5	0.0	1.2	0.0	0.0	1.0
Costa Rica	5.1	1.3	2.9	7.5	4.9	5.8	5.7	3.0	6.5	10.6	10.3	7.2	14.0	11.6	16.2
Cuba	3.6	6.8	14.2	7.7	13.8	3.6	10.2	6.7	10.3	12.1	11.9	10.7	9.8	14.1	11.5
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.6	0.0	0.3	0.7	0.1	0.3	0.3	0.0	0.3	0.2	0.8	0.3	0.1	0.0
El Salvador	0.0	0.0	0.0	0.2	0.0	0.6	0.0	1.0	0.3	1.3	1.1	0.4	1.5	0.7	1.3
Grenada	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5
Guatemala	1.0	0.2	0.2	0.7	0.2	0.3	0.6	1.4	0.8	1.9	0.6	0.5	0.0	1.7	1.7
Haiti	0.0	0.0	0.2	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.3	0.8
Honduras	0.0	0.5	1.0	0.7	1.0	0.0	0.0	0.3	0.6	0.8	0.0	0.3	1.6	0.8	0.6
Jamaica	4.1	4.5	6.7	1.5	5.9	12.7	16.6	8.8	7.1	4.4	5.6	7.2	4.5	7.0	5.6
Nicaragua	0.5	1.8	1.3	1.0	1.7	1.5	1.3	2.8	1.4	2.4	1.7	5.2	1.2	1.2	2.2
Panama	6.7	3.8	2.5	3.7	6.3	4.6	6.8	6.4	5.7	5.9	5.6	14.5	12.5	11.8	7.6
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	1.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Trinidad and Tobago	0.1	7.0	2.8	3.8	2.8	1.9	2.5	4.3	2.5	6.0	9.0	6.1	4.4	5.2	8.5
West Indies Associated States	0.1	1.2	0.8	0.3	1.2	1.5	1.9	0.6	2.5	1.3	0.1	1.2	3.1	1.7	0.7
South America															
Argentina	131.9	159.1	140.0	159.4	156.4	201.6	196.6	223.1	248.8	255.9	282.3	321.3	356.9	363.4	410.4
Bolivia	0.9	4.0	9.4	3.0	4.5	4.9	8.2	5.2	9.7	7.9	8.7	6.9	4.6	5.7	5.8
Brazil	174.0	217.6	266.2	290.1	328.6	360.9	364.9	423.8	481.4	515.5	547.5	556.0	723.2	649.0	758.1
Chile	54.0	61.4	88.9	94.5	124.0	118.2	130.3	161.0	132.3	159.6	169.3	181.7	175.1	188.5	205.4
Colombia	22.2	9.2	12.2	20.3	19.8	26.4	14.4	15.4	16.5	38.7	19.0	27.2	37.4	34.4	41.6
Ecuador	5.9	7.0	3.1	7.6	7.7	8.9	12.2	8.0	9.6	6.0	8.5	16.9	9.0	9.5	12.5
Guyana	0.0	0.5	1.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.5	0.0	0.3	0.7	0.0
Paraguay	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.6	0.3	0.7	0.0	0.0	0.0	0.0	0.6
Peru	4.0	3.0	4.3	5.6	8.4	10.7	8.0	14.8	11.1	18.7	12.8	22.4	16.7	14.6	16.5
Suriname	0.0	0.0	0.0	1.0	0.8	0.5	0.3	1.2	0.0	0.2	1.2	1.0	0.5	0.0	0.5
Uruguay	5.9	4.3	11.2	7.3	12.6	15.4	15.6	13.6	19.0	20.7	15.5	21.2	20.1	18.0	23.0
Venezuela	25.4	24.5	29.6	30.4	28.3	22.7	23.4	26.7	40.0	34.7	20.8	16.8	20.7	23.0	27.0

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	129.5	140.7	170.1	161.8	212.9	187.8	196.2	212.8	172.3	196.0	207.5	212.5	238.5	220.2	268.5
Belgium	214.9	262.7	258.8	268.4	289.0	306.5	330.2	307.1	348.2	340.3	318.8	390.0	350.5	329.1	356.6
Bulgaria	21.7	27.4	30.8	28.5	30.6	33.8	30.1	29.6	37.3	26.9	36.7	32.5	44.5	33.1	36.8
Cyprus	2.2	2.0	3.4	0.0	1.5	1.2	4.5	2.0	2.0	1.2	6.0	1.9	12.0	10.6	9.1
Czech Republic	87.8	112.2	74.7	78.8	101.0	130.2	162.6	148.5	166.9	183.7	202.6	209.2	257.8	247.8	255.1
Denmark	314.1	341.3	331.4	383.5	360.8	400.7	379.0	328.6	345.4	369.7	345.5	352.3	347.0	362.6	360.7
Estonia	21.9	31.3	38.9	21.2	33.4	26.8	41.6	38.6	45.5	42.9	36.5	58.8	44.7	59.0	50.7
Finland	231.4	271.6	232.1	222.9	299.9	269.2	278.5	277.8	259.7	263.8	278.4	322.5	274.9	284.1	285.4
France	1,630.4	1,779.1	1,829.3	1,780.2	1,802.5	1,762.3	1,800.2	1,868.7	1,916.2	2,009.6	1,971.8	2,098.8	2,258.0	2,260.3	2,174.6
Germany	1,626.9	1,657.5	1,716.9	1,774.4	1,799.3	1,823.5	1,810.3	1,766.9	1,945.1	1,831.7	1,886.3	2,068.7	2,066.2	2,096.6	2,122.4
Greece	173.2	183.9	175.6	193.2	185.5	226.7	245.3	230.0	265.9	310.3	316.4	295.9	322.0	280.8	296.9
Hungary	58.5	77.3	61.3	53.7	54.8	62.2	89.8	76.3	75.4	76.9	88.2	77.2	101.9	97.3	91.6
Ireland	68.8	57.0	59.9	67.4	87.5	74.5	76.5	79.2	109.6	128.0	114.8	126.8	149.7	135.0	163.2
Italy	695.3	772.3	856.6	960.4	998.5	981.4	1,161.2	1,213.5	1,195.7	1,343.0	1,380.4	1,480.5	1,541.4	1,490.9	1,520.1
Latvia	3.3	4.0	8.0	5.4	7.1	3.5	5.9	6.0	4.4	2.6	3.8	3.0	3.3	2.1	5.5
Lithuania	3.5	6.4	7.7	7.0	12.5	11.3	7.8	28.7	10.3	19.6	14.8	14.5	18.2	12.8	11.3
Luxembourg	0.5	1.9	0.9	2.2	2.8	1.1	2.8	6.1	10.6	4.2	6.7	6.2	10.9	9.1	8.4
Malta	1.4	0.3	0.0	2.8	1.4	3.0	4.2	0.8	2.5	4.0	0.3	3.9	2.8	4.6	7.8
Netherlands	583.3	629.1	561.6	560.2	562.2	619.7	565.3	589.2	633.1	624.8	603.3	631.0	651.0	654.8	627.8
Poland	145.8	142.6	136.7	131.1	183.2	169.4	202.3	195.1	236.8	241.6	265.3	275.2	354.2	315.9	323.2
Portugal	70.8	110.0	119.5	118.4	155.4	201.3	200.7	200.7	269.5	343.1	356.2	419.1	524.2	382.3	517.1
Romania	18.4	12.4	20.5	20.4	24.3	27.0	29.4	22.0	33.4	29.7	35.8	31.8	53.2	58.3	66.5
Slovakia	31.8	30.6	20.6	25.1	18.6	25.5	27.0	18.2	38.1	40.0	35.8	55.1	58.0	56.0	57.7
Slovenia	20.5	26.9	28.0	27.0	28.1	22.0	34.7	45.4	37.1	48.8	51.8	34.7	60.7	57.4	47.0
Spain	683.7	738.6	782.9	807.5	827.0	878.2	944.1	927.9	1,075.0	1,221.1	1,288.5	1,468.8	1,535.8	1,501.0	1,664.1
Sweden	385.8	505.5	472.6	437.6	524.8	443.2	493.6	529.0	528.0	553.6	507.0	546.4	509.5	533.3	480.8
United Kingdom	2,292.2	2,410.6	2,425.2	2,643.6	2,515.3	2,445.1	2,426.2	2,372.8	2,401.1	2,648.8	2,681.8	2,636.7	2,618.1	2,705.7	2,593.7
Other Europe															
Albania	1.0	2.9	2.8	1.1	3.4	3.7	0.3	0.5	1.5	0.6	1.6	4.1	1.4	0.8	9.5
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	0.3	0.1	0.0
Belarus	10.0	6.8	6.5	10.6	6.7	4.5	6.3	6.5	11.1	4.0	2.6	4.2	3.4	1.9	2.1
Bosnia and Herzegovina	0.0	0.0	0.0	0.3	0.5	0.0	0.3	0.5	0.7	0.0	1.5	0.7	2.0	1.8	2.0
Croatia	29.9	34.2	25.6	37.5	41.2	37.4	48.9	59.4	56.0	74.7	65.2	81.5	102.1	75.7	110.0
Iceland	28.6	31.0	22.4	37.7	31.2	41.2	39.0	32.8	45.8	53.2	53.5	49.8	45.9	38.5	49.3
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.0	0.2	0.0	0.3	1.0
Macedonia	1.0	1.3	0.5	0.0	1.5	1.5	0.0	1.7	1.3	1.6	2.3	2.6	2.0	4.2	3.2
Moldova	0.5	0.8	0.5	0.0	0.3	1.0	0.0	0.0	1.1	0.0	0.0	0.3	0.5	1.6	0.0
Monaco	7.2	7.8	14.9	5.3	5.7	10.1	11.2	12.8	8.3	8.8	7.2	9.9	11.9	7.2	8.6
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.3	0.1	1.3	1.5

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	392.9	446.1	400.1	426.8	460.1	499.2	481.7	532.1	477.4	559.9	603.8	599.4	624.3	611.4	690.1
Russia	733.9	691.2	664.5	927.5	949.2	952.5	927.5	928.4	947.6	945.8	901.9	1,006.8	947.5	964.0	943.1
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.9	35.6	35.8	48.8	53.5	54.1
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	18.3	10.3	NA	NA	NA	NA	NA
Switzerland	377.9	372.9	379.2	406.4	468.7	404.0	470.2	479.2	514.6	529.7	548.0	611.4	641.6	592.3	676.8
Ukraine	45.6	33.7	44.6	35.5	44.7	56.6	43.9	42.0	46.8	36.8	38.5	38.6	39.1	35.0	30.4
Vatican City	0.8	0.0	0.1	0.3	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.2	0.0	0.3	0.2
Yugoslavia	13.3	15.6	14.2	13.1	13.5	12.6	5.9	18.3	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	0.0	1.5	2.0	0.5	1.3	3.0	2.8	0.3	1.1	0.0	0.3	1.2	1.0	1.6	1.8
Iran	7.9	14.7	11.8	15.2	19.9	27.4	40.1	53.9	71.2	143.2	138.0	162.6	308.1	240.0	339.0
Iraq	5.2	2.7	0.5	1.0	1.0	0.0	0.0	1.0	1.1	2.0	0.0	4.9	6.7	4.8	10.0
Israel	224.7	198.5	185.7	242.3	224.6	204.4	213.7	216.4	211.9	237.8	223.8	238.4	227.8	231.7	222.5
Jordan	11.0	15.6	17.4	16.8	26.0	12.2	17.3	19.9	20.3	17.1	21.1	24.0	22.1	19.6	11.3
Kuwait	10.0	15.6	29.0	14.9	18.1	5.2	11.0	14.8	9.1	17.5	13.5	11.9	13.0	7.9	20.5
Lebanon	8.2	3.5	8.7	4.5	9.1	6.0	10.7	12.2	11.6	13.5	16.2	12.6	11.5	14.0	8.4
Oman	6.3	5.2	6.9	7.4	7.2	6.9	8.8	9.1	9.8	13.7	19.6	14.4	14.9	19.3	19.2
Qatar	0.5	2.0	2.3	0.0	2.2	0.0	2.8	1.0	0.8	0.0	0.8	0.3	2.0	2.2	4.1
Saudi Arabia	28.5	20.5	15.8	22.0	16.8	16.0	16.8	22.1	15.9	25.8	17.8	25.9	29.4	44.3	65.5
Syria	7.1	1.7	1.7	2.4	4.6	3.8	4.4	6.5	5.4	4.6	8.1	5.1	1.9	7.9	6.1
Turkey	119.6	159.9	192.6	154.7	200.5	263.8	321.1	356.5	356.8	456.7	485.4	534.5	576.3	431.1	446.1
United Arab Emirates	8.2	9.6	10.3	9.6	8.4	10.4	8.2	9.0	13.0	11.5	13.5	21.7	16.2	15.6	17.0
Yemen	2.6	1.7	0.3	2.3	1.7	0.0	1.4	0.5	1.0	1.6	1.7	1.9	0.5	0.7	2.4
Africa															
Algeria	7.3	9.2	8.2	9.3	14.8	8.1	9.5	14.2	13.3	19.2	12.6	28.0	42.9	31.8	27.5
Angola	0.7	0.1	0.5	0.7	0.7	0.0	0.0	0.3	0.8	0.0	0.0	0.0	1.7	1.4	0.0
Benin	0.0	0.5	0.7	0.8	0.7	0.3	1.0	0.3	0.7	2.1	1.6	1.2	2.8	1.7	0.2
Botswana	3.5	4.7	2.4	4.0	2.8	4.5	6.4	5.2	7.1	12.9	6.7	6.0	3.8	1.9	2.7
Burkina Faso	0.2	1.0	0.7	1.9	1.8	1.2	2.9	1.5	0.8	1.1	1.1	0.6	4.3	3.2	2.3
Burundi	1.0	0.0	1.7	0.5	0.8	0.0	1.4	0.3	0.9	0.3	0.0	0.7	0.0	0.3	0.0
Cameroon	5.7	4.9	3.1	7.1	4.5	5.2	6.3	5.4	8.2	7.8	10.2	12.2	10.7	13.6	8.1
Cape Verde	0.3	0.0	0.2	0.0	0.2	0.0	1.3	0.3	0.3	0.8	0.0	0.0	1.0	1.2	0.0
Central African Republic	0.1	0.4	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3	1.3	0.1	0.0	0.0
Chad	0.3	0.4	0.0	1.3	1.4	0.9	1.6	0.5	1.9	0.3	1.9	1.0	0.3	1.0	0.3
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1
Congo (Brazzaville)	1.2	0.8	0.1	0.0	1.1	0.0	0.5	0.3	1.3	2.0	1.9	1.8	2.0	0.4	1.9
Congo (Kinshasa)	0.0	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.4	1.1	0.8
Côte d'Ivoire	3.9	7.7	2.1	2.9	1.2	1.8	3.8	2.1	2.7	1.6	2.7	3.2	4.7	3.1	4.2
Djibouti	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.1	0.3	0.6
Egypt	52.8	45.3	57.4	48.1	56.6	50.4	76.8	66.7	63.9	66.5	77.9	96.1	121.9	101.2	99.8
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.2	1.2	0.2	0.5	0.5	2.2	1.1	1.8	2.1	3.3	0.5	0.5	0.5	1.3	0.3
Ethiopia	2.8	4.0	5.1	1.1	3.2	5.8	8.9	7.2	8.7	11.9	15.8	16.3	18.9	10.9	12.7
Gabon	1.3	0.3	0.0	0.1	1.1	0.0	1.3	0.0	0.5	0.3	0.4	0.6	0.7	0.0	0.3
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Ghana	0.8	2.3	3.3	5.3	4.9	5.4	2.5	5.1	2.7	9.7	6.5	10.6	7.9	11.3	13.0
Guinea	0.0	0.0	0.5	0.5	0.9	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.3
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	11.7	11.9	16.3	17.2	26.9	25.2	21.6	14.9	20.9	16.2	25.5	15.4	23.1	17.1	14.3
Lesotho	0.0	0.0	1.3	0.5	0.0	0.0	1.0	0.0	0.2	0.1	0.0	1.0	0.8	0.0	0.3
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Libya	0.2	1.3	0.2	1.5	1.0	1.7	0.8	1.6	1.6	2.3	0.8	3.2	3.9	1.7	1.1
Madagascar	2.9	4.1	0.9	3.4	0.9	0.7	4.8	0.8	0.8	5.5	2.2	2.6	3.1	4.5	3.0
Malawi	3.3	0.0	2.0	1.8	0.3	1.5	1.3	1.0	1.2	3.6	0.7	0.8	0.1	0.8	4.6
Mali	0.0	0.0	0.2	0.3	0.0	1.6	0.3	0.9	0.0	1.0	0.5	1.0	4.0	0.9	0.5
Mauritania	0.5	0.3	0.8	0.5	0.5	0.7	0.7	0.2	2.1	0.5	1.2	0.3	1.2	0.7	0.3
Mauritius	0.0	1.5	1.2	0.8	1.0	1.3	1.3	1.2	1.4	2.1	2.0	1.8	0.6	3.2	1.8
Morocco	14.8	25.9	23.2	33.8	28.3	31.8	26.0	32.7	38.8	40.1	34.0	44.0	41.9	29.5	32.9
Mozambique	1.0	2.3	1.7	2.2	4.0	3.2	0.8	3.1	5.8	3.8	2.3	3.8	2.6	3.2	2.2
Namibia	2.0	0.5	5.7	0.7	4.0	3.4	2.2	1.9	3.0	3.4	4.6	5.0	2.6	1.4	1.3
Niger	7.9	2.5	1.4	0.5	1.0	2.0	1.3	1.3	2.4	2.1	2.0	3.5	4.1	2.9	1.6
Nigeria	26.3	18.2	19.6	21.5	14.5	25.4	20.3	25.6	24.7	31.0	24.5	29.0	33.3	34.6	31.3
Rwanda	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.8
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Senegal	6.0	1.0	6.4	5.5	3.7	4.9	6.4	4.6	7.4	5.9	2.8	6.7	6.1	5.9	8.9
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.5	1.0	0.0	0.8	0.3	0.5	0.0	0.4	0.6	0.7	0.9	1.9	1.2	0.5	0.7
Sierra Leone	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	230.6	197.2	248.1	212.6	248.6	258.5	216.8	269.1	214.2	255.2	261.3	242.9	312.0	274.2	287.7
Sudan	0.0	0.7	0.8	0.3	0.0	1.0	1.3	1.0	1.6	0.8	0.0	0.7	1.9	4.1	3.0
Swaziland	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.3	0.0	0.3	0.5	0.2
Tanzania	7.6	13.8	8.0	5.7	5.8	12.8	6.1	8.9	15.5	10.4	9.8	9.9	12.5	9.8	7.8
Togo	0.3	1.0	0.5	0.5	0.5	0.5	0.1	0.3	0.0	0.2	0.5	0.0	0.5	0.0	0.7
Tunisia	9.2	14.9	11.2	17.0	16.3	17.5	18.5	15.6	24.5	40.6	37.5	57.8	110.1	79.2	90.7
Uganda	1.1	2.5	2.5	3.5	3.5	1.3	7.5	3.8	4.3	5.9	6.3	6.5	6.1	8.8	4.5
Zambia	0.5	1.3	1.9	0.5	1.9	0.3	1.0	0.8	2.5	2.8	1.1	0.5	2.0	1.3	1.7
Zimbabwe	10.3	6.9	5.4	6.2	6.2	6.7	7.1	6.8	2.2	3.9	5.7	5.7	3.4	3.7	3.7
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.5	0.4	0.0
Armenia	1.6	2.1	1.1	0.1	3.1	3.2	2.7	1.2	1.5	4.5	1.0	2.3	3.2	0.4	3.4
Azerbaijan	2.3	0.5	0.3	3.5	4.0	2.0	2.8	7.0	4.5	2.9	2.2	0.7	3.6	3.4	1.0
Bangladesh	4.2	4.6	7.8	10.1	11.2	11.0	17.7	11.7	13.3	18.5	30.1	17.7	17.1	20.8	24.9

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	1.0	0.0	0.0	0.5	0.0	0.5	0.3	1.3	0.5	0.3	1.0	1.0	1.2	1.6	0.4
Brunei	0.0	1.3	4.3	8.7	2.2	4.8	8.4	2.6	1.5	0.5	1.5	1.8	1.8	0.5	0.5
Burma	0.0	0.7	0.7	1.9	0.0	0.5	0.0	2.0	1.3	1.2	0.9	1.2	0.5	0.5	3.4
Cambodia	0.0	0.0	0.5	0.3	2.0	0.5	1.0	0.0	0.8	2.4	1.6	5.3	3.0	0.5	1.4
China	468.2	510.2	580.2	701.1	933.6	933.4	1,226.7	1,528.1	1,657.6	2,175.5	2,451.4	2,791.7	3,597.6	3,790.4	4,297.8
Georgia	4.5	5.7	3.2	1.8	3.3	4.4	7.2	4.6	2.3	10.3	6.3	9.0	7.5	5.8	9.1
India	400.9	330.4	408.8	388.6	443.2	507.7	510.0	594.0	707.3	754.4	834.3	908.9	1,022.3	948.1	1,051.7
Indonesia	19.1	12.7	20.8	28.7	22.1	20.6	23.0	21.4	17.2	16.2	21.9	27.6	36.8	36.4	22.8
Japan	1,445.3	1,599.9	1,445.7	1,693.4	1,947.0	1,921.9	1,974.2	2,098.2	2,078.7	2,218.4	2,093.1	2,213.0	2,131.9	1,990.6	1,957.1
Kazakhstan	8.5	1.7	3.5	6.0	8.0	3.6	5.4	4.6	6.1	3.9	8.5	5.0	4.2	2.1	2.5
Kyrgyzstan	2.6	1.0	0.0	1.0	2.6	1.6	0.8	0.4	0.9	4.8	3.9	2.7	1.4	1.4	4.1
Laos	0.7	0.0	0.5	0.0	0.5	1.0	1.0	0.5	1.8	5.3	1.2	0.7	0.2	0.6	3.1
Malaysia	24.4	17.8	18.1	25.1	26.1	46.1	38.5	36.6	38.3	27.2	52.0	67.1	101.4	121.8	116.1
Maldives	0.0	1.5	2.0	0.0	0.8	0.0	0.0	0.0	0.0	0.2	1.5	0.5	0.5	0.5	0.1
Mongolia	1.8	0.5	2.5	2.2	2.9	1.6	2.8	4.1	5.0	2.2	6.3	5.7	6.1	7.2	4.6
Nepal	5.9	2.6	5.5	6.6	6.3	5.4	6.1	7.3	9.9	7.3	8.8	8.9	6.3	8.8	7.4
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.8	0.8	0.3	0.3
Pakistan	8.7	7.6	7.2	7.2	9.7	13.9	12.2	13.6	17.1	22.3	32.0	36.5	75.6	49.9	53.3
Philippines	38.1	40.3	42.2	41.2	28.5	27.9	32.9	27.9	19.0	26.0	32.4	28.1	25.8	25.1	32.0
Singapore	54.2	40.9	37.5	64.2	67.7	71.9	91.6	85.0	82.7	75.5	71.2	81.5	69.1	81.5	93.1
South Korea	121.0	155.6	146.8	210.4	343.3	373.9	415.6	527.9	468.9	527.3	517.8	597.6	663.3	716.6	742.7
Sri Lanka	5.8	8.3	6.5	6.7	6.2	7.1	11.9	12.4	12.3	8.2	14.0	17.3	11.6	12.4	13.6
Taiwan	265.5	309.2	315.7	337.4	454.0	407.3	506.4	507.4	492.6	623.6	621.3	660.6	766.7	645.8	621.2
Tajikistan	1.5	0.0	2.0	3.8	5.2	3.2	5.6	3.2	2.8	2.4	5.0	0.0	0.6	4.7	0.5
Thailand	31.6	48.4	34.4	41.9	64.1	57.9	64.2	74.0	76.9	104.3	102.9	101.1	98.6	117.3	111.7
Turkmenistan	0.0	0.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.0
Uzbekistan	5.2	3.5	1.7	0.8	2.2	0.8	4.5	7.0	2.1	4.2	1.3	1.6	6.0	3.0	2.1
Vietnam	5.2	5.7	8.9	11.8	9.5	11.8	8.0	6.4	15.1	15.6	22.6	22.3	26.6	25.6	28.4
Australia/Oceania															
Australia	1,081.3	1,233.0	1,235.2	1,316.4	1,375.5	1,211.7	1,380.3	1,432.4	1,470.4	1,503.8	1,578.9	1,697.0	1,644.1	1,700.0	1,854.6
Fiji	3.4	2.4	4.8	2.3	2.9	2.0	1.2	3.9	1.6	4.3	4.1	2.9	5.3	1.4	3.9
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.3	0.0	0.0	0.3	1.0	0.0	0.3	0.4	0.0	0.1	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	329.7	327.0	340.1	310.2	372.8	337.2	396.3	347.2	366.9	363.0	351.4	368.4	354.1	404.4	417.6
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	1.8	0.0	0.7	0.5	3.0	0.6	1.3	0.4	0.5	1.0	0.7
Papua New Guinea	1.6	2.2	2.2	4.5	2.6	2.5	4.6	3.1	0.6	1.2	1.6	0.1	2.0	1.7	0.8
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	2.7	3.0	5.4	2.2	0.7	0.5	1.6	0.3	0.4	1.0	1.2	0.0	0.5	0.4	2.2

Appendix table 5-33

S&E articles in geosciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.7	0.5	0.3	0.6	0.3	0.3	0.5	0.4	0.8	0.6	0.0	0.0	1.8	0.5	0.4

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	10,729.0	10,956.0	12,006.0	14,015.0	14,127.0	13,625.0	14,518.0	14,802.0	14,923.0	16,507.0	17,415.0	18,156.0	19,274.0	18,233.0	18,023.0
North America															
Canada	411.0	385.6	424.9	442.0	408.5	435.2	491.1	529.5	532.4	592.9	576.1	597.1	689.1	575.9	557.6
Mexico	40.7	35.8	53.2	55.2	68.7	72.3	74.2	88.8	92.8	80.4	82.8	106.0	74.9	98.5	78.9
United States	3,326.2	3,368.0	3,381.9	3,977.5	3,645.2	3,455.3	3,690.1	3,691.0	3,782.6	4,031.2	4,085.3	4,186.8	4,211.3	3,897.8	3,935.7
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	0.0	0.0	1.0	0.5	1.0	2.0	1.3	0.5	0.5	0.0	0.5	0.0	0.0	0.0	0.3
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	1.0	1.0	1.7	0.5	0.0	0.0	1.5	0.0	1.0	1.5	0.0	1.8	0.5	0.9	0.3
Cuba	0.0	3.8	2.7	2.8	1.0	2.5	2.8	2.1	2.3	5.5	3.2	6.7	2.0	1.7	1.7
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	1.0	0.5	0.8	0.5	1.5	0.0	0.5	0.0	0.8	0.8	0.5	0.8	1.2	0.3	0.0
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
West Indies Associated States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South America															
Argentina	32.2	20.8	45.2	59.2	59.8	62.3	51.1	58.8	53.5	73.1	73.4	85.5	76.4	96.3	78.3
Bolivia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Brazil	105.7	114.8	126.3	160.3	179.2	197.8	193.5	194.3	204.2	221.4	230.3	253.8	289.4	289.3	266.0
Chile	33.7	33.5	31.1	35.1	37.5	49.4	58.4	59.6	52.5	76.5	77.6	74.7	95.1	86.1	91.5
Colombia	2.2	3.3	3.7	5.7	9.0	7.3	8.7	5.2	6.2	12.6	11.2	9.9	16.1	17.7	24.9
Ecuador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.8	1.8	3.8	1.7
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Peru	0.0	0.0	0.0	2.0	1.0	0.8	1.5	0.0	1.0	2.0	0.7	1.5	1.8	1.8	2.0
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	7.6	4.0	4.8	6.2	5.5	8.0	7.5	4.5	6.0	4.3	5.3	7.9	11.3	10.4	5.7
Venezuela	18.9	11.7	15.2	25.3	23.7	19.5	15.4	18.3	17.7	12.2	11.9	16.5	6.5	11.9	10.0

Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	72.2	65.8	79.0	95.0	120.6	120.6	127.7	114.3	124.7	159.2	157.8	158.2	159.0	155.0	179.1
Belgium	80.1	85.0	120.8	122.1	118.6	120.1	145.4	175.1	157.4	174.0	184.3	211.8	185.0	193.2	166.7
Bulgaria	31.2	27.9	30.3	37.7	35.5	31.2	28.1	33.2	33.0	30.2	31.0	33.1	29.0	36.4	18.2
Cyprus	3.2	3.8	3.0	5.0	8.0	2.5	7.8	10.5	8.8	11.8	9.6	18.5	16.3	20.3	7.9
Czech Republic	52.3	46.2	59.0	75.2	106.9	76.2	79.1	85.4	78.6	105.5	124.0	135.5	139.6	162.3	115.8
Denmark	64.7	64.0	73.6	63.2	73.4	64.1	78.6	74.7	80.6	78.2	63.0	52.9	68.6	59.5	64.2
Estonia	4.3	4.5	7.2	6.0	6.3	3.8	4.0	4.5	8.0	5.7	11.3	8.8	6.0	4.5	8.2
Finland	46.6	38.4	61.2	74.2	70.4	67.7	72.5	73.0	61.4	88.9	90.7	87.2	82.4	83.1	92.4
France	1,044.5	1,154.2	1,248.7	1,355.3	1,369.0	1,381.5	1,360.3	1,335.6	1,367.1	1,409.9	1,388.4	1,393.8	1,549.5	1,549.9	1,442.4
Germany	735.8	812.4	907.0	1,025.8	936.1	888.1	930.8	959.0	937.3	989.0	1,071.0	1,031.9	1,106.0	1,012.6	1,065.0
Greece	80.7	52.5	73.2	69.9	96.0	82.5	94.8	100.0	113.5	117.4	96.2	101.7	124.6	98.4	101.6
Hungary	52.8	65.0	72.3	95.4	97.7	82.3	100.0	81.6	106.4	110.3	88.9	128.0	120.5	91.5	103.8
Ireland	28.5	34.7	34.9	49.8	42.0	32.6	34.0	42.4	42.5	61.4	49.3	48.0	54.4	58.1	54.6
Italy	438.5	404.8	472.0	564.4	638.3	640.3	660.8	652.0	665.5	755.7	793.0	774.4	882.2	865.4	778.0
Latvia	2.5	1.5	1.5	2.5	2.5	0.0	0.5	0.3	1.0	0.0	2.3	0.0	1.0	1.0	2.0
Lithuania	3.0	5.7	17.7	10.5	8.3	10.3	30.0	11.6	5.2	9.0	43.9	10.0	11.1	13.2	7.9
Luxembourg	0.0	1.0	1.0	0.0	1.5	0.0	1.8	2.8	0.0	0.5	4.2	8.8	5.4	6.7	12.7
Malta	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	0.5	2.0	2.2	2.5	3.2	1.0
Netherlands	145.9	142.3	130.4	178.2	162.9	140.0	189.7	154.1	161.2	163.3	161.7	181.4	166.4	167.2	153.8
Poland	138.5	128.2	175.3	187.8	226.9	199.0	224.0	227.6	211.8	207.6	277.7	296.8	330.4	289.3	330.3
Portugal	26.3	33.4	30.6	49.1	73.4	78.7	82.2	76.2	98.8	102.8	105.0	110.9	159.8	134.9	150.9
Romania	50.9	48.4	58.6	61.9	74.4	81.1	73.2	68.9	68.3	79.0	114.2	104.0	141.6	151.2	120.9
Slovakia	26.2	13.7	20.6	27.4	35.4	27.9	17.7	25.7	23.8	22.7	36.8	34.2	30.8	34.9	30.7
Slovenia	18.2	24.8	22.3	28.3	28.6	65.5	38.0	49.2	50.6	46.7	82.5	62.8	70.4	67.3	47.3
Spain	320.8	317.8	439.8	510.1	528.7	495.3	550.1	565.5	533.9	617.4	675.6	683.3	705.7	688.6	608.9
Sweden	100.3	118.2	132.4	137.6	130.0	130.2	146.1	159.8	155.7	179.9	171.5	164.4	164.3	152.9	142.6
United Kingdom	638.9	673.1	713.3	803.9	739.0	701.2	758.3	699.8	720.2	887.0	901.1	872.8	908.2	895.4	913.9
Other Europe															
Albania	0.0	0.0	0.5	0.0	0.0	1.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	1.3	0.5
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	10.7	13.0	16.0	14.8	18.3	9.5	12.4	12.8	14.3	15.2	15.9	10.3	11.5	12.2	15.8
Bosnia and Herzegovina	1.0	0.5	0.5	2.5	0.0	1.0	0.5	0.0	1.5	4.0	3.5	3.2	1.7	4.8	3.5
Croatia	14.3	19.3	9.5	21.0	20.4	15.2	9.2	17.2	20.7	28.0	24.8	32.1	29.9	29.0	27.8
Iceland	4.0	2.0	1.7	0.3	4.1	2.5	3.0	2.1	1.8	3.5	5.0	5.7	6.6	10.2	3.7
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	1.0	0.0	2.0	0.5	1.0	0.0	1.0	2.0	0.0	0.0	0.0	1.5	1.5	0.5	3.7
Moldova	4.5	5.5	1.0	2.0	1.5	0.3	0.8	1.0	2.0	1.8	2.5	1.0	1.5	0.0	2.0
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	1.0	1.0	0.8	3.5	7.3

Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	37.1	53.7	45.5	59.2	67.9	43.4	51.7	63.7	50.6	72.4	79.2	88.1	93.6	80.8	92.8
Russia	294.5	297.3	302.7	458.3	563.5	539.0	508.8	537.2	533.4	473.3	480.7	509.8	515.1	514.3	467.9
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	19.5	54.2	53.2	63.3	53.6	62.2
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	38.9	20.4	NA	NA	NA	NA	NA
Switzerland	84.3	99.6	105.8	116.5	118.3	130.1	127.5	134.9	154.5	148.3	161.5	148.1	172.5	143.6	173.4
Ukraine	37.7	45.5	61.4	58.1	68.7	55.2	60.2	58.3	64.4	77.2	72.2	67.9	68.9	61.7	60.0
Vatican City	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	22.5	14.1	15.1	13.1	23.3	24.4	21.1	21.3	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	1.0	1.5	0.3	2.0	0.0	0.0	1.5	0.7	1.0	1.5	0.0	2.5	0.5	2.0	0.0
Iran	14.8	16.5	26.8	23.2	40.7	33.3	39.6	57.2	71.8	84.5	129.3	161.7	186.9	168.8	197.8
Iraq	1.0	0.0	0.5	0.0	2.0	0.5	0.5	1.0	0.5	1.5	0.0	1.5	0.5	1.0	0.0
Israel	212.3	225.0	232.7	255.7	246.7	255.0	243.3	233.3	246.4	274.1	255.6	303.0	278.6	250.0	255.7
Jordan	4.1	0.5	2.0	2.3	2.0	4.8	6.0	8.5	5.2	6.0	10.0	18.3	7.7	10.8	7.8
Kuwait	11.2	7.3	7.5	10.2	6.8	5.8	4.8	7.1	3.2	6.6	3.2	5.0	6.4	6.0	4.0
Lebanon	3.8	3.5	4.0	3.0	6.0	3.0	8.6	7.0	3.5	1.6	6.8	8.5	3.1	6.3	8.4
Oman	2.3	1.5	2.5	3.5	1.5	3.8	3.8	2.2	4.3	5.0	4.3	7.8	7.3	5.5	4.5
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.5	2.1	1.0	4.5
Saudi Arabia	21.3	14.0	13.5	14.2	20.5	21.2	17.8	13.2	20.7	21.3	29.0	34.7	37.9	46.9	61.7
Syria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.3
Turkey	25.0	27.9	36.7	40.0	54.3	47.5	57.0	88.7	94.4	129.9	146.3	149.4	163.5	130.4	157.6
United Arab Emirates	0.0	2.0	0.0	2.8	3.0	10.9	10.1	17.7	11.2	10.3	10.6	5.3	8.2	5.3	11.2
Yemen	1.0	0.5	1.5	0.0	0.3	1.5	0.0	0.0	0.0	1.0	1.0	0.5	1.0	0.0	2.0
Africa															
Algeria	4.5	3.5	8.0	6.5	12.2	12.2	15.0	12.8	14.8	16.4	23.2	28.4	33.5	35.7	25.3
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.5	0.0	0.0	0.0	1.0	1.3	0.0	1.0	0.0	1.2	0.8	1.0	1.0	2.0	0.0
Botswana	0.0	1.0	0.5	3.3	3.3	4.0	0.0	3.0	1.8	0.0	0.0	0.0	1.5	0.5	1.0
Burkina Faso	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.3	0.0	0.0	1.3	2.4	0.5
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	0.0	1.0	1.0	1.0	1.3	1.0	2.8	2.1	4.0	4.0	6.6	5.9	3.3	6.7	6.4
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.2	0.5	0.0	0.0	0.0
Congo (Kinshasa)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Côte d'Ivoire	1.0	2.5	2.5	0.0	2.0	1.0	2.0	0.0	2.0	0.3	0.0	0.5	2.2	1.0	2.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	9.7	15.3	8.1	14.0	11.0	12.1	17.7	17.5	26.3	24.9	27.1	33.1	24.0	20.2	28.2
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethiopia	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	3.0	3.0	1.3	1.8
Gabon	0.0	0.5	0.0	0.5	1.5	0.5	1.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.5
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.3	0.0	1.5	0.0
Guinea	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.2
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Libya	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.8	0.0	3.0	1.0	1.0
Madagascar	0.0	1.3	0.0	0.0	0.0	0.0	0.5	0.5	0.0	1.0	0.0	1.5	0.0	1.0	0.0
Malawi	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Mauritania	0.0	0.0	0.0	0.3	0.8	0.8	0.5	0.3	1.8	1.5	0.7	0.0	0.0	0.0	1.0
Mauritius	0.0	0.0	0.0	0.0	1.0	0.5	0.5	0.0	0.0	1.0	0.0	4.5	3.0	1.5	0.0
Morocco	21.2	20.2	32.7	31.2	48.7	31.2	41.3	33.3	35.2	38.2	32.7	31.0	37.7	36.2	29.2
Mozambique	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Niger	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0
Nigeria	6.0	2.5	6.0	6.0	7.0	3.0	1.5	2.0	2.8	3.0	6.5	2.3	1.0	5.2	2.8
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	1.3	0.5	0.0	0.0	1.5	0.8	2.5	1.3	1.3	2.4	1.0	3.8	2.6	4.8	3.7
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	25.5	34.8	52.7	43.9	40.6	42.2	37.6	33.6	37.7	44.7	67.8	53.1	65.4	42.9	47.9
Sudan	0.0	0.0	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	1.0
Swaziland	0.0	0.5	0.5	0.3	0.0	0.5	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Tanzania	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.3
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	15.6	21.8	25.9	27.7	38.3	37.0	32.4	32.7	44.2	43.3	48.8	45.8	60.0	62.7	66.1
Uganda	0.0	0.5	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.3	1.0	0.0
Zambia	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zimbabwe	1.0	0.0	0.0	0.5	0.5	0.5	0.3	0.5	0.0	0.0	1.3	0.0	0.8	0.0	1.0
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Armenia	0.7	6.5	3.3	4.5	1.5	10.1	6.3	8.0	2.0	9.2	8.3	7.0	12.5	9.0	9.5
Azerbaijan	2.3	0.0	2.5	3.5	5.3	3.8	4.0	5.5	6.0	8.3	12.3	8.7	12.3	10.6	9.8
Bangladesh	1.5	2.0	1.0	0.5	0.5	2.5	0.0	0.0	1.0	1.0	0.3	0.5	0.0	1.0	1.8

Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	1.0	1.0	1.0	2.5	1.0	0.0	2.8	0.0	3.0	0.0	1.8	1.0	0.5	0.0	2.3
Burma	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.0	0.0	1.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
China	458.4	483.4	555.7	712.4	817.5	856.1	1,037.7	1,193.7	1,203.3	1,507.3	1,858.2	2,169.6	2,408.7	2,327.0	2,365.4
Georgia	4.8	4.2	9.6	10.4	11.5	9.0	9.7	13.7	12.2	14.3	13.2	17.4	17.3	6.5	9.3
India	126.4	114.8	134.4	156.0	131.3	148.3	153.7	170.3	153.8	179.0	207.4	202.4	252.0	212.1	246.3
Indonesia	0.0	0.3	0.0	0.0	0.5	1.5	1.6	0.8	1.6	2.5	2.3	3.8	2.7	3.0	2.8
Japan	464.2	437.0	561.1	664.5	761.8	626.1	721.5	700.7	616.8	707.6	705.5	771.8	793.0	717.6	707.1
Kazakhstan	3.3	5.5	3.0	2.8	9.3	4.3	9.8	6.0	6.0	7.0	6.9	7.0	5.3	6.0	3.8
Kyrgyzstan	0.0	0.0	0.0	0.0	1.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	1.0	1.5	3.3	2.7	4.8	3.5	5.7	4.0	5.3	6.8	8.3	8.4	21.7	15.9	21.6
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.5	0.7	0.0	0.0	0.0	0.0	0.5	0.0
Nepal	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	1.0	1.3	0.5
Pakistan	2.3	2.3	3.5	4.0	3.8	3.2	0.5	2.0	8.0	10.9	10.8	20.6	21.6	21.7	15.7
Philippines	3.5	1.0	1.0	4.5	3.0	3.3	5.5	1.3	2.5	2.6	2.2	6.0	1.8	2.0	0.8
Singapore	47.7	47.2	58.9	72.2	86.3	94.2	93.0	84.9	77.8	92.5	101.2	89.4	74.8	86.0	67.6
South Korea	95.5	122.0	135.4	181.4	186.8	193.6	229.8	228.7	239.3	273.2	305.5	309.3	332.8	294.6	345.2
Sri Lanka	0.0	0.5	1.5	1.5	0.0	0.0	0.5	0.1	0.0	0.8	1.3	0.3	1.3	0.0	0.0
Taiwan	113.2	130.4	124.4	174.6	156.5	152.1	145.3	165.1	153.7	207.0	204.5	271.2	271.8	248.2	196.8
Tajikistan	0.0	1.0	0.5	1.0	4.0	7.5	3.0	5.5	7.8	4.5	1.0	0.0	2.0	4.5	1.0
Thailand	0.5	0.5	2.2	5.0	3.8	4.5	7.2	8.7	9.6	18.2	17.8	18.2	29.1	21.7	18.8
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Uzbekistan	4.8	2.5	4.0	6.5	3.8	4.6	3.3	2.7	4.5	5.8	6.4	3.3	8.7	5.2	5.6
Vietnam	26.5	15.5	12.5	26.7	24.2	19.9	27.2	22.7	31.7	24.8	35.2	50.1	60.9	71.1	64.3
Australia/Oceania															
Australia	244.4	223.1	241.0	277.7	242.3	222.1	218.0	257.3	239.0	242.8	239.8	243.8	269.6	245.6	238.9
Fiji	0.5	0.5	1.5	0.7	0.0	1.0	1.0	0.0	0.5	0.3	0.0	0.5	0.0	0.6	1.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	40.5	43.6	35.8	48.1	51.1	57.8	45.9	48.6	45.4	56.1	47.3	40.7	53.7	51.8	51.5
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-34

S&E articles in mathematics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	144,819.0	148,378.0	149,672.0	154,835.0	152,922.0	153,483.0	158,517.0	162,593.0	167,524.0	171,808.0	174,390.0	178,435.0	179,051.0	180,734.0	182,772.0
North America															
Canada	5,620.8	5,610.5	5,925.7	5,882.5	5,666.5	5,714.4	6,104.9	6,179.5	6,579.4	6,807.3	6,984.0	7,257.0	7,356.3	7,394.2	7,359.4
Mexico	327.7	390.8	476.5	508.3	478.1	495.5	487.8	528.0	496.7	570.1	548.4	591.0	545.9	576.7	522.9
United States	52,196.9	52,146.9	52,106.6	53,042.3	52,592.2	52,894.8	54,935.8	56,160.9	57,221.3	57,876.8	58,323.1	59,731.0	58,675.4	59,222.9	60,071.3
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.0	0.0	0.1	0.0
Bahamas	0.0	0.0	0.0	0.3	0.3	0.5	1.0	0.0	0.2	0.1	0.3	0.3	0.7	0.1	0.4
Barbados	3.7	0.3	2.9	1.7	1.7	2.3	3.9	9.3	5.2	6.1	6.1	4.3	4.3	2.6	2.6
Belize	1.2	0.6	0.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.7	0.0
Costa Rica	5.6	7.7	10.1	6.0	12.4	14.6	11.2	13.2	16.2	17.3	16.7	19.7	21.1	19.3	14.5
Cuba	21.5	33.1	40.2	34.8	35.9	23.2	39.1	39.4	28.8	41.4	34.1	48.5	40.0	39.6	46.9
Dominica	0.0	1.5	0.0	0.1	2.0	0.7	1.0	2.0	0.0	0.9	0.3	0.0	0.3	0.8	0.5
Dominican Republic	1.6	2.5	3.2	3.5	2.5	1.9	1.7	3.9	3.6	3.8	4.0	2.2	3.5	3.0	3.6
El Salvador	0.0	0.0	1.1	2.8	2.6	3.5	0.7	1.6	2.2	0.7	1.0	0.8	1.3	2.0	5.1
Grenada	0.0	0.0	0.9	0.3	0.0	0.0	0.6	0.6	1.2	1.7	1.5	4.3	4.6	5.5	7.7
Guatemala	4.6	3.6	6.7	3.0	5.3	5.1	7.8	2.9	10.1	10.3	8.9	5.5	8.5	8.7	10.0
Haiti	1.5	1.9	0.3	3.1	2.3	3.5	1.2	3.9	2.9	4.6	3.2	2.6	2.9	2.8	9.5
Honduras	2.6	4.2	5.1	1.3	1.8	1.3	2.2	2.4	3.9	1.8	3.7	2.6	2.9	3.3	2.8
Jamaica	13.1	11.7	14.1	5.2	18.9	9.1	8.8	12.5	15.7	7.7	14.9	10.3	15.0	16.2	15.7
Nicaragua	3.5	2.2	2.6	5.1	2.0	4.5	2.2	2.8	2.8	8.5	2.1	4.4	6.0	4.2	4.5
Panama	1.6	2.9	2.9	3.6	5.5	3.6	2.8	5.8	6.6	5.6	7.3	8.5	6.2	5.0	7.5
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.3	0.6	0.2
St. Lucia	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0
St. Vincent	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	8.3	10.5	13.6	11.6	12.2	13.3	15.6	10.5	8.4	14.7	18.7	13.9	14.4	11.7	16.1
West Indies Associated States	0.5	0.0	2.4	3.1	0.7	3.6	4.8	0.3	2.7	1.8	2.9	3.3	6.2	2.8	3.0
South America															
Argentina	465.0	463.9	526.5	564.7	547.7	572.5	461.4	505.4	479.1	500.5	494.8	474.4	542.1	558.0	580.2
Bolivia	9.1	9.7	13.0	5.0	8.6	7.2	4.5	5.8	5.3	7.0	10.0	11.7	8.8	6.7	6.0
Brazil	793.7	932.9	996.9	1,170.8	1,259.3	1,443.9	1,658.5	1,858.0	2,122.7	2,494.1	2,996.0	3,352.9	3,130.5	3,287.4	3,265.2
Chile	271.3	287.6	302.9	312.1	301.6	306.4	328.6	321.0	358.4	386.6	368.7	371.7	403.3	390.3	397.4
Colombia	32.2	49.7	48.2	57.3	65.5	72.1	57.6	60.7	79.3	73.8	101.5	101.0	105.8	104.1	131.1
Ecuador	19.7	9.8	10.9	10.6	6.5	12.6	14.5	14.5	10.5	9.7	14.4	14.0	12.7	18.9	9.8
Guyana	1.0	0.0	1.9	1.3	0.5	1.1	0.3	0.0	1.1	2.6	1.0	0.8	0.2	3.9	1.5
Paraguay	2.1	3.5	1.8	2.1	1.8	3.2	1.7	3.5	2.0	1.6	6.5	1.7	4.5	4.1	1.3
Peru	23.1	22.5	24.1	27.2	24.0	25.9	31.1	32.2	40.5	46.9	37.7	54.3	49.3	46.0	50.8
Suriname	0.0	0.8	0.8	1.0	1.0	1.6	2.0	0.4	0.9	0.0	0.5	0.8	0.3	1.0	0.4
Uruguay	41.3	39.5	34.3	43.3	23.3	31.8	29.4	30.9	38.3	32.5	30.7	47.0	30.7	34.7	51.3
Venezuela	68.6	71.2	71.7	79.5	79.2	77.6	81.1	76.4	79.9	77.3	65.4	54.6	54.1	42.8	43.1

Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	1,437.3	1,611.9	1,556.2	1,693.9	1,638.6	1,709.6	1,755.6	1,657.2	1,604.8	1,574.9	1,596.2	1,500.0	1,480.1	1,388.3	1,515.6
Belgium	1,560.6	1,738.2	1,602.3	1,632.3	1,627.5	1,623.4	1,664.9	1,682.8	1,673.1	1,763.1	1,805.2	1,821.9	1,845.0	1,842.7	1,776.3
Bulgaria	67.1	90.8	63.8	69.2	76.5	63.3	65.4	76.4	81.1	75.0	72.1	88.6	70.0	67.3	57.8
Cyprus	5.1	8.5	2.6	9.3	8.6	12.7	12.8	9.8	11.8	16.6	8.7	10.7	21.2	21.0	22.2
Czech Republic	227.6	213.6	211.4	275.3	289.9	281.6	334.3	348.3	380.2	471.8	484.1	489.8	480.0	522.5	466.5
Denmark	1,521.1	1,509.7	1,574.2	1,504.7	1,466.0	1,453.7	1,565.9	1,547.0	1,608.5	1,655.1	1,713.9	1,728.8	1,746.1	1,873.0	2,054.3
Estonia	31.2	47.0	42.6	40.9	45.1	33.9	45.6	45.9	48.1	57.2	63.4	60.0	65.7	75.7	65.4
Finland	1,753.4	1,577.1	1,715.7	1,733.6	1,650.5	1,601.0	1,563.6	1,587.6	1,526.8	1,552.1	1,462.1	1,474.8	1,407.8	1,405.6	1,314.8
France	6,664.7	7,143.4	6,894.6	6,967.0	6,747.5	6,572.4	6,611.7	5,953.3	6,201.6	6,157.0	6,078.3	6,153.7	6,100.5	6,062.0	6,003.8
Germany	10,377.3	10,855.2	11,102.7	11,805.5	11,558.7	11,588.3	11,552.1	11,728.3	11,903.7	12,033.9	11,890.6	11,743.8	11,779.3	11,575.7	11,395.4
Greece	645.8	700.1	699.6	790.8	900.6	886.0	1,012.3	1,150.4	1,325.3	1,431.0	1,462.9	1,402.8	1,369.8	1,323.9	1,233.3
Hungary	333.4	391.6	377.5	479.2	550.8	458.4	502.6	491.6	541.7	535.2	506.5	532.4	499.3	473.2	423.1
Ireland	426.7	398.2	368.2	433.9	428.5	418.5	442.8	506.7	470.6	546.7	559.4	605.1	613.9	660.3	672.0
Italy	5,924.7	6,180.6	6,081.7	6,305.4	6,655.2	6,482.0	6,989.2	7,122.2	7,161.0	7,560.4	7,635.9	7,684.7	7,704.9	7,543.4	7,317.1
Latvia	5.4	7.3	7.6	8.2	11.7	7.8	5.8	7.7	8.4	7.5	11.5	12.0	9.9	12.7	17.5
Lithuania	12.0	17.1	19.8	27.7	17.3	20.4	24.2	31.8	38.4	45.7	36.5	39.9	36.1	34.9	43.3
Luxembourg	15.4	5.8	6.8	15.5	12.0	14.1	5.4	11.6	15.3	10.5	19.2	17.2	25.6	22.9	20.5
Malta	7.8	6.6	12.1	9.0	8.2	5.8	10.4	6.3	7.8	3.7	6.4	12.6	8.9	6.5	12.3
Netherlands	4,093.0	4,129.2	3,953.0	4,062.1	3,961.4	4,044.7	4,300.9	4,561.8	4,880.0	5,110.2	5,126.3	5,227.7	5,376.7	5,580.3	5,554.8
Poland	441.8	477.7	504.2	528.8	596.3	638.2	682.8	704.6	768.9	859.3	846.2	824.9	904.4	927.4	913.8
Portugal	179.8	166.7	222.5	178.7	189.5	208.0	215.0	262.6	264.1	318.8	311.7	391.4	444.3	480.0	509.7
Romania	31.4	27.1	22.8	34.4	25.7	24.0	18.5	35.7	30.7	49.1	70.9	55.2	87.1	122.4	101.9
Slovakia	112.6	107.5	115.7	108.3	99.7	76.8	97.3	101.6	103.2	121.5	98.6	103.7	141.6	122.7	104.0
Slovenia	91.4	91.1	104.9	155.2	146.6	135.8	154.1	168.0	149.8	201.0	146.3	206.0	186.9	168.4	175.6
Spain	2,761.8	3,051.3	2,989.7	3,260.1	3,088.9	3,144.1	3,086.1	3,271.3	3,485.7	3,693.5	3,823.6	4,047.0	3,903.5	4,160.9	4,224.5
Sweden	3,510.4	3,390.8	3,365.1	3,302.6	3,200.7	3,127.5	3,033.0	2,947.2	3,163.9	3,059.1	3,059.4	2,892.4	2,959.3	2,827.9	2,835.9
United Kingdom	13,409.6	13,312.1	13,694.8	13,994.2	13,474.8	13,046.6	13,113.7	13,415.5	13,381.0	13,297.2	13,198.4	12,777.4	12,519.8	12,324.2	12,281.8
Other Europe															
Albania	4.8	1.6	3.0	0.0	0.9	2.3	2.0	2.4	1.3	2.1	1.6	3.8	1.3	4.4	3.7
Andorra	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.7	0.3	0.6	2.2	0.1	0.0	0.1	0.0
Belarus	14.9	11.8	15.9	25.3	16.2	15.5	13.2	20.5	19.7	20.6	15.1	21.0	16.2	8.0	19.1
Bosnia and Herzegovina	1.3	1.0	3.7	0.5	4.8	2.3	6.2	1.8	3.3	4.1	20.7	10.9	14.6	7.6	6.9
Croatia	115.1	114.9	120.7	126.1	131.7	132.9	135.6	155.1	141.7	162.1	180.2	199.9	164.3	200.2	192.2
Iceland	45.8	57.1	46.8	41.9	51.4	59.5	57.1	50.3	57.4	71.2	55.3	49.4	64.3	75.1	48.5
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.1	1.5	0.0	0.0	0.0	1.0	0.2	4.8	3.8	3.0	7.3	3.1	4.2	2.4
Macedonia	5.7	2.4	5.1	7.2	8.2	8.7	10.7	4.5	4.7	5.8	6.8	4.8	10.1	5.7	9.5
Moldova	0.5	0.0	4.5	0.3	0.2	0.7	3.2	2.3	4.7	2.1	1.0	3.1	1.1	2.2	0.7
Monaco	2.9	3.3	0.8	1.4	3.6	2.8	7.1	7.1	5.8	4.5	2.3	4.6	5.9	6.3	5.5
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6	0.3	0.9	2.3	1.8	0.0

Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	905.3	937.1	937.6	954.2	926.2	870.4	901.4	935.3	1,084.8	1,070.2	1,106.1	1,231.8	1,271.7	1,286.6	1,283.2
Russia	644.9	594.6	522.9	541.6	505.7	517.5	491.4	472.6	566.3	528.5	576.4	568.8	582.1	422.5	526.7
San Marino	0.8	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.5
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	65.6	157.8	178.3	191.6	193.3	194.0
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	121.4	64.2	NA	NA	NA	NA	NA
Switzerland	2,188.7	2,280.6	2,281.5	2,510.6	2,188.9	2,174.6	2,160.3	2,342.4	2,364.8	2,534.3	2,541.3	2,542.5	2,600.8	2,591.5	2,596.7
Ukraine	73.3	72.2	76.8	57.9	73.8	61.1	56.1	59.1	54.9	40.1	29.3	35.1	32.8	31.1	41.6
Vatican City	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Yugoslavia	92.2	85.3	84.1	57.8	79.4	63.7	76.9	108.9	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	7.2	5.5	5.3	4.0	3.6	2.7	2.8	2.1	5.3	7.8	7.3	6.6	7.1	7.1	9.6
Iran	47.6	68.0	74.4	103.4	121.5	159.2	179.7	205.7	291.0	459.2	618.7	671.2	714.3	746.9	743.1
Iraq	9.2	3.0	6.0	4.2	8.0	3.7	5.3	3.3	8.2	20.7	17.2	22.8	17.0	19.6	23.1
Israel	1,719.9	1,642.5	1,649.9	1,736.3	1,755.9	1,759.9	1,847.0	1,873.0	1,836.7	1,817.4	1,763.9	1,591.5	1,601.6	1,513.9	1,439.4
Jordan	39.5	45.8	49.5	41.7	33.6	38.6	41.3	45.3	50.6	52.1	59.1	71.0	66.9	75.4	67.6
Kuwait	45.2	50.4	66.7	55.3	63.9	61.9	70.7	58.3	54.8	63.4	56.1	51.0	45.0	42.9	45.9
Lebanon	36.6	36.9	58.5	55.7	69.3	60.2	79.3	69.7	94.1	114.2	100.5	123.4	99.4	102.3	89.4
Oman	20.2	21.8	29.3	28.9	35.5	29.3	21.1	19.1	20.8	21.1	24.8	23.1	23.0	19.6	30.6
Qatar	5.0	10.0	6.5	5.2	6.5	2.8	5.9	17.2	15.3	13.5	14.0	16.4	17.2	30.7	21.6
Saudi Arabia	238.9	251.5	213.9	203.9	177.8	167.0	131.2	136.0	171.9	140.5	143.9	168.6	152.7	211.3	235.8
Syria	7.0	4.0	15.2	4.3	11.8	5.5	9.2	10.7	9.1	6.3	11.6	11.8	14.9	8.9	16.1
Turkey	951.4	1,073.5	1,294.3	1,417.6	1,663.8	2,094.4	2,366.5	2,807.0	3,157.8	3,005.8	3,026.5	2,804.7	2,599.7	2,356.7	2,379.7
United Arab Emirates	59.6	76.4	46.4	49.7	61.3	37.0	36.3	41.5	41.1	46.9	39.1	50.1	45.6	50.2	63.8
Yemen	1.6	2.5	2.5	0.3	1.3	2.3	0.9	6.0	0.9	5.1	2.4	3.1	7.1	3.2	4.4
Africa															
Algeria	4.9	9.5	9.7	8.9	8.0	6.5	8.9	8.6	4.9	11.7	12.7	12.4	20.8	15.8	17.9
Angola	1.0	0.0	0.5	1.1	0.5	1.5	0.1	1.0	0.9	0.9	0.5	1.4	2.4	1.7	2.5
Benin	1.7	4.8	4.6	1.3	3.8	4.0	3.6	3.5	5.9	5.6	10.0	8.8	7.5	7.3	9.9
Botswana	4.6	8.4	6.7	11.1	6.5	6.0	8.4	5.7	3.9	6.8	5.1	5.1	8.0	4.2	10.4
Burkina Faso	7.9	9.3	8.1	8.2	8.4	10.5	9.8	12.0	8.9	16.2	14.0	19.1	9.3	14.0	11.8
Burundi	7.8	0.8	0.5	0.2	0.0	0.8	1.2	1.1	0.6	0.3	0.8	0.4	0.3	0.3	0.2
Cameroon	19.5	19.8	17.9	15.1	19.4	27.2	23.0	24.3	20.4	25.2	26.1	20.1	27.7	26.9	26.8
Cape Verde	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0
Central African Republic	3.4	4.8	1.0	1.5	0.9	2.5	1.0	1.8	3.3	3.1	0.2	2.8	0.8	1.3	0.8
Chad	1.5	1.7	1.6	1.0	0.0	2.3	2.3	1.0	2.1	2.8	0.3	1.1	0.5	0.8	0.3
Comoros	0.0	0.0	1.0	0.5	0.1	0.0	0.0	0.3	0.0	0.0	0.9	0.3	0.5	0.2	0.0
Congo (Brazzaville)	0.0	5.5	3.2	2.9	1.0	3.3	6.0	4.0	5.1	6.7	8.2	4.9	4.1	5.6	4.3
Congo (Kinshasa)	8.2	2.7	1.2	2.4	1.2	1.2	3.1	2.9	2.1	2.6	4.9	4.6	6.3	4.5	6.4
Côte d'Ivoire	14.5	13.4	12.5	13.3	8.9	7.7	8.2	9.9	6.8	8.3	5.3	6.8	8.8	9.4	8.8
Djibouti	0.0	0.4	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.1	0.0	0.0	0.5	0.6	0.7
Egypt	199.0	187.6	212.7	191.3	216.2	192.7	236.1	236.9	243.2	263.1	277.6	330.7	384.2	530.8	541.9
Equatorial Guinea	0.3	0.0	2.2	0.3	0.7	0.3	0.3	0.8	0.0	0.5	0.7	0.0	1.3	0.0	0.6

Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.7	0.0	0.3	0.5	0.4	1.7	1.0	1.4	1.3	4.6	1.4	0.5	1.1	1.0
Ethiopia	37.4	26.8	54.2	48.9	28.5	29.5	19.5	40.2	25.1	33.5	40.0	48.7	60.1	75.3	54.2
Gabon	9.8	7.1	6.2	6.3	4.3	4.3	5.9	3.5	4.2	4.2	4.1	2.9	1.6	5.7	7.4
Gambia	14.6	9.9	12.1	15.4	17.3	11.0	11.2	12.8	12.8	10.5	7.3	7.3	6.3	7.8	6.5
Ghana	32.6	26.5	20.4	33.7	25.3	24.9	19.7	28.8	27.1	27.3	27.1	18.9	25.2	31.0	33.0
Guinea	1.1	0.0	0.3	0.5	1.8	2.0	0.3	1.2	1.7	5.7	2.8	0.2	1.1	2.1	0.9
Guinea-Bissau	1.9	0.4	4.3	2.0	0.5	3.8	4.8	2.8	1.5	2.6	6.3	2.2	2.8	0.7	2.6
Kenya	120.0	116.3	102.0	87.1	52.6	48.6	59.5	72.0	52.5	53.4	60.3	62.9	69.3	81.4	85.2
Lesotho	0.3	0.3	0.3	0.5	0.2	0.1	0.3	0.0	0.0	0.5	0.6	0.6	0.1	1.4	0.6
Liberia	0.0	1.3	0.0	0.0	0.8	0.7	0.0	0.3	0.3	0.0	0.0	0.1	0.0	1.1	0.3
Libya	4.4	4.9	4.2	5.2	4.1	4.7	5.4	1.5	1.6	6.2	3.4	4.9	10.8	5.8	4.8
Madagascar	4.6	2.8	3.5	4.3	7.8	6.3	6.8	3.7	3.5	4.8	12.4	9.8	5.6	6.1	4.7
Malawi	19.7	13.3	18.8	26.5	25.2	24.9	20.9	23.7	21.6	19.9	25.0	19.1	22.6	24.7	25.9
Mali	7.4	7.6	4.2	2.8	3.0	5.7	4.7	5.0	7.2	7.9	8.2	4.9	6.9	6.7	11.6
Mauritania	1.0	0.0	0.4	0.7	3.9	2.6	2.3	0.8	1.3	1.2	0.7	0.0	0.1	0.2	1.4
Mauritius	1.3	1.1	1.2	0.9	1.9	0.3	1.7	1.2	1.2	0.6	0.7	0.7	0.8	1.6	0.8
Morocco	33.9	30.0	45.6	50.1	42.4	45.7	49.3	46.0	50.0	68.1	59.7	65.4	65.7	52.9	53.6
Mozambique	6.0	2.2	4.6	2.3	4.8	3.2	2.9	5.2	5.2	6.8	8.8	10.6	10.3	5.4	15.7
Namibia	1.1	4.3	1.5	0.3	0.3	2.4	3.0	0.8	0.7	1.7	0.8	1.1	0.6	1.6	1.7
Niger	3.2	5.6	3.2	5.0	1.3	0.8	3.9	3.3	5.6	3.8	5.3	3.0	2.5	1.6	2.6
Nigeria	146.8	126.5	118.0	120.7	70.5	75.4	72.2	88.6	104.3	108.6	109.4	125.5	143.8	120.8	126.8
Rwanda	1.8	3.2	1.6	1.0	0.7	1.2	0.7	2.3	1.6	5.9	6.8	3.6	4.6	3.6	7.3
São Tomé and Príncipe	0.0	0.3	0.0	0.5	0.3	0.5	0.3	0.3	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Senegal	17.4	23.0	24.8	24.5	14.6	11.1	16.8	11.4	16.3	12.3	17.1	12.1	13.3	9.9	20.2
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.2	1.0	1.4	2.5	0.1	0.7	0.3	0.5	0.6	0.5	0.8	0.5	0.6	0.3	2.4
Sierra Leone	7.7	0.5	0.0	0.8	1.6	0.2	0.0	0.5	0.8	0.6	0.1	0.3	1.9	3.4	1.6
Somalia	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.3	0.0	0.7	0.0	0.0	0.7	0.2	0.0
South Africa	523.6	497.2	528.2	456.3	450.7	430.2	418.0	403.5	422.8	457.5	492.3	517.8	520.7	504.6	541.3
Sudan	16.8	20.9	13.0	10.0	13.0	17.7	15.4	14.7	20.8	11.4	11.5	17.9	25.6	23.8	18.5
Swaziland	0.0	0.0	0.0	0.0	0.8	0.1	0.8	0.7	0.3	0.0	0.2	0.9	0.8	0.9	0.8
Tanzania	45.3	36.6	32.0	45.4	41.9	32.9	30.0	36.6	33.5	45.6	40.7	34.0	57.0	50.5	49.8
Togo	1.3	4.4	5.2	8.7	7.2	2.4	0.9	1.6	3.5	1.5	5.2	3.1	2.7	2.5	0.9
Tunisia	44.6	36.8	38.7	45.8	67.6	42.2	85.1	66.3	90.1	111.1	108.7	136.2	145.5	126.4	116.7
Uganda	21.3	26.8	31.5	33.4	25.5	32.1	24.2	28.5	33.7	45.3	42.7	35.7	47.7	46.9	62.4
Zambia	11.7	13.5	10.8	10.9	9.9	11.7	6.1	9.7	10.2	13.7	15.3	14.1	16.5	18.8	26.7
Zimbabwe	36.4	31.1	26.8	32.4	26.0	16.8	19.9	22.3	18.7	19.2	19.4	14.4	12.9	14.4	15.8
Asia															
Afghanistan	0.0	0.2	0.0	0.0	0.0	0.0	0.7	2.8	1.8	1.3	2.3	3.7	4.7	3.9	2.7
Armenia	5.2	3.5	6.3	8.5	11.5	6.7	5.9	9.3	6.7	7.3	5.9	6.9	4.9	11.7	7.4
Azerbaijan	1.3	2.7	3.8	2.9	0.7	1.1	1.2	0.3	0.1	4.1	0.3	3.7	0.3	0.4	3.2
Bangladesh	28.9	24.4	25.8	24.8	36.6	22.0	24.5	27.6	27.1	33.8	36.1	43.9	40.6	38.0	46.1

Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	2.5	0.0	0.0	1.4	0.7	3.8
Brunei	2.1	2.3	4.5	2.0	0.0	1.0	3.0	2.4	1.2	3.8	1.8	3.6	1.4	2.4	1.3
Burma	3.2	1.0	5.5	1.7	2.5	2.6	0.8	3.8	1.6	7.3	3.6	4.1	3.2	2.7	1.0
Cambodia	1.2	0.6	2.9	2.3	1.3	6.6	2.3	10.7	7.5	10.5	10.4	7.9	9.5	6.0	13.5
China	1,164.1	1,326.2	1,359.2	1,570.5	1,753.1	2,049.6	2,402.5	2,814.4	3,194.3	3,970.2	4,771.0	5,992.1	7,430.4	8,491.5	9,525.9
Georgia	4.0	8.6	10.1	4.3	9.4	13.4	6.2	22.3	19.9	21.0	8.9	7.4	7.3	10.0	10.1
India	1,018.7	1,133.0	1,112.6	1,219.5	1,181.0	1,275.8	1,381.9	1,407.8	1,636.6	1,799.7	1,825.2	2,010.3	2,150.4	2,208.4	2,131.7
Indonesia	28.5	19.8	25.6	26.8	33.3	29.8	20.3	18.5	29.9	38.1	26.0	30.0	34.6	34.7	27.7
Japan	11,795.6	12,743.8	12,747.0	13,355.0	12,890.4	12,682.2	12,465.4	12,312.0	11,946.6	11,256.0	11,250.7	11,041.5	10,665.8	10,136.5	10,033.8
Kazakhstan	2.3	4.2	1.1	2.4	2.8	2.3	4.3	2.6	1.9	6.6	2.5	1.2	3.7	3.7	1.0
Kyrgyzstan	2.0	0.0	0.8	0.0	1.3	1.6	0.3	0.2	0.7	1.2	1.7	0.8	2.8	0.9	1.3
Laos	0.0	1.0	0.0	0.8	1.4	1.4	2.9	4.2	2.0	6.5	6.6	6.7	3.6	5.0	6.2
Malaysia	57.1	65.3	85.5	77.8	72.6	55.6	75.8	64.0	85.0	77.0	96.9	116.5	137.6	157.0	197.2
Maldives	0.0	0.3	0.0	0.0	0.0	0.0	1.0	1.0	0.0	2.0	0.0	0.0	0.8	0.5	0.0
Mongolia	1.4	1.7	1.7	2.2	2.8	2.6	3.1	3.3	4.4	5.6	2.7	4.6	9.2	6.0	4.2
Nepal	10.3	14.6	15.3	17.2	13.3	14.1	22.8	27.6	21.2	31.8	29.0	21.4	21.2	17.8	19.7
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.6	0.0	1.0	0.2	0.5	0.3
Pakistan	50.3	52.8	44.4	46.3	36.2	53.8	54.6	64.9	61.4	69.8	77.8	97.3	107.2	103.0	124.7
Philippines	15.4	13.9	14.8	15.0	14.9	25.0	29.8	25.3	32.8	26.4	33.4	27.5	32.3	34.1	38.5
Singapore	223.0	247.6	271.5	332.0	312.4	339.8	389.6	464.7	447.7	451.0	447.4	477.1	502.9	522.5	522.1
South Korea	559.5	731.9	982.0	1,294.8	1,515.0	1,515.3	1,745.5	1,971.2	2,591.0	2,900.0	3,259.4	3,783.7	4,226.9	4,840.3	5,066.7
Sri Lanka	14.9	19.9	20.8	29.3	18.0	27.4	25.2	24.5	27.8	31.1	33.7	38.8	44.9	41.2	35.6
Taiwan	1,218.5	1,346.8	1,422.5	1,474.6	1,594.4	1,757.8	1,928.0	2,173.4	2,245.8	2,379.2	2,394.2	2,445.4	2,533.7	2,603.8	2,665.4
Tajikistan	0.0	0.9	0.0	0.5	0.0	1.0	0.3	0.3	0.0	0.3	1.2	0.3	0.0 *	0.0	2.4
Thailand	135.6	162.6	172.8	188.9	193.9	210.6	247.5	227.3	237.1	320.5	297.0	333.8	357.4	311.4	365.5
Turkmenistan	0.0	0.0	0.0	1.2	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	4.0	4.3	1.0	0.7	4.0	2.2	4.5	2.5	5.1	1.2	4.8	2.9	2.6	2.2	2.7
Vietnam	17.8	12.9	16.0	23.5	13.9	18.8	26.7	32.2	39.9	36.9	36.0	49.4	37.9	49.1	36.7
Australia/Oceania															
Australia	3,463.9	3,570.1	3,614.6	3,818.4	3,667.3	3,777.5	3,941.5	4,178.6	4,225.2	4,615.2	4,712.6	4,930.6	4,961.7	5,039.9	5,317.0
Fiji	1.3	1.3	1.1	1.6	2.5	1.0	2.4	2.3	1.8	6.3	0.8	2.4	1.5	1.2	2.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.2	0.0	0.2	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.6	0.0	0.0
Micronesia	0.0	0.3	1.0	0.0	0.0	0.0	0.4	0.7	0.3	0.3	0.0	0.0	0.9	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	647.5	662.1	702.3	679.8	645.2	638.4	571.3	644.6	664.2	650.1	693.9	756.2	711.3	702.6	737.4
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.4	0.0	0.2	0.3	0.6	0.0	0.8	0.3	0.0	0.0	0.7	0.2
Papua New Guinea	13.3	12.4	12.0	7.9	10.3	10.0	3.4	5.3	7.3	5.7	8.4	4.5	3.5	2.0	7.1
Samoa	1.3	0.0	0.0	0.0	0.0	1.2	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Solomon Islands	0.6	0.1	0.5	1.0	1.0	0.0	1.0	0.5	0.3	0.9	0.2	1.0	0.5	0.5	1.9

Appendix table 5-35

S&E articles in medical sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	1.1	0.0	0.3	0.0	0.5	0.0	0.7	0.0	0.0	0.3	0.5	0.3	0.3	0.0	0.5
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.6	0.3	0.0	0.8	1.0	2.7	1.8	2.0	2.3	0.0	0.8	0.0	0.0	0.0	1.5

* = rounds to zero. NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	4,892.0	4,962.0	5,089.0	5,257.0	5,171.0	5,327.0	5,552.0	5,792.0	6,425.0	7,316.0	8,704.0	9,766.0	9,426.0	9,606.8	10,068.0
North America															
Canada	241.9	207.1	249.2	233.8	234.5	314.3	318.5	318.7	394.6	434.3	522.0	553.4	595.5	602.9	614.0
Mexico	49.2	49.4	54.4	44.5	56.2	67.9	86.0	49.4	50.0	46.7	72.6	62.4	98.7	66.9	52.3
United States	2,921.5	2,982.4	3,053.6	3,124.1	2,925.4	2,949.5	2,954.6	3,170.1	3,498.7	4,035.5	4,118.2	4,572.4	4,576.0	4,578.4	4,623.5
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Barbados	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.3	0.0	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0
Costa Rica	1.0	0.2	0.0	0.0	0.0	0.0	2.0	0.5	0.0	0.0	1.7	0.2	0.0	0.1	4.3
Cuba	1.0	0.7	1.0	0.3	0.0	0.7	1.0	0.5	0.0	0.7	1.0	0.8	0.0	0.8	2.0
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.3	0.0	0.0	1.5
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	0.2	0.0	0.0	0.0
Grenada	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.8	0.3	0.2	0.0	0.3	0.5
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.7	0.3	0.8	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	1.5	0.0	0.0	0.0
Jamaica	0.0	1.5	1.0	0.3	2.0	1.7	0.0	1.0	0.0	0.7	0.8	0.0	3.9	0.6	1.8
Nicaragua	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.3	1.2	0.8	0.3	0.8
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.0	2.0	1.0	0.0	0.6	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.5	0.3
West Indies Associated States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
South America															
Argentina	4.0	1.0	4.0	2.0	2.5	3.0	2.5	1.5	2.6	1.0	4.4	8.4	4.4	5.0	8.7
Bolivia	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2
Brazil	3.5	4.4	5.5	9.7	9.7	9.3	14.0	14.6	21.9	21.5	287.8	238.4	44.7	46.2	89.0
Chile	2.0	0.2	2.8	3.0	2.5	1.5	3.3	1.1	1.1	3.2	10.6	12.8	8.6	4.5	4.3
Colombia	0.0	1.0	2.0	1.8	2.2	1.3	1.0	1.1	2.3	3.5	8.8	7.7	5.1	7.9	12.5
Ecuador	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.6	0.3	0.5	0.5	0.7	0.0	0.9
Guyana	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.3	0.8	4.7	1.0	1.1	2.2
Suriname	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	0.0	0.0	0.0	0.0	0.8	1.0	0.0	0.0	0.5	0.0	0.0	2.4	1.6	0.3
Venezuela	0.0	1.3	2.5	2.5	1.0	1.0	2.0	0.0	0.0	1.2	0.5	3.5	1.0	0.0	1.3

Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	1.3	2.0	5.7	1.9	4.3	9.5	10.9	6.6	5.7	11.0	5.2	12.9	11.9	8.6	13.3
Belgium	18.5	23.2	16.1	24.9	22.9	21.5	33.7	37.0	44.9	46.6	56.1	64.1	80.7	89.6	105.1
Bulgaria	1.8	0.0	0.0	0.0	1.0	0.0	1.5	0.8	0.0	1.0	0.5	2.0	1.0	1.3	0.3
Cyprus	0.0	0.5	0.0	0.0	0.0	1.0	0.1	0.0	0.0	1.0	3.0	2.2	2.2	4.3	6.3
Czech Republic	0.5	0.8	0.5	0.0	0.0	1.3	0.0	1.0	3.5	1.0	5.4	3.4	2.5	3.9	5.5
Denmark	8.6	17.3	5.1	10.7	14.0	15.5	18.9	18.2	34.5	18.8	31.7	43.9	52.9	51.7	59.9
Estonia	0.3	0.0	0.0	3.1	2.2	2.0	3.5	3.4	1.0	2.0	4.0	3.0	7.0	4.2	1.8
Finland	41.9	60.0	50.3	51.5	56.7	65.6	73.0	55.8	50.4	49.0	78.9	87.4	93.6	79.0	90.0
France	57.0	39.6	45.3	45.7	35.1	34.5	54.6	43.2	52.0	53.8	71.5	81.7	70.2	88.4	98.5
Germany	36.1	40.6	28.0	42.8	50.4	51.9	63.9	61.7	67.4	66.8	104.7	133.9	123.2	135.1	145.5
Greece	5.1	7.6	5.0	2.9	8.4	13.6	7.7	11.6	16.7	22.8	17.2	38.2	31.1	18.2	34.2
Hungary	4.7	0.0	0.3	0.0	1.6	1.0	2.5	3.9	2.7	3.0	27.3	6.0	4.8	6.8	9.5
Ireland	11.0	16.8	11.0	20.2	16.4	19.2	18.3	29.3	38.4	50.5	64.7	75.0	83.1	75.6	79.3
Italy	22.0	29.4	19.0	27.4	30.5	31.1	35.2	37.1	45.8	48.4	94.0	110.0	101.3	98.2	139.8
Latvia	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.0	3.8	0.0	0.0	0.0	0.5
Lithuania	0.0	0.0	0.0	0.0	0.3	1.0	0.5	0.8	1.0	1.0	4.4	0.4	2.0	0.9	4.3
Luxembourg	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.2	0.1
Malta	2.5	1.5	0.0	1.0	2.0	2.7	1.0	0.0	0.5	2.0	1.0	4.0	0.0	1.5	0.6
Netherlands	101.2	104.6	116.1	114.0	116.7	102.7	130.4	137.5	176.1	193.8	193.8	238.8	294.6	323.2	317.9
Poland	2.5	0.5	0.8	0.0	2.1	4.0	1.5	6.2	4.5	7.4	17.7	10.0	14.5	11.3	14.8
Portugal	1.2	1.1	0.4	0.7	1.6	2.7	3.5	2.0	5.0	3.3	8.0	11.5	6.6	17.5	27.6
Romania	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.8	1.7	0.2	29.2	19.5	0.5	1.6	1.1
Slovakia	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.1	2.8	0.6	1.1
Slovenia	5.5	3.0	2.0	3.0	2.4	1.6	2.3	3.4	4.6	2.5	22.0	8.5	10.3	12.5	7.4
Spain	17.9	27.2	33.0	20.8	37.9	38.8	36.4	26.0	36.7	43.0	69.5	93.3	71.7	100.4	112.8
Sweden	98.4	98.3	116.5	149.9	167.3	168.8	172.6	186.9	197.0	229.3	281.8	310.5	293.4	290.4	285.2
United Kingdom	700.3	679.5	681.9	732.2	719.0	647.1	690.2	672.9	674.4	757.6	953.7	1,016.0	920.4	901.5	1,036.4
Other Europe															
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.0	0.9
Croatia	0.6	0.0	0.0	2.0	2.0	2.0	1.2	0.6	0.7	4.9	3.5	10.1	7.4	1.6	4.6
Iceland	1.5	3.0	3.3	2.8	3.0	7.3	4.7	3.7	10.7	9.7	6.7	20.9	13.8	12.5	10.7
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Moldova	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.3	0.0	0.0	0.0	0.0

Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	27.2	20.4	31.4	25.7	28.9	44.2	51.8	45.4	53.1	49.6	62.8	143.6	102.2	119.1	137.0
Russia	2.5	2.0	0.0	1.4	1.7	2.6	4.3	1.1	1.3	2.5	3.2	5.3	2.6	1.0	3.5
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	2.2	4.0	3.8	5.7	8.8
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	1.0	0.0	NA	NA	NA	NA	NA
Switzerland	9.9	13.5	9.0	25.4	18.0	16.3	28.4	22.6	36.0	37.4	35.5	58.3	45.7	59.6	74.6
Ukraine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.0	0.3	1.3	0.0	0.7	2.1	0.0
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.5	1.5	0.0	0.0
Iran	1.0	0.0	0.0	1.0	0.0	1.3	0.0	4.3	2.5	16.0	28.0	27.5	38.4	33.0	43.5
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	3.5	0.0	0.0	0.0	0.0
Israel	50.5	41.8	46.5	49.7	50.7	57.2	59.6	67.7	59.6	55.2	78.1	69.7	91.1	94.7	98.1
Jordan	0.5	1.5	2.2	4.0	4.2	4.8	1.3	4.2	8.2	5.3	11.7	11.8	17.5	15.7	18.3
Kuwait	1.0	2.0	0.0	0.0	1.2	1.3	2.0	0.0	1.3	1.0	4.0	4.0	4.0	3.3	0.9
Lebanon	1.0	0.0	1.0	0.0	1.0	0.0	1.0	3.0	0.8	4.4	4.4	3.4	3.0	10.1	4.9
Oman	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	1.8	0.0	1.0
Qatar	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.7	0.4
Saudi Arabia	0.0	1.2	5.5	3.0	1.0	1.0	0.5	1.7	1.5	3.3	1.0	5.3	3.3	8.5	3.3
Syria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	4.5	4.0	3.7	10.4	12.7	10.2	31.7	46.7	52.5	55.7	94.5	99.9	105.8	126.9	107.0
United Arab Emirates	1.0	1.0	2.0	1.3	1.2	2.0	1.8	2.5	1.0	2.8	1.0	0.7	2.6	2.7	0.8
Yemen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Africa															
Algeria	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.0	0.1
Benin	0.9	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.5	0.5	0.5
Botswana	1.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.2	4.9	7.3	4.8	2.5	1.6	1.4
Burkina Faso	0.0	0.0	0.0	0.0	0.5	0.5	0.8	0.6	0.3	0.5	0.7	1.0	1.1	1.8	0.3
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0
Cameroon	0.0	0.0	1.0	1.0	0.0	1.0	0.1	0.0	0.3	0.0	3.0	2.0	0.3	0.5	2.4
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.0	0.1	0.1	0.8
Congo (Kinshasa)	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	0.3	1.0
Côte d'Ivoire	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.1	1.5	0.4	0.0	0.0	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	1.0	1.0	0.0	1.0	1.0	0.7	0.3	1.8	0.0	0.5	1.5	4.9	5.9	3.0	8.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Ethiopia	0.0	0.0	0.5	0.0	0.8	0.0	0.0	0.6	0.0	2.0	2.0	3.9	4.1	2.2	1.5
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Gambia	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.1	1.0	0.0	0.7	0.5	0.8
Ghana	1.3	0.5	0.5	0.5	0.3	0.0	3.4	2.0	1.0	0.9	5.0	2.0	1.7	2.3	2.5
Guinea	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Kenya	0.0	1.6	0.8	0.3	0.7	1.0	1.7	0.5	3.3	2.9	6.6	7.2	4.3	6.9	6.5
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.4	0.4	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.7	3.0
Libya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madagascar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malawi	0.0	0.0	0.0	0.0	0.0	0.5	2.2	2.0	2.5	0.1	5.5	6.1	3.1	5.4	2.2
Mali	1.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.8	0.3	1.6
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	1.3
Morocco	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.3	0.0	1.0	1.4	0.0	1.0
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.4	1.1	1.2	0.1
Namibia	1.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.3	0.5	0.0	0.0
Niger	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.5	0.0	0.7	0.1	0.0	0.0	0.0
Nigeria	1.2	2.5	0.0	3.7	1.0	6.0	1.5	4.7	6.5	8.9	12.8	10.6	9.8	9.6	13.0
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.4	0.7	0.9	1.9
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Senegal	0.4	0.0	0.0	0.0	0.3	0.0	0.5	1.0	0.0	0.5	0.0	0.1	1.5	2.0	1.0
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	7.0	10.2	9.5	11.2	11.3	20.2	17.2	20.9	31.0	27.4	62.9	58.2	49.2	56.9	51.5
Sudan	1.0	0.2	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.0	0.5	0.5	1.5	0.1	0.7
Swaziland	0.5	0.0	1.0	0.0	0.0	0.3	0.5	0.3	0.7	0.1	1.1	0.6	1.2	1.5	0.3
Tanzania	0.5	1.4	1.8	0.9	0.8	1.1	0.1	2.0	1.7	2.8	4.2	6.0	6.6	7.1	4.8
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2
Tunisia	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0	1.0	0.5	0.2
Uganda	1.5	0.5	2.3	2.5	4.5	2.1	3.6	6.5	3.4	2.8	7.1	8.6	9.8	10.8	7.5
Zambia	1.5	0.0	0.3	0.2	0.2	2.3	1.0	0.4	0.5	1.5	1.0	3.0	2.7	4.4	3.6
Zimbabwe	1.0	4.5	0.8	0.0	2.5	1.4	0.7	1.1	0.3	0.0	2.8	1.3	1.5	2.6	3.3
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.4	0.1	1.1
Armenia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Bangladesh	1.0	1.0	1.3	0.0	3.3	0.0	1.5	0.0	1.0	2.2	1.1	2.5	1.2	4.0	4.1

Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Burma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.7	0.0
Cambodia	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.2	0.8	0.8	1.1	0.8	2.4	1.1	2.6
China	33.0	37.5	54.9	47.1	67.2	84.3	62.0	81.4	74.8	88.5	122.2	123.7	153.3	163.1	178.2
Georgia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.5	1.7	0.9	0.0	0.0
India	5.4	6.3	14.4	9.7	10.9	13.7	13.8	23.9	27.1	27.4	32.0	33.4	33.1	33.1	29.2
Indonesia	0.5	1.3	1.0	1.0	0.0	0.7	1.2	2.0	2.9	2.0	1.0	1.2	3.9	1.2	5.4
Japan	25.9	28.3	42.1	26.2	24.5	52.2	54.4	53.7	52.5	67.6	67.2	113.8	77.1	79.7	83.8
Kazakhstan	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kyrgyzstan	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0	0.0
Laos	0.0	0.0	2.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.8
Malaysia	1.0	0.0	1.8	1.0	2.5	1.0	0.0	1.0	1.0	1.6	2.6	6.0	6.9	12.2	12.6
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5
Nepal	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.0	0.5	0.2	0.0	0.3	1.2	1.3	2.0
North Korea	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pakistan	1.0	0.0	0.0	0.0	2.0	2.4	1.2	1.4	3.1	2.0	1.3	4.1	8.2	2.5	6.4
Philippines	1.0	1.0	2.5	0.5	1.0	0.8	1.6	1.3	2.3	3.2	5.5	2.4	3.8	2.9	3.4
Singapore	2.0	4.7	2.8	4.5	4.0	8.5	6.0	8.2	7.5	5.7	14.3	14.8	16.7	17.9	26.1
South Korea	4.2	5.2	7.2	8.6	15.1	16.9	42.5	25.5	39.9	40.3	55.4	144.0	83.1	95.9	103.7
Sri Lanka	0.0	0.0	1.0	0.0	0.0	0.5	1.7	1.8	0.5	2.0	2.7	3.5	0.2	3.0	1.0
Taiwan	10.2	10.0	17.4	25.1	27.7	52.4	40.5	65.0	84.8	79.3	113.0	153.7	195.1	230.4	243.3
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Thailand	2.3	2.2	5.4	4.6	8.5	5.6	9.4	10.5	15.9	11.3	19.4	29.6	21.0	14.6	14.6
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.8	0.0	0.0	0.0	0.0
Vietnam	0.0	0.3	1.0	1.4	0.3	0.5	1.0	0.8	1.7	1.2	2.3	1.3	5.4	5.1	3.3
Australia/Oceania															
Australia	278.4	311.6	266.3	266.4	275.2	278.4	307.8	309.9	334.4	452.8	535.4	616.3	546.8	584.6	591.0
Fiji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	36.3	33.2	28.0	33.7	45.4	28.2	30.2	38.5	46.0	50.1	69.0	72.1	70.7	79.1	91.6
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3

Appendix table 5-36

S&E articles in other life sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	84,021.0	84,205.0	85,767.0	86,358.0	86,385.0	90,134.0	92,949.0	96,435.0	99,760.0	105,377.0	106,231.0	109,178.0	106,875.0	105,232.0	108,551.0
North America															
Canada	1,748.9	1,582.3	1,458.3	1,574.0	1,479.2	1,685.9	1,780.1	1,807.6	2,040.8	2,174.0	2,134.0	2,237.8	2,191.8	2,026.3	2,129.2
Mexico	499.0	610.3	657.5	633.4	707.7	676.5	778.5	731.5	817.4	803.1	787.0	767.6	726.0	681.9	742.6
United States	17,959.6	18,071.7	17,715.9	17,398.2	17,205.8	17,573.8	18,065.4	18,693.9	19,778.9	20,058.3	19,470.9	19,212.1	18,235.7	17,963.9	18,311.2
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Barbados	0.8	1.3	1.0	1.1	6.8	3.8	9.8	9.8	4.3	2.0	1.0	2.3	2.5	3.6	4.1
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	3.5	5.8	5.5	2.3	4.5	5.1	5.8	4.6	3.9	4.7	4.7	4.1	2.0	2.7	3.3
Cuba	32.8	36.9	38.2	57.4	43.2	39.1	48.2	34.5	50.2	46.3	36.8	40.0	35.5	22.8	26.2
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Dominican Republic	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3
El Salvador	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.5	0.0	0.5	0.0	0.3	0.0	0.0	0.0	0.3	0.3	0.2	0.3	0.3	0.2	0.3
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Honduras	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0
Jamaica	3.5	1.5	0.2	0.0	0.0	0.0	0.5	0.0	0.0	2.0	1.2	0.0	2.0	4.0	2.1
Nicaragua	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.0
Panama	1.0	0.0	2.2	0.7	1.0	0.0	2.0	0.3	0.2	0.0	0.5	0.0	0.8	1.0	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.0	1.3	0.5	2.4	3.0	0.5	1.0	3.0	1.0	2.0	1.5	0.0	0.0	1.0	0.3
West Indies Associated States	0.0	0.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0
South America															
Argentina	425.8	440.6	447.1	458.4	464.2	507.8	443.1	465.8	429.2	445.3	509.6	447.0	491.2	428.3	432.1
Bolivia	0.8	0.8	0.6	0.2	0.5	0.6	2.8	0.6	0.8	0.4	0.3	0.3	0.8	1.3	0.9
Brazil	1,007.6	1,199.5	1,252.7	1,210.3	1,512.2	1,491.4	1,460.3	1,862.1	1,649.6	1,712.4	1,769.4	1,681.4	1,513.0	1,461.9	1,460.9
Chile	77.9	104.6	92.4	87.4	94.9	151.3	107.4	132.2	144.6	190.2	165.9	171.0	180.7	195.1	199.9
Colombia	54.1	56.6	40.8	97.1	52.8	42.7	63.3	66.3	71.9	104.3	74.1	110.8	98.2	114.6	107.0
Ecuador	0.0	0.0 *	1.1	1.8	4.6	5.8	2.6	2.8	5.1	4.8	5.8	2.8	5.9	5.2	2.5
Guyana	1.0	0.0	0.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Peru	5.8	1.2	3.3	8.2	7.8	5.1	10.3	5.8	8.7	5.5	14.1	5.2	7.7	7.2	3.7
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Uruguay	13.3	18.4	21.2	21.4	25.4	18.7	24.9	23.1	24.3	18.2	25.5	25.3	26.6	23.4	19.2
Venezuela	58.6	99.1	81.4	73.9	75.3	76.4	119.4	51.4	78.7	133.4	56.2	64.6	40.5	49.7	38.3

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	483.0	480.1	483.6	531.6	495.8	507.7	587.5	551.9	560.5	548.2	594.1	607.5	557.8	596.8	597.6
Belgium	672.1	665.8	723.9	710.8	734.5	798.9	861.0	855.7	854.1	850.8	846.0	856.0	801.2	767.4	815.3
Bulgaria	226.2	206.8	185.2	193.2	149.0	183.9	136.8	171.5	154.5	148.6	172.0	149.7	148.3	136.5	126.7
Cyprus	15.8	15.8	9.8	10.3	5.4	15.0	14.2	13.4	20.4	25.0	21.2	30.3	26.6	29.3	22.1
Czech Republic	368.0	380.3	447.9	441.9	435.8	514.4	435.0	598.6	495.9	585.9	526.4	556.2	548.9	578.7	546.3
Denmark	502.8	488.8	458.5	491.1	468.5	469.6	455.0	432.2	444.2	445.7	457.1	469.5	477.8	487.3	524.7
Estonia	54.6	64.4	60.5	58.8	75.6	57.4	59.1	64.1	63.7	67.1	87.1	76.5	69.6	73.2	68.7
Finland	387.4	386.9	384.5	408.0	435.7	437.0	480.7	486.4	464.6	509.4	524.9	535.4	534.3	475.6	511.5
France	5,188.3	5,001.5	5,162.9	5,250.4	5,006.0	5,171.8	4,988.6	5,076.9	5,046.7	5,476.5	5,139.0	5,358.0	5,125.1	4,910.9	5,049.4
Germany	7,502.1	7,789.7	7,426.7	7,285.6	7,082.1	7,351.5	7,024.2	7,105.6	7,212.9	7,441.5	7,160.2	7,181.6	7,151.9	7,026.8	7,291.6
Greece	354.0	359.1	396.2	414.4	445.7	465.0	428.2	451.3	472.1	560.0	619.7	558.7	555.4	490.8	472.3
Hungary	298.1	314.0	322.9	368.1	372.0	379.9	403.6	374.7	397.8	400.9	369.6	409.3	324.7	316.6	323.4
Ireland	122.7	147.5	149.1	155.6	166.9	172.2	168.7	241.9	251.9	278.3	279.4	316.0	313.1	339.1	385.0
Italy	3,281.9	3,327.2	3,340.4	3,523.6	3,451.7	3,895.1	3,867.8	4,284.1	3,934.9	4,053.2	4,040.5	3,937.7	3,506.1	3,521.3	3,365.3
Latvia	48.7	49.9	46.9	40.8	56.9	50.9	34.7	50.0	41.9	41.9	30.3	43.1	42.5	42.5	51.4
Lithuania	93.9	85.1	90.2	71.1	87.3	90.6	77.4	140.3	153.9	191.4	120.3	158.5	131.0	99.7	175.9
Luxembourg	0.3	0.0	2.2	0.6	1.6	2.5	3.3	8.0	2.4	3.8	2.0	10.9	13.9	15.2	25.6
Malta	0.8	0.0	0.0	1.0	0.0	1.5	0.0	1.3	4.0	1.0	2.6	7.0	4.3	1.5	6.2
Netherlands	1,177.1	1,184.4	1,126.9	1,141.8	1,107.1	1,230.9	1,144.4	1,239.8	1,156.2	1,156.5	1,076.7	1,086.5	1,037.6	1,014.1	1,123.0
Poland	1,340.9	1,270.1	1,392.5	1,544.6	1,481.6	1,565.4	1,779.4	1,708.2	1,676.4	1,854.3	1,630.6	1,871.0	1,653.2	1,622.3	1,649.5
Portugal	203.1	226.9	336.2	311.6	368.9	367.3	418.7	429.2	409.3	493.4	495.8	536.8	486.3	492.5	497.2
Romania	277.9	260.9	296.8	305.4	281.5	286.0	275.5	286.7	253.9	304.0	322.9	368.1	360.0	354.4	365.1
Slovakia	174.4	161.2	143.9	158.7	148.1	213.4	192.0	233.1	142.9	189.9	170.1	231.8	163.8	209.2	160.8
Slovenia	116.1	120.0	147.2	146.9	146.5	146.7	189.8	146.8	184.2	201.7	211.6	214.8	199.7	193.1	216.2
Spain	1,676.5	1,706.4	1,853.8	1,753.4	1,834.4	1,893.2	1,925.6	2,125.2	2,166.5	2,304.4	2,474.2	2,397.9	2,414.6	2,343.8	2,411.6
Sweden	985.1	963.9	1,007.8	1,026.3	1,088.5	1,099.6	985.5	1,044.4	1,022.4	1,013.2	970.8	913.4	878.4	876.0	944.9
United Kingdom	4,661.5	4,407.6	4,810.5	4,673.4	4,249.6	4,366.8	4,382.2	4,418.4	4,528.6	4,632.0	4,576.4	4,561.2	4,414.8	4,259.9	4,342.4
Other Europe															
Albania	1.1	0.5	1.0	0.0	0.0	0.0	1.0	0.7	1.3	1.6	1.9	1.0	2.1	0.6	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	268.7	256.7	241.5	224.0	212.1	200.9	230.6	193.5	229.0	182.4	192.5	169.7	172.8	145.1	158.7
Bosnia and Herzegovina	3.9	3.4	1.5	1.2	2.2	2.0	3.7	1.2	5.0	4.7	5.4	7.2	8.1	6.8	6.2
Croatia	77.1	78.3	86.7	69.4	81.6	99.3	99.0	119.5	117.0	94.4	118.6	104.5	105.3	95.8	104.5
Iceland	6.3	11.9	13.3	8.7	10.6	14.1	12.6	10.7	12.1	11.8	12.4	16.8	25.9	26.2	25.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.5	0.3	2.6	1.4	0.8	1.0	4.3	3.4	0.8	0.8	1.6	1.9	2.3	1.1	0.9
Macedonia	7.7	8.0	4.7	9.2	8.9	13.3	11.2	13.5	9.3	8.2	10.4	13.6	11.2	17.1	14.9
Moldova	59.6	50.8	48.0	41.9	29.9	37.2	44.8	28.3	46.2	37.5	34.6	37.3	34.8	30.9	37.5
Monaco	0.0	0.0	0.0	0.7	0.0	0.5	1.0	0.0	1.0	0.8	1.3	0.0	0.8	0.3	1.3
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4	4.9	5.5	2.1	4.3	3.5

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	203.8	148.1	166.6	166.8	155.3	157.7	147.9	174.2	201.9	225.8	242.2	238.6	201.6	242.8	273.2
Russia	6,514.3	6,232.4	6,118.8	6,174.9	5,572.5	5,717.0	5,407.8	5,209.6	5,016.8	4,946.9	4,912.1	5,095.9	5,210.3	5,090.9	5,219.5
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	71.8	192.2	204.8	243.2	169.2	175.7
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	162.3	70.8	NA	NA	NA	NA	NA	NA
Switzerland	1,292.1	1,278.9	1,243.8	1,249.2	1,095.3	1,126.2	1,191.0	1,231.3	1,217.9	1,314.8	1,271.9	1,155.1	1,142.4	1,168.2	1,247.2
Ukraine	971.8	1,005.3	991.7	1,002.2	1,054.1	962.2	896.4	850.9	909.8	816.1	915.2	857.6	793.9	822.9	827.6
Vatican City	1.3	1.0	1.0	0.5	0.0	0.5	0.5	0.5	2.0	0.0	1.0	0.1	0.3	0.5	0.7
Yugoslavia	122.0	129.0	121.5	97.2	92.1	121.0	116.7	113.8	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	6.3	3.3	3.8	0.7	3.0	1.7	3.2	6.8	6.3	9.1	11.2	10.2	7.4	9.9	10.3
Iran	63.1	90.8	99.7	125.2	134.3	205.6	240.3	318.8	382.0	507.1	600.4	888.0	1,040.7	1,141.5	1,312.0
Iraq	1.0	1.0	1.0	0.7	3.0	3.5	6.0	2.8	6.5	10.5	17.4	11.5	17.4	14.9	19.2
Israel	980.5	1,019.3	985.4	940.2	897.4	981.4	1,011.6	944.0	924.2	958.7	1,035.1	986.6	879.8	884.0	893.0
Jordan	32.9	24.9	15.3	39.3	23.8	48.5	36.5	33.9	35.2	41.5	39.8	52.2	47.9	50.0	55.4
Kuwait	15.9	17.3	13.7	15.3	7.8	8.8	5.3	13.5	7.0	7.8	12.2	17.8	20.4	8.1	7.0
Lebanon	6.1	6.8	9.2	17.2	14.7	14.9	9.1	17.6	33.6	16.4	23.5	18.4	19.8	22.1	14.0
Oman	5.8	4.5	12.8	8.8	10.0	9.3	15.7	12.9	15.7	13.1	10.2	21.3	10.9	7.1	16.3
Qatar	2.0	1.5	0.8	0.0	1.3	1.3	4.3	1.9	3.3	5.9	10.3	10.0	10.2	11.3	11.8
Saudi Arabia	59.0	49.9	41.4	36.8	64.1	65.2	66.8	63.4	66.7	70.2	83.0	90.8	119.5	140.2	230.9
Syria	4.9	3.4	4.2	7.5	7.7	9.7	3.8	10.6	15.8	11.1	18.3	9.6	19.2	20.5	20.8
Turkey	239.6	266.6	299.8	269.6	364.3	440.8	542.0	620.3	640.8	690.6	819.1	788.3	817.7	746.7	803.6
United Arab Emirates	5.5	9.8	10.0	8.8	10.3	12.9	15.8	18.2	22.4	22.1	21.7	24.3	29.9	20.8	18.0
Yemen	0.0	0.0	1.5	0.2	0.3	0.0	0.3	2.0	1.3	2.3	4.4	2.8	3.7	4.6	5.8
Africa															
Algeria	59.3	60.9	56.3	72.7	85.2	89.0	96.2	119.2	147.8	151.6	178.1	176.3	188.4	189.8	178.0
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	2.8	1.0	6.3	6.3	2.0	2.2	3.5	2.3	2.8	1.2	10.9	5.3	5.0	5.8	6.0
Botswana	1.0	0.3	1.7	3.5	3.0	5.3	9.0	4.0	1.0	2.2	2.8	4.0	1.0	1.2	0.5
Burkina Faso	0.5	0.8	0.3	0.8	1.5	1.0	2.0	1.4	0.3	1.1	0.3	1.2	1.0	0.0	0.8
Burundi	1.0	0.0	0.0	0.0	1.8	0.5	1.5	0.7	0.0	0.3	0.7	0.0	0.0	0.0	0.0
Cameroon	13.5	6.4	7.7	9.3	4.5	15.6	21.2	26.4	33.2	37.0	22.9	36.1	29.9	23.1	26.3
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.5	0.0	0.0	0.6	0.6	0.7	0.5	2.5	1.0	0.0	2.3	1.6	0.6
Congo (Kinshasa)	0.5	1.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5
Côte d'Ivoire	0.2	0.5	0.0	0.2	0.0	0.3	0.0	1.1	1.0	1.6	0.8	2.3	1.4	0.9	1.2
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	183.2	154.7	205.6	233.0	260.3	256.9	297.2	287.7	275.6	329.6	338.4	340.7	350.2	324.8	302.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
Ethiopia	0.7	3.5	3.8	1.5	4.8	3.0	1.0	4.2	3.3	5.2	11.4	11.5	6.5	2.9	9.1
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.0	0.3	0.3	0.2	1.4
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	1.8	0.5	1.8	4.3	2.3	2.0	5.2	2.6	2.8	0.5	2.8	0.7	1.7	2.5	1.0
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.0	2.0	1.5	1.3	1.8	2.2	2.1	2.3	1.9	1.3	1.5	1.6	2.7	3.1	5.7
Lesotho	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	2.5	0.0	0.5	1.0	0.0	0.0
Liberia	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Libya	2.2	0.2	0.5	1.8	1.1	3.2	1.0	1.5	0.5	2.0	1.3	4.5	1.5	1.9	2.8
Madagascar	0.0	0.5	0.5	0.0	0.5	0.6	1.5	0.2	1.0	1.7	2.3	1.0	1.1	0.9	1.5
Malawi	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.0	1.2
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.3	0.0	0.3	0.0	0.0	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	0.3	0.3	0.5	0.0	0.0	1.5	2.0	2.0	2.0	3.5	2.5	0.8
Morocco	75.5	81.7	106.2	127.6	99.4	107.9	92.2	88.1	135.2	82.8	69.5	83.5	73.3	62.7	82.2
Mozambique	0.3	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	1.2	0.0	0.0	1.0	0.0	3.5	0.5	1.3	2.0	0.6	0.4	0.1	0.5	1.0	0.4
Niger	0.0	0.0	0.0	0.0	0.0	1.5	2.0	0.3	1.3	0.3	0.5	0.5	0.5	0.0	0.8
Nigeria	5.6	9.7	16.5	5.0	8.0	14.0	11.3	10.6	15.2	14.1	8.6	15.8	13.6	20.7	14.3
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.2	0.2	0.3
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.6	3.2	1.3	1.3	2.8	2.7	4.7	1.3	6.3	2.1	3.9	4.1	3.3	6.3	6.9
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	136.1	164.9	185.4	140.9	157.0	138.4	119.9	135.3	140.6	167.9	170.6	160.8	210.6	183.2	232.2
Sudan	2.7	2.5	1.1	1.3	1.4	4.0	0.0	3.7	1.0	1.2	0.2	3.8	1.6	5.2	4.8
Swaziland	0.0	0.0	0.5	0.3	0.8	1.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.7	1.0
Tanzania	0.3	0.5	2.0	0.0	0.5	2.3	2.0	0.0	0.2	1.0	0.0	0.6	2.3	1.3	0.8
Togo	0.0	0.0	0.0	1.0	0.5	0.5	0.3	0.5	0.0	0.3	0.0	0.3	0.7	0.6	0.0
Tunisia	33.6	36.8	46.7	41.4	55.8	56.3	63.3	67.7	94.6	86.5	87.1	112.3	100.6	99.5	100.2
Uganda	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.2	0.5	0.0	1.2	0.5
Zambia	0.0	0.7	2.0	1.0	0.0	2.3	0.3	0.0	0.3	0.5	0.3	1.0	1.2	0.5	1.0
Zimbabwe	2.3	2.8	1.0	2.0	0.5	2.0	2.0	0.5	0.3	2.8	1.0	1.1	1.8	2.0	2.5
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Armenia	88.0	94.6	72.2	92.1	85.6	89.5	98.1	96.8	87.6	78.2	78.8	94.4	77.1	91.7	95.5
Azerbaijan	27.9	39.4	28.5	25.4	21.7	35.1	47.6	39.4	36.2	39.7	32.5	38.4	54.8	43.8	61.8
Bangladesh	14.9	24.5	24.1	22.5	26.4	25.6	35.6	26.2	28.8	28.6	37.0	50.1	42.6	46.9	54.5

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.5	0.0	0.8	0.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0
Brunei	0.7	0.0	2.3	0.0	1.3	0.0	1.0	1.8	2.5	2.0	2.0	1.0	3.0	0.3	0.0
Burma	0.0	0.0	0.5	0.3	0.3	0.5	1.4	0.0	0.8	1.0	0.3	0.0	0.1	0.3	0.0
Cambodia	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.7	0.0	0.0	0.0	0.0
China	3,754.9	3,758.5	3,935.4	4,499.1	5,035.0	5,372.2	7,147.6	8,392.9	10,372.3	12,074.0	13,652.9	15,392.5	16,202.3	16,343.5	17,474.3
Georgia	70.5	65.7	56.9	62.2	38.0	51.0	45.8	59.3	44.5	57.4	47.1	47.6	46.2	38.0	36.3
India	1,882.1	1,957.3	1,867.8	1,908.6	1,990.0	2,156.8	2,235.6	2,283.5	2,660.9	2,971.8	3,201.6	3,601.9	3,761.6	3,870.2	4,014.4
Indonesia	5.2	9.4	8.1	8.1	15.4	14.0	13.0	15.0	20.5	17.8	21.5	20.0	25.9	29.4	29.8
Japan	10,142.2	9,927.6	10,750.9	10,678.5	10,929.0	11,242.0	11,705.5	10,950.5	10,735.3	10,916.0	10,421.6	10,111.2	9,067.1	8,869.1	8,595.2
Kazakhstan	31.4	26.2	36.6	27.5	29.1	28.6	28.6	17.6	19.4	17.1	25.1	13.8	29.9	17.0	41.3
Kyrgyzstan	3.0	10.5	8.0	11.5	5.8	12.2	7.6	4.0	7.9	6.8	5.9	5.6	3.7	6.2	3.4
Laos	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	0.0
Malaysia	18.7	27.0	21.0	28.1	32.0	60.3	41.5	66.4	56.2	60.1	109.5	113.2	164.5	164.5	238.0
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Mongolia	2.7	1.3	0.3	1.0	1.0	1.5	2.3	1.5	1.0	1.2	1.8	3.5	3.8	3.2	2.6
Nepal	0.5	2.0	0.0	2.3	0.5	1.5	1.8	2.2	1.8	3.5	0.4	0.2	0.0	4.2	7.5
North Korea	0.5	0.0	0.0	0.0	0.0	0.3	0.0	0.8	2.3	0.0	4.1	0.9	0.8	4.7	2.0
Pakistan	39.7	39.7	53.4	54.8	54.8	63.7	61.0	59.9	96.4	143.0	174.8	242.7	217.6	237.6	295.6
Philippines	6.7	11.5	6.5	14.2	14.6	19.8	13.5	23.1	17.3	19.7	20.5	23.4	17.1	20.8	19.7
Singapore	226.2	272.0	392.8	488.5	516.9	577.7	548.2	710.6	750.3	866.3	868.8	887.8	939.9	864.4	876.2
South Korea	1,650.9	1,870.0	2,275.2	2,131.3	2,613.2	2,711.6	2,979.1	3,373.7	3,159.0	3,703.1	3,860.1	4,181.7	4,406.0	4,218.0	4,328.6
Sri Lanka	3.7	6.4	6.4	6.9	6.6	14.9	16.8	17.2	15.3	16.2	12.2	7.5	6.8	5.7	7.4
Taiwan	1,057.3	1,107.7	1,071.1	1,183.6	1,301.2	1,385.9	1,436.1	1,693.8	1,970.9	2,210.4	2,402.9	2,512.5	2,418.9	2,421.0	2,496.4
Tajikistan	2.5	0.0	3.0	1.3	2.0	1.8	0.0	1.8	1.7	1.2	5.6	3.7	2.5	5.7	3.7
Thailand	18.3	28.2	19.4	26.8	22.7	27.9	49.5	66.0	84.6	94.0	127.5	168.6	193.6	204.2	192.1
Turkmenistan	0.8	0.8	0.3	1.0	0.0	1.0	2.0	0.0	0.0	1.0	0.3	0.3	0.5	0.0	0.0
Uzbekistan	85.8	77.4	80.9	88.7	69.5	81.0	81.3	59.6	66.0	62.0	77.6	58.7	70.4	63.5	52.2
Vietnam	28.4	23.8	22.8	29.0	35.5	39.8	75.8	36.2	37.4	46.0	73.6	115.7	60.6	54.7	81.6
Australia/Oceania															
Australia	1,132.2	1,154.1	1,058.4	1,011.0	986.3	1,013.2	1,035.4	1,084.0	1,123.8	1,232.6	1,277.4	1,281.4	1,371.2	1,322.6	1,317.9
Fiji	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.8	0.0	0.0	0.0	0.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	132.0	133.4	141.4	126.5	129.1	104.9	121.4	130.6	164.1	157.6	159.4	166.3	171.2	159.1	164.0
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Papua New Guinea	0.0	0.0	3.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-37

S&E articles in physics, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = rounds to zero. NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	14,479.0	14,298.0	14,375.0	14,672.0	14,620.0	14,583.0	15,005.0	15,642.0	16,386.0	18,007.0	19,692.0	21,789.0	21,518.0	21,864.0	23,231.0
North America															
Canada	955.1	949.3	932.0	962.4	996.1	927.4	911.0	1,004.3	1,009.7	1,138.7	1,217.6	1,345.4	1,398.8	1,428.5	1,430.7
Mexico	35.4	41.3	56.1	48.8	44.2	42.7	60.9	46.6	58.0	59.9	77.7	67.7	58.9	60.9	54.7
United States	8,093.7	7,833.5	7,715.4	7,824.6	7,707.9	7,679.6	7,706.9	7,860.8	8,011.7	8,715.1	8,968.0	9,804.1	9,824.7	9,873.4	10,294.6
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	1.0	1.0	1.3	0.0	0.0	0.3	0.0	0.0	0.5	1.0	0.0
Barbados	0.0	0.0	0.5	0.5	0.0	1.0	0.5	1.3	0.0	1.3	0.0	0.0	1.5	0.2	0.3
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.5	0.5	0.3	0.3	1.3	1.0	0.0	1.1	1.8	2.3	3.0	0.5	1.6	2.8	3.5
Cuba	1.8	3.0	1.3	7.5	1.8	0.0	1.3	2.5	1.4	0.3	1.7	2.0	1.3	1.3	1.6
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.5	0.0
Dominican Republic	0.0	0.0	0.0	2.0	0.0	0.2	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	0.2	0.2
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	1.0	0.3	0.0
Grenada	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.3	1.3	0.5	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Honduras	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	0.3	1.5	0.7	2.7	0.3	0.5	0.8	0.7	2.0	0.0	1.5	1.0	1.0	1.3	0.0
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	0.3	1.9	1.3	3.0	0.9	0.5	2.1	1.2	2.1	3.1	3.7	1.3	1.3	4.5	4.4
St. Kitts and Nevis	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.0	0.0	1.0	0.0	0.3	0.3	0.8	0.0	0.0 *	0.0	0.3	1.0	2.2	1.5
West Indies Associated States	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South America															
Argentina	17.2	14.5	23.0	18.7	9.8	13.1	14.6	18.3	22.1	16.9	34.7	39.3	26.4	35.1	27.6
Bolivia	1.0	0.0	0.0	1.8	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.3	1.0
Brazil	32.9	45.6	43.0	45.3	32.2	54.4	52.2	53.8	70.0	76.3	137.0	191.3	92.5	98.2	106.3
Chile	10.2	6.0	6.3	4.4	2.5	7.6	11.0	11.0	12.2	21.9	22.5	24.6	27.6	18.4	28.3
Colombia	9.0	6.2	4.7	3.9	6.3	4.2	8.2	10.8	8.5	13.5	22.9	20.1	13.5	9.4	15.3
Ecuador	0.0	0.0	0.0	0.5	0.0	0.5	0.0	1.0	0.0	0.2	1.0	0.6	0.3	0.5	0.7
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Peru	2.3	0.5	0.5	2.0	0.0	0.7	0.5	1.2	1.5	1.4	4.0	1.7	2.4	2.3	3.2
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.0
Uruguay	2.0	0.0	0.0	0.3	2.5	2.0	0.0	0.3	4.5	3.0	7.0	5.1	1.6	4.0	2.9
Venezuela	11.0	10.0	6.5	3.6	1.3	5.1	1.7	1.3	1.9	1.3	6.8	4.0	3.6	2.8	2.7

Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	61.9	44.2	40.5	31.7	56.8	62.2	57.6	68.6	61.5	62.3	67.2	103.8	96.4	117.0	127.7
Belgium	87.7	99.5	96.7	96.3	119.8	121.3	137.4	172.4	198.6	232.8	254.7	307.8	299.4	309.1	316.3
Bulgaria	5.0	5.5	2.7	2.8	1.6	0.1	2.1	1.9	1.3	2.9	3.3	2.5	5.2	1.9	5.5
Cyprus	0.1	0.5	1.0	2.0	1.9	2.6	4.8	1.5	3.3	3.5	7.7	10.8	7.0	11.2	11.7
Czech Republic	52.9	35.6	38.2	36.9	42.7	43.0	36.8	38.0	44.1	54.9	73.5	64.1	57.4	68.8	67.3
Denmark	22.2	41.7	47.5	43.4	53.4	63.0	61.8	67.3	63.5	75.9	71.7	78.0	85.8	86.5	97.2
Estonia	4.4	2.7	7.8	7.0	4.1	5.2	12.0	9.7	9.8	9.2	16.5	12.7	14.9	17.5	10.6
Finland	100.5	94.2	83.4	91.5	94.6	82.2	103.2	115.7	110.3	117.7	128.2	142.7	156.5	133.4	163.6
France	274.8	305.0	302.8	285.7	282.6	295.5	287.6	332.3	347.0	369.8	413.7	546.0	444.8	436.9	490.3
Germany	715.9	730.0	773.1	778.4	819.5	808.6	854.5	885.3	979.2	1,078.8	1,213.2	1,340.8	1,274.5	1,370.2	1,437.3
Greece	15.4	10.2	15.1	16.2	17.1	16.5	26.9	32.4	36.8	51.4	46.4	55.4	66.2	70.8	71.0
Hungary	16.9	10.2	10.4	13.2	20.8	12.0	17.9	21.7	25.9	19.3	34.2	29.4	37.6	28.1	41.5
Ireland	22.5	45.8	20.9	30.1	28.9	40.6	20.5	45.9	41.3	26.4	47.3	57.8	66.3	64.4	79.2
Italy	157.9	149.8	140.7	131.2	163.3	170.6	207.7	196.3	209.8	274.7	315.2	378.1	397.5	393.4	448.3
Latvia	0.0	1.0	0.0	1.0	1.0	1.0	0.5	0.7	0.5	0.0	0.5	1.9	0.7	0.5	1.0
Lithuania	0.5	0.4	0.0	0.0	1.0	1.3	0.0 *	1.5	6.5	1.7	3.5	2.4	3.8	4.1	1.5
Luxembourg	0.0	0.0	0.0	0.0	1.0	1.8	1.0	0.0	0.0	2.0	1.5	3.3	3.6	2.9	8.7
Malta	0.0	0.5	0.0	0.0	0.0	0.5	0.0 *	0.0 *	1.3	1.5	0.3	0.0	1.5	1.8	0.1
Netherlands	425.4	420.3	433.4	433.1	444.2	488.0	508.1	534.4	620.8	661.0	781.9	934.7	914.6	962.8	1,004.2
Poland	16.3	14.0	23.0	16.8	18.6	21.7	22.7	24.8	30.5	23.0	42.5	43.4	35.8	43.5	79.9
Portugal	8.5	11.4	11.1	10.1	18.2	14.5	21.5	18.0	29.8	42.3	44.9	58.7	68.2	64.4	95.4
Romania	1.6	0.0	3.0	1.4	1.5	2.0	1.2	2.3	2.5	11.0	12.0	17.3	3.7	7.7	9.5
Slovakia	46.7	49.0	41.5	46.0	29.0	24.0	23.0	32.2	18.3	24.6	29.7	25.7	20.6	25.6	24.7
Slovenia	1.5	7.0	1.6	7.7	5.3	6.1	5.8	8.8	10.8	10.3	10.1	11.7	10.3	8.6	14.8
Spain	145.6	127.6	133.3	150.1	142.5	152.1	188.9	197.7	262.7	322.0	430.6	510.7	349.4	378.4	418.6
Sweden	187.5	171.9	173.5	196.3	187.1	188.5	209.1	195.9	211.8	232.0	262.0	255.4	233.3	224.3	249.8
United Kingdom	1,278.0	1,299.5	1,419.8	1,454.5	1,414.8	1,347.5	1,439.6	1,537.7	1,653.4	1,796.8	2,020.7	2,057.6	2,094.2	2,036.2	2,192.8
Other Europe															
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.1	0.0	0.3	0.5	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	1.0	2.5	4.0	9.0	0.0	1.5	0.0	0.0	0.0	0.0	1.0	2.0	4.1	1.0	2.1
Bosnia and Herzegovina	0.0	0.3	1.0	0.0	0.6	0.3	1.3	0.0	0.7	0.0	0.7	1.5	0.3	1.5	2.0
Croatia	6.1	9.5	8.6	6.5	11.5	3.3	10.9	3.1	8.1	7.2	17.9	13.6	5.5	10.6	8.5
Iceland	5.0	2.7	2.2	3.8	8.3	5.7	7.2	10.4	2.6	10.9	7.1	13.8	12.2	13.8	13.9
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.5	1.6	0.1
Moldova	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	0.0	0.0
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	96.5	82.7	80.7	80.7	105.4	111.3	106.7	94.6	111.3	123.4	131.4	153.0	177.2	185.7	207.6
Russia	132.9	133.9	151.9	139.7	71.1	133.5	134.5	139.7	67.3	65.1	78.7	74.3	139.8	124.1	128.1
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.8	32.0	22.6	6.5	5.1	11.2
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	4.4	1.2	NA	NA	NA	NA	NA
Switzerland	88.5	98.4	83.7	124.2	96.7	76.3	113.7	126.9	146.4	178.4	210.5	271.3	273.8	270.1	278.9
Ukraine	4.5	10.3	4.5	8.4	3.4	3.7	2.0	6.2	0.4	1.8	0.5	1.3	2.7	6.0	5.3
Vatican City	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	3.3	2.0	3.5	4.0	3.0	0.9	2.1	2.9	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.3	1.5	0.0
Iran	3.3	0.8	5.6	7.7	4.5	10.5	15.9	14.3	16.3	25.8	21.3	36.1	26.7	30.4	28.5
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.3	0.0	0.0	0.5	0.3	0.1	0.3
Israel	167.8	194.3	176.6	179.5	214.0	205.0	206.6	178.6	200.1	227.3	270.4	302.2	287.3	274.2	335.1
Jordan	0.0	2.5	4.0	6.0	1.5	1.0	0.5	1.5	1.0	3.1	1.0	0.5	2.3	3.5	1.4
Kuwait	5.7	5.3	5.0	4.5	4.0	10.8	9.8	11.7	15.8	20.8	7.0	10.8	5.6	1.8	2.4
Lebanon	0.2	1.0	2.0	0.5	3.8	0.5	0.8	2.8	4.8	2.7	4.3	2.0	2.6	4.1	5.3
Oman	0.0	0.0	0.0	0.0	1.0	0.5	1.5	0.0	0.0	0.0	2.0	0.5	0.0	0.0	4.5
Qatar	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3	0.8
Saudi Arabia	1.0	1.0	4.0	0.0	1.0	4.0	3.3	2.2	5.0	2.1	2.0	1.4	2.5	7.7	5.4
Syria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Turkey	19.0	17.3	23.6	30.3	44.9	43.7	55.1	55.8	73.6	88.3	113.1	122.4	147.5	120.2	130.9
United Arab Emirates	5.0	3.0	4.7	4.5	4.0	6.5	5.5	6.5	2.5	0.0 *	2.8	4.3	5.0	10.6	5.8
Yemen	0.5	0.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Africa															
Algeria	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.5	0.0	0.5	0.1
Angola	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Benin	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.3
Botswana	0.0	1.0	0.0	0.0 *	0.0	0.5	0.0	1.0	0.0	0.5	2.0	0.5	0.0 *	2.0	0.1
Burkina Faso	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.0 *	0.0	0.0	0.0 *	0.1	0.0
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1
Cameroon	0.5	0.0	1.0	0.0	0.0	0.0	0.8	0.0	0.0	1.0	0.5	0.0	0.5	0.3	0.0
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.3	0.0	0.0	0.3	0.5	0.0	0.3	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.5	0.0	0.0	0.0	0.0	0.3	1.0	1.3	0.8	0.5	0.5	0.3	0.3	0.0
Congo (Kinshasa)	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.5
Côte d'Ivoire	0.8	0.0	0.0	1.5	0.8	0.8	0.8	0.3	1.9	1.0	0.0	0.5	1.2	0.0	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	0.5	2.5	3.3	0.0	6.7	0.7	0.3	1.0	1.0	2.2	3.8	2.3	3.1	4.2	5.9
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Ethiopia	0.8	1.2	0.0	0.0	0.3	0.3	0.0	1.0	0.0	0.8	0.0	0.2	1.0	1.5	0.5
Gabon	0.5	0.0	1.0	0.0	0.1	0.8	1.0	0.0	2.7	1.2	0.5	0.6	0.4	0.7	0.5
Gambia	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Ghana	0.0	1.5	1.3	2.1	1.0	0.0	0.5	0.0	0.0	0.5	0.8	0.1	1.0	1.4	0.2
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.3	2.3	2.7	2.6	1.3	1.5	2.2	2.4	2.9	2.3	4.1	3.8	2.6	3.0	1.0
Lesotho	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Libya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.3	0.5	0.0	0.0
Madagascar	0.0	0.5	0.0	1.6	0.0	0.7	1.0	0.4	0.4	1.9	0.9	0.9	0.3	0.4	2.5
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.9	0.0
Mali	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	1.1	0.5
Morocco	0.0	0.2	0.3	0.8	0.0	0.5	0.0	0.5	1.0	0.2	0.0	2.3	0.7	0.0	0.8
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
Namibia	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.4
Niger	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Nigeria	2.2	1.5	0.0	1.7	0.0	1.4	2.6	2.7	2.0	5.7	4.9	5.4	10.0	5.7	6.5
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.5	0.0	1.1
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.4
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	85.2	90.1	85.3	74.8	70.2	65.0	72.3	75.0	72.5	98.5	79.1	142.6	77.9	80.6	85.0
Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.3	1.0	0.0	0.1
Swaziland	0.0	0.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	0.5	0.0
Tanzania	0.0	1.0	0.0	1.0	1.8	0.3	0.0 *	0.3	0.5	2.1	0.3	0.8	1.2	2.1	0.3
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	1.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.5	0.7	1.7	1.5	1.8	0.0
Uganda	0.0	0.3	0.2	0.3	1.9	1.7	1.0	1.6	0.0	1.2	1.3	2.8	2.5	3.2	3.9
Zambia	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.5	1.5	0.0	0.1	1.0
Zimbabwe	1.5	1.9	1.3	1.6	2.0	0.5	0.7	0.0 *	0.3	0.5	0.0	3.5	0.3	1.3	0.0
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	0.0
Armenia	1.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.0	0.0 *	0.0	1.0	0.0	0.0	0.6
Azerbaijan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Bangladesh	0.3	0.3	0.8	0.7	0.0	0.8	2.5	0.0 *	0.5	0.0	1.2	0.5	0.0 *	1.0	2.3

Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
Burma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.5
China	82.4	91.8	88.6	96.9	108.9	106.8	123.2	142.7	121.4	148.9	198.5	230.4	300.7	348.9	385.0
Georgia	0.0	0.0	0.2	0.5	0.0	1.0	0.0	0.0 *	0.0	0.0 *	0.0	1.0	0.0	0.3	1.0
India	20.0	26.2	14.4	29.4	17.2	14.5	24.8	25.7	22.4	29.6	34.5	28.5	36.4	44.8	43.0
Indonesia	1.5	0.5	0.8	0.9	0.8	0.8	0.7	1.5	1.4	3.4	1.9	2.1	4.3	4.9	3.5
Japan	299.3	281.0	281.5	284.6	279.3	261.7	234.7	284.5	369.0	307.7	361.4	343.8	359.8	349.0	376.7
Kazakhstan	0.5	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.0	0.0
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5
Laos	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	3.2	1.3	3.7	2.5	2.5	7.2	5.5	5.7	3.0	6.2	2.7	4.8	8.8	15.7	23.2
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nepal	1.0	2.2	1.0	0.0	1.3	1.3	0.5	0.8	0.6	0.0 *	0.0	0.0	0.7	0.1	0.5
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pakistan	1.5	0.0	3.3	1.3	0.0	0.9	1.3	4.5	1.0	2.5	2.7	4.9	4.3	2.1	2.0
Philippines	2.0	3.7	2.2	2.0	3.0	5.3	2.3	1.0	3.6	3.4	2.7	6.2	2.4	5.2	4.7
Singapore	8.0	14.5	14.5	25.2	14.7	17.8	26.7	18.2	18.4	26.7	35.6	56.0	60.1	62.7	67.2
South Korea	12.7	9.6	26.3	19.0	31.9	29.6	42.2	43.9	55.6	56.2	75.9	74.8	93.2	111.7	151.7
Sri Lanka	0.0	1.4	0.3	0.5	0.0	1.0	0.5	0.5	0.0	0.8	0.3	1.2	0.5	1.4	0.6
Taiwan	30.9	23.5	32.8	37.7	33.3	33.5	69.7	74.1	74.4	104.3	175.1	201.0	210.0	218.1	259.9
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Thailand	2.9	2.4	3.3	5.8	3.5	1.5	7.0	3.3	10.9	11.8	17.0	11.9	7.7	4.1	9.7
Turkmenistan	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Vietnam	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	1.9	0.5	1.2	0.5	2.5	0.7	1.1
Australia/Oceania															
Australia	433.2	477.5	474.9	519.7	549.9	559.8	542.2	567.8	626.9	675.0	762.6	871.4	848.0	909.3	979.8
Fiji	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.3	1.3	1.0	1.3	0.0	1.2
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	116.0	96.7	146.0	128.6	124.8	125.4	129.0	159.3	132.1	179.2	166.1	173.0	151.0	170.0	174.7
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0

Appendix table 5-38

S&E articles in psychology, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = rounds to zero. NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	20,009.0	20,015.0	20,215.0	21,333.0	21,079.0	21,353.0	22,337.0	22,881.0	24,075.0	26,170.0	29,572.0	32,470.0	31,296.0	32,908.0	34,275.0
North America															
Canada	1,154.4	1,071.4	1,024.5	1,093.4	1,122.0	1,126.1	1,247.2	1,223.5	1,238.6	1,322.8	1,530.9	1,554.0	1,589.9	1,753.8	1,722.8
Mexico	63.5	40.1	48.1	50.3	53.6	59.1	72.5	58.6	80.3	89.4	146.8	164.4	95.7	97.3	99.3
United States	9,857.0	9,811.3	9,847.1	9,945.6	9,918.0	9,842.5	10,114.1	10,237.6	10,382.6	10,737.6	11,349.5	12,121.8	12,052.3	12,361.2	12,663.3
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.5	0.3	1.0	0.0
Barbados	1.0	0.0	1.0	1.0	4.5	4.0	0.8	1.5	1.0	1.3	4.1	3.5	2.0	2.0	3.5
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.2
Costa Rica	2.8	1.8	0.0	2.1	2.8	2.3	2.9	3.8	4.5	2.8	0.5	6.1	5.4	5.9	7.7
Cuba	1.1	0.0	0.0	2.0	0.3	2.0	3.8	1.1	1.8	5.8	5.0	3.1	5.5	2.4	3.9
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	2.0	1.0	1.5	1.0	2.0	1.5	0.0
Dominican Republic	0.0	1.2	1.0	0.8	0.2	1.0	0.5	0.0	0.0	0.0	1.3	1.8	0.2	0.6	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.4	1.7	0.0	0.0	0.0	0.3	0.5
Grenada	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.5	0.3	0.0	1.3
Guatemala	0.3	2.5	0.5	2.2	0.0	1.1	1.3	0.0	0.4	2.3	2.2	2.3	2.2	1.8	3.2
Haiti	0.0	0.3	0.0	0.0	0.0	0.3	0.0	1.0	0.3	2.0	0.0	0.0	0.3	0.2	0.0
Honduras	0.6	0.3	0.5	0.5	1.3	0.9	0.5	0.8	0.5	0.5	0.0	1.5	0.0	1.7	2.3
Jamaica	4.0	3.3	4.8	4.7	4.2	0.5	1.5	5.3	3.7	2.7	7.5	5.2	4.3	3.2	2.2
Nicaragua	1.7	0.0	0.5	1.3	0.5	0.3	1.5	0.5	1.0	1.7	1.6	0.5	0.3	1.5	1.3
Panama	0.0	0.9	1.0	0.3	0.0	2.0	1.5	0.0	0.5	0.0	2.7	0.9	0.3	0.1	2.0
St. Kitts and Nevis	0.0	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Trinidad and Tobago	1.3	3.0	2.0	1.6	1.8	4.5	1.8	3.8	2.0	3.5	5.2	6.2	7.9	3.5	6.2
West Indies Associated States	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0
South America															
Argentina	27.0	41.8	25.2	47.4	34.5	32.6	39.6	43.6	38.1	51.1	78.4	90.6	67.7	42.1	71.1
Bolivia	3.5	1.4	2.8	0.5	2.3	2.1	0.6	2.7	3.3	2.3	2.1	4.6	4.8	7.4	4.2
Brazil	52.6	73.9	78.5	95.1	100.2	86.1	77.2	113.7	121.0	124.6	180.1	209.1	196.2	201.2	207.3
Chile	16.8	15.5	13.2	34.4	22.5	25.0	30.2	28.4	47.7	49.0	96.6	104.4	73.1	90.6	107.4
Colombia	8.6	8.2	6.6	10.2	13.5	9.4	12.5	13.2	13.2	13.3	26.4	24.7	26.4	28.1	27.7
Ecuador	2.0	0.9	0.3	0.0	0.0	0.5	0.3	2.5	3.0	0.0	1.8	3.5	2.5	4.0	4.4
Guyana	2.0	1.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.3	0.0
Paraguay	0.5	1.0	0.0	1.3	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.5	0.5
Peru	4.8	3.3	1.7	4.5	6.7	1.8	4.2	4.8	11.6	5.3	6.3	10.5	10.9	8.7	14.9
Suriname	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	1.0	2.3	0.0	1.0	2.3	5.0	3.1	5.4	3.8	4.3	5.1	4.0	5.8	4.2	8.5
Venezuela	7.8	7.7	5.1	14.5	7.7	8.0	7.2	3.5	11.0	5.8	33.0	28.7	10.6	6.3	4.7

Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	89.1	94.7	118.7	85.5	103.1	80.7	120.7	127.1	116.4	144.5	176.7	201.6	191.0	207.0	201.6
Belgium	131.2	124.2	130.7	162.7	165.1	147.9	174.4	224.9	221.2	214.9	269.4	305.8	309.8	356.0	369.7
Bulgaria	11.0	13.1	5.0	6.5	5.3	7.3	5.3	1.8	2.0	7.2	8.3	11.2	6.9	8.2	7.9
Cyprus	10.7	3.8	6.0	5.4	8.7	10.2	11.1	9.0	7.0	8.2	14.9	25.2	17.9	18.5	25.6
Czech Republic	94.4	74.7	84.9	80.9	86.4	87.9	92.2	110.2	108.2	125.7	191.5	231.5	144.8	159.7	168.4
Denmark	91.5	119.6	127.1	136.9	161.6	157.6	149.0	164.3	187.4	198.1	255.4	276.5	279.0	288.6	349.1
Estonia	6.0	12.7	7.8	9.8	11.0	15.8	18.1	23.1	17.4	29.2	37.3	35.2	30.6	39.5	31.1
Finland	82.8	100.5	85.9	92.0	109.9	125.8	146.2	135.6	112.5	144.7	166.6	211.0	218.0	222.4	211.1
France	402.4	503.7	506.7	557.7	502.4	529.0	561.3	585.8	625.6	689.2	763.2	880.6	835.9	846.2	929.3
Germany	776.4	740.2	779.0	831.3	820.3	905.9	896.3	956.9	1,075.2	1,184.4	1,308.7	1,488.2	1,496.6	1,493.8	1,646.4
Greece	75.9	69.1	54.2	75.6	72.3	86.3	122.8	119.3	123.5	131.9	129.9	158.3	152.0	162.5	182.8
Hungary	29.5	35.3	20.7	38.0	30.2	42.2	38.2	41.5	30.2	47.1	59.5	69.3	54.0	43.1	53.7
Ireland	56.0	64.0	61.6	80.2	69.5	74.5	81.0	79.9	88.7	98.0	152.2	157.2	161.0	173.0	202.8
Italy	196.8	199.0	203.8	255.7	271.2	280.1	280.3	317.8	334.5	386.5	544.0	652.4	591.2	641.8	720.4
Latvia	0.5	2.0	1.0	1.0	1.0	2.7	3.5	2.5	6.2	6.3	5.5	12.2	5.3	6.0	9.1
Lithuania	3.0	4.0	1.5	2.5	10.0	14.3	8.3	17.7	13.7	20.3	41.0	97.1	12.4	6.7	13.6
Luxembourg	2.0	3.0	5.0	3.0	3.0	0.5	2.5	2.7	3.5	9.9	5.9	8.2	15.0	19.4	22.3
Malta	2.3	4.0	2.0	2.0	2.0	2.0	5.0	1.3	3.0	1.0	1.0	2.5	3.6	4.0	4.2
Netherlands	479.4	489.8	468.6	488.5	529.4	544.0	527.2	592.8	648.1	706.3	840.2	892.6	954.4	1,082.3	1,038.9
Poland	33.6	29.7	36.5	34.7	33.7	38.0	42.6	48.3	70.0	80.9	69.8	128.1	86.5	70.2	99.5
Portugal	13.6	22.5	27.8	32.0	30.5	40.2	38.0	54.2	74.5	85.0	103.9	135.9	126.9	167.0	182.0
Romania	7.7	0.5	3.0	4.5	4.0	6.8	4.2	4.0	2.6	4.9	75.7	129.2	18.3	21.3	23.2
Slovakia	74.8	68.5	58.4	68.0	71.5	70.4	78.8	93.4	77.3	70.6	59.2	73.9	53.8	64.7	56.1
Slovenia	7.0	16.4	19.3	16.5	30.5	24.8	33.1	34.7	40.2	31.7	108.2	95.3	53.7	43.5	53.2
Spain	174.0	187.3	196.9	223.4	270.3	302.6	300.8	359.1	435.1	532.7	759.3	868.9	681.0	739.9	853.6
Sweden	219.0	224.2	270.3	225.5	239.5	271.1	284.8	296.0	341.8	357.3	383.3	505.6	496.0	528.3	565.0
United Kingdom	2,717.8	2,705.6	2,828.3	3,219.3	2,842.4	2,870.5	3,134.6	3,106.7	3,375.4	3,727.8	4,071.6	4,051.0	4,007.5	4,212.2	4,397.3
Other Europe															
Albania	0.0	1.5	2.3	0.0	0.0	1.5	1.3	0.0	0.0	1.8	0.0	1.8	0.3	4.4	4.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.5	25.5	1.3	3.0	3.5	0.0	6.8	9.7	2.8	2.0	5.5	5.0	3.0	4.0	8.0
Bosnia and Herzegovina	0.0	1.0	1.0	2.7	3.3	1.1	1.2	4.3	4.6	6.0	9.0	8.8	20.8	30.0	11.3
Croatia	83.7	114.3	93.8	112.9	117.5	135.5	154.8	138.6	184.1	181.3	245.6	302.0	269.4	349.5	346.1
Iceland	5.5	8.2	6.3	6.0	9.8	5.7	6.3	8.7	8.3	9.9	15.1	8.2	19.6	9.4	15.4
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Macedonia	2.0	1.5	1.0	0.0	0.0	1.0	0.2	1.7	0.0	0.4	2.8	0.0	0.3	1.1	1.1
Moldova	0.0	0.5	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.8	0.2	0.0	1.8	0.8	1.7
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	1.5	1.0	0.0	0.3	1.3

Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Norway	160.6	153.2	141.2	158.6	165.0	168.9	197.0	204.3	218.6	244.1	316.8	333.8	354.5	361.5	418.1
Russia	264.0	228.2	272.6	262.7	218.4	209.5	233.3	210.4	155.9	188.1	187.8	129.9	162.8	210.3	228.6
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.0
Serbia	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.7	12.0	10.3	21.3	26.0	25.9
Serbia and Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	3.4	2.9	NA	NA	NA	NA	NA
Switzerland	123.8	124.0	113.2	147.6	179.0	186.3	193.6	181.2	253.0	238.5	300.3	358.3	354.3	397.3	411.8
Ukraine	3.8	8.3	25.7	11.2	3.5	6.6	6.4	13.3	7.6	9.2	12.4	16.6	10.0	16.7	8.3
Vatican City	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yugoslavia	2.3	4.0	2.7	5.0	4.0	2.2	3.7	9.2	NA	NA	NA	NA	NA	NA	NA
Middle East															
Bahrain	2.0	2.5	0.5	0.0	1.0	1.0	1.5	3.2	1.0	3.3	0.5	1.5	0.0	1.0	3.3
Iran	2.0	3.1	1.0	4.5	7.4	6.5	9.5	6.3	11.2	25.2	28.4	32.2	55.3	52.6	43.4
Iraq	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.9	0.0	1.5	2.2	0.5	1.0
Israel	276.6	271.8	247.6	250.2	236.4	258.4	281.7	274.3	232.9	287.2	276.5	368.8	329.7	346.4	313.9
Jordan	5.0	1.5	3.4	2.3	4.5	3.1	4.3	6.5	6.0	6.0	4.7	7.5	10.3	8.4	8.6
Kuwait	5.8	4.5	3.2	5.5	3.0	8.9	6.1	9.3	7.8	7.3	6.5	8.3	5.8	3.0	6.0
Lebanon	2.8	4.8	1.5	8.2	13.3	5.9	13.0	12.2	7.3	10.1	6.0	10.3	19.5	15.0	12.9
Oman	1.0	1.5	0.0	3.0	2.5	2.0	0.8	1.0	0.0	1.0	2.0	2.5	2.8	1.5	3.9
Qatar	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.3	1.5	3.0	3.8	2.5	0.5	3.2	8.5
Saudi Arabia	4.0	13.0	10.0	3.8	4.5	6.0	5.5	7.8	6.5	5.5	4.5	6.5	8.8	7.8	10.0
Syria	1.0	0.5	0.0	0.3	1.0	0.6	0.8	0.0	0.4	2.5	0.8	1.3	0.5	4.3	1.8
Turkey	53.0	60.9	40.4	74.4	75.3	85.4	102.0	112.5	151.6	188.9	250.9	340.8	247.9	290.6	270.6
United Arab Emirates	9.0	3.5	5.5	2.6	3.5	5.5	7.0	9.7	11.5	10.8	12.5	18.9	18.8	17.3	24.2
Yemen	0.0	0.0	0.0	0.5	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Africa															
Algeria	1.8	0.0	1.5	1.0	1.0	0.7	0.0	0.3	0.0	2.0	3.7	2.7	2.0	2.9	2.5
Angola	0.0	0.1	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.3	0.5	0.0	0.4	1.0	0.0	1.2	1.1	0.0	1.3	3.0	0.8	1.0	4.7	0.3
Botswana	5.7	4.0	12.5	8.7	12.8	18.0	7.0	8.7	8.5	11.0	6.8	12.6	4.1	5.3	11.0
Burkina Faso	1.2	1.3	1.9	1.6	0.3	1.6	1.6	1.9	0.0	2.7	2.0	0.5	3.1	3.7	6.8
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.3	2.0
Cameroon	6.3	1.5	2.0	5.1	8.2	7.3	3.7	10.0	9.4	9.4	9.0	9.1	8.0	4.1	6.2
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo (Brazzaville)	0.0	0.0	0.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.3	0.5	0.0
Congo (Kinshasa)	0.5	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.4	0.0	1.2	1.6	0.6	0.3
Côte d'Ivoire	0.5	4.0	5.4	3.3	4.3	0.3	2.3	1.3	1.0	2.3	1.8	1.5	1.5	3.0	2.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	10.0	15.3	7.7	10.8	9.5	10.0	9.0	9.8	8.0	10.0	17.0	14.1	23.6	23.4	21.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	2.0	0.8	1.0	0.0	3.0	1.0	0.0	2.0	0.8	1.5	1.0	0.5	0.3	0.0
Ethiopia	2.8	2.2	4.0	2.8	3.3	9.2	6.7	7.1	7.6	13.2	14.9	18.9	15.2	20.2	11.3
Gabon	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.4	0.0	1.2	0.0	0.0	0.5
Gambia	1.7	0.7	0.3	0.3	0.3	3.2	0.0	1.0	0.3	0.7	0.0	0.6	0.0	0.2	0.0
Ghana	13.6	8.9	10.8	10.0	9.4	8.4	9.9	9.6	8.6	8.5	15.5	28.8	13.7	12.6	15.3
Guinea	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.7	0.0
Guinea-Bissau	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	10.3	13.6	17.2	11.3	21.6	30.9	16.4	9.4	17.4	15.5	24.6	35.3	31.8	25.1	29.1
Lesotho	1.0	1.0	0.0	2.5	1.0	0.0	1.0	1.5	0.0	1.5	1.0	2.0	0.0	0.0	1.0
Liberia	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Libya	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.0	0.0	0.3	0.5	0.5	1.6	0.3
Madagascar	0.0	1.0	1.0	0.8	2.8	0.8	1.5	0.0	1.0	2.8	0.3	1.3	0.3	1.0	1.5
Malawi	2.2	3.8	2.5	1.3	2.5	3.5	1.7	3.8	1.8	1.5	11.2	8.7	7.0	5.7	4.2
Mali	0.8	1.7	0.3	1.3	1.3	2.0	0.6	0.6	0.7	0.5	0.0	1.1	1.0	1.2	1.2
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0
Mauritius	0.0	0.0	0.5	0.0	0.5	2.0	1.0	2.0	1.0	1.0	1.0	5.5	4.3	1.5	3.5
Morocco	0.8	2.0	5.1	2.7	2.3	2.0	2.8	3.5	5.1	3.0	2.2	4.1	8.5	2.1	2.7
Mozambique	1.3	2.8	1.0	2.1	0.5	1.8	0.3	0.2	0.5	3.6	1.5	1.9	4.3	2.9	3.7
Namibia	0.0	1.5	1.0	1.5	0.0	3.0	1.5	0.0	2.0	0.0	1.4	0.5	1.5	0.0	1.1
Niger	1.0	0.0	1.0	1.3	2.3	0.3	0.5	0.0	1.3	2.0	0.6	0.8	1.0	1.3	1.8
Nigeria	21.2	23.8	17.4	16.3	18.5	28.1	23.9	26.2	17.7	29.9	22.7	44.7	30.8	39.1	26.0
Rwanda	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	1.6	0.3	0.0	0.5	2.5	1.8
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	2.0	4.0	3.2	4.2	4.9	2.2	4.7	2.5	7.0	2.0	3.5	5.0	7.1	6.6	4.8
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Sierra Leone	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.8
Somalia	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
South Africa	120.6	110.8	91.6	117.4	120.7	169.1	137.3	168.9	191.4	240.8	271.8	288.5	212.3	248.3	231.7
Sudan	1.0	0.0	0.5	2.0	0.3	1.3	0.0	0.0	0.8	0.9	1.3	4.9	4.5	2.8	2.2
Swaziland	1.0	0.0	0.0	2.5	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.2	0.0	1.5
Tanzania	8.9	5.8	8.8	9.0	1.4	7.8	3.9	6.5	15.9	13.8	9.3	18.8	12.7	12.0	12.9
Togo	0.0	1.0	0.0	0.0	0.5	0.0	1.0	1.0	0.0	1.0	0.5	0.0	0.0	1.5	0.0
Tunisia	2.5	1.5	2.5	3.5	2.8	1.1	2.5	1.7	6.0	5.3	8.2	6.6	16.5	11.6	15.4
Uganda	4.5	4.6	4.2	4.7	8.0	6.8	5.9	6.0	8.7	8.7	5.1	6.7	8.9	11.2	14.2
Zambia	1.3	2.8	0.7	1.3	3.4	2.8	3.6	0.5	2.3	2.5	3.5	5.7	1.8	3.5	5.9
Zimbabwe	11.3	12.1	11.0	9.0	15.0	13.3	9.2	6.7	3.6	4.4	6.6	6.2	4.1	12.5	6.9
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.0	1.0	0.3	4.0	0.3	0.5
Armenia	0.0	1.0	1.0	1.5	0.0	2.0	0.0	0.0	0.0	3.3	0.2	0.2	0.5	1.5	2.3
Azerbaijan	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	1.5	0.3	0.0	0.6
Bangladesh	13.0	10.1	16.4	20.3	14.9	7.7	16.7	13.4	17.2	12.9	17.3	16.8	21.0	22.9	21.8

Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bhutan	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.0	0.3	0.0	0.0	0.8
Brunei	1.0	1.0	1.0	1.5	1.0	0.0	1.0	0.5	1.5	0.3	0.0	0.0	0.0	0.5	1.0
Burma	0.0	0.0	0.0	0.0	0.6	1.6	0.0	0.3	0.3	0.0	2.4	1.3	0.0	0.0	0.0
Cambodia	1.5	1.8	0.7	0.5	1.0	1.7	2.5	2.5	2.0	2.2	2.0	1.5	1.5	1.5	4.5
China	215.9	166.3	183.0	216.1	231.0	241.8	232.3	292.6	283.2	392.9	471.3	561.7	599.8	695.4	846.0
Georgia	2.0	0.5	0.0	2.5	3.9	2.4	3.0	1.0	3.2	3.8	2.3	3.6	3.9	4.0	2.9
India	156.3	144.6	115.5	168.5	173.7	170.5	156.5	140.2	162.8	207.0	205.4	236.5	239.5	247.3	207.3
Indonesia	10.4	10.5	12.4	17.2	16.2	19.8	14.4	18.0	17.6	19.1	19.7	20.3	23.5	18.2	31.2
Japan	260.4	276.4	294.4	337.0	297.5	296.0	330.9	304.8	345.8	413.9	509.4	475.3	476.5	511.4	488.6
Kazakhstan	0.5	10.5	1.2	2.8	3.5	1.3	2.6	4.5	2.5	1.0	0.9	3.4	4.0	1.5	2.6
Kyrgyzstan	2.0	2.3	1.2	1.8	2.2	1.5	1.0	3.0	1.3	1.7	0.5	1.5	0.7	1.8	1.5
Laos	0.0	0.0	0.0	0.0	0.8	0.5	0.1	1.6	0.8	0.0	0.0	1.0	0.8	1.8	5.0
Malaysia	8.0	9.2	9.5	16.0	9.3	13.2	16.0	9.2	15.6	28.9	23.6	43.1	49.4	50.1	69.7
Maldives	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	1.2	0.0	1.5	0.5	2.3	2.0	1.0	0.8	0.5	0.0	0.5	1.0	0.5	0.7	0.7
Nepal	4.4	2.9	1.3	3.3	5.3	4.2	3.4	2.2	5.9	2.7	5.8	7.0	4.8	5.4	5.1
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pakistan	8.6	5.0	7.0	6.3	8.2	10.7	15.7	7.9	10.5	14.0	12.8	9.4	12.4	15.1	24.4
Philippines	9.2	17.3	15.2	17.2	12.3	7.4	17.1	11.0	12.8	21.7	20.5	27.1	32.9	23.4	23.9
Singapore	49.1	54.6	62.9	77.7	88.7	67.6	111.3	104.4	115.4	147.6	131.9	143.5	151.3	147.2	129.6
South Korea	58.8	52.2	92.8	76.5	110.4	114.4	125.9	136.7	144.2	182.3	229.0	271.6	252.8	304.0	299.9
Sri Lanka	6.5	5.0	1.9	3.0	2.3	2.5	3.5	3.2	6.8	5.3	7.5	6.7	15.7	8.8	11.2
Taiwan	63.6	62.7	72.5	79.6	107.5	116.6	101.8	124.8	166.2	208.4	236.1	325.7	311.4	354.7	416.9
Tajikistan	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.3
Thailand	11.2	19.5	20.0	13.9	14.8	16.5	14.7	19.7	27.6	35.9	32.6	46.6	37.8	40.4	47.3
Turkmenistan	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.0	0.0	0.2	3.7	4.0	2.0	1.3	2.3	0.0	0.0	2.9	1.3	0.7	1.0	1.0
Vietnam	4.3	3.0	4.9	1.5	4.8	6.5	4.5	2.4	4.9	4.9	16.5	18.9	11.4	11.5	16.2
Australia/Oceania															
Australia	734.6	751.6	784.1	757.4	717.8	698.4	704.5	761.9	829.3	930.4	1,114.8	1,373.0	1,267.5	1,288.4	1,333.4
Fiji	3.5	2.3	3.0	3.3	5.1	1.0	4.5	4.3	3.3	5.3	15.9	12.7	9.0	6.8	4.8
Kiribati	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	1.0	0.5
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	128.4	120.5	139.8	133.5	134.6	137.8	157.9	116.0	170.7	194.8	232.6	270.0	232.4	235.8	239.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	3.3	2.5	1.0	1.0	0.3	2.0	0.0	1.5	0.0	0.0	0.0	3.0	0.0	1.8	0.9
Samoa	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.0	1.5	1.0	0.3	0.0	0.0	0.0
Solomon Islands	1.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.8	0.1

Appendix table 5-39

S&E articles in social sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.7	0.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2

NA = not available; country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-40

U.S. S&E articles, by field and sector: 1997–2012

Field and sector	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All fields	189,477	189,813	190,390	188,125	193,066	187,400	202,475	192,913	214,557	207,874	204,307	221,913	214,350	203,053	209,443	213,902
Federal government	14,090	13,936	13,721	13,567	13,816	13,251	13,987	13,159	14,244	13,625	13,144	14,113	13,071	12,364	12,887	13,075
Industry	14,116	13,994	14,183	13,760	13,974	13,389	14,316	13,100	13,632	13,195	12,524	13,503	12,793	11,815	11,831	11,779
Academic	137,577	138,132	138,395	137,036	140,812	137,340	148,715	142,502	160,128	156,089	154,089	167,797	163,004	154,614	159,183	163,137
FFRDCs	5,217	5,102	5,226	5,049	5,259	4,874	5,721	5,352	6,004	5,653	5,392	5,699	5,349	4,957	5,395	5,690
Private nonprofit	15,298	15,236	15,681	15,942	16,363	15,639	16,773	16,205	17,620	17,013	16,888	18,516	17,978	17,379	18,222	18,322
State/local government	1,809	1,850	1,817	1,765	1,881	1,817	1,834	1,773	1,981	1,925	1,871	1,928	1,885	1,744	1,755	1,728
Joint/unknown sectors	1,370	1,562	1,368	1,006	961	1,090	1,130	821	948	373	399	357	270	181	170	170
Engineering	11,760	11,815	12,312	11,637	12,560	12,475	13,467	12,671	14,455	14,347	14,048	15,140	15,299	13,823	14,890	15,038
Federal government	908	859	893	814	886	844	885	827	952	869	772	868	877	695	790	781
Industry	2,343	2,359	2,411	2,316	2,287	2,228	2,385	1,918	2,091	2,053	1,904	1,973	2,016	1,653	1,792	1,628
Academic	7,292	7,448	7,817	7,421	8,203	8,260	8,925	8,783	10,121	10,295	10,128	11,131	11,139	10,489	11,079	11,431
FFRDCs	889	807	782	759	913	733	892	820	935	838	980	834	986	711	891	904
Private nonprofit	181	185	190	211	161	156	176	203	194	184	177	221	197	199	243	217
State/local government	37	35	96	33	33	163	93	60	87	84	57	92	68	65	82	66
Joint/unknown sectors	110	122	124	83	76	90	112	60	77	25	29	20	15	11	13	9
Astronomy	2,557	1,932	2,829	2,566	2,697	2,996	2,719	2,874	2,853	2,885	2,805	2,981	3,421	2,876	2,897	3,377
Federal government	295	207	306	264	252	229	191	220	208	201	184	241	243	207	202	241
Industry	51	54	58	57	54	68	55	38	46	42	52	79	77	50	63	71
Academic	1,663	1,261	1,816	1,607	1,755	1,954	1,817	1,887	1,862	1,919	1,899	1,957	2,322	1,949	1,937	2,304
FFRDCs	228	179	259	267	266	276	263	294	300	306	308	311	322	278	291	309
Private nonprofit	308	222	369	347	349	439	364	404	409	394	341	375	435	377	391	437
State/local government	0	0 *	0 *	0 *	0	0	0	0 *	0	0	0 *	0	0	0 *	1	0
Joint/unknown sectors	13	9	21	25	21	30	29	30	28	24	22	19	22	15	12	14
Chemistry	14,375	14,414	14,491	14,560	14,342	14,043	15,763	15,110	17,138	16,266	15,268	16,684	17,064	16,977	17,405	17,221
Federal government	698	648	607	614	655	647	673	669	702	632	599	629	624	597	636	609
Industry	2,031	1,849	1,956	1,818	1,761	1,830	2,125	2,101	1,948	1,944	1,793	1,861	1,754	1,675	1,465	1,466
Academic	10,666	10,914	10,848	10,998	10,854	10,565	11,823	11,180	13,133	12,521	11,760	12,838	13,312	13,363	13,889	13,690
FFRDCs	648	636	676	715	705	639	749	774	987	812	784	906	919	953	989	1,065
Private nonprofit	272	292	331	349	313	306	322	322	310	319	294	405	415	364	402	369
State/local government	29	27	27	35	26	21	26	24	22	25	17	23	26	17	19	15
Joint/unknown sectors	32	48	45	31	29	35	46	41	35	14	21	22	15	8	4	7
Physics	18,037	17,951	18,061	16,888	17,376	17,288	18,643	17,642	20,540	19,787	18,209	20,696	18,551	17,632	17,953	18,672
Federal government	991	992	1,071	884	942	903	978	941	913	925	845	922	762	728	800	832
Industry	1,814	1,884	1,807	1,679	1,813	1,652	1,774	1,586	1,568	1,556	1,316	1,398	1,285	1,119	1,160	1,180
Academic	12,903	12,719	12,726	12,094	12,307	12,412	13,227	12,752	15,416	14,713	13,775	15,891	14,383	13,712	13,847	14,396
FFRDCs	2,042	2,093	2,175	1,994	2,077	2,053	2,390	2,127	2,371	2,335	2,033	2,211	1,880	1,846	1,907	2,022
Private nonprofit	203	162	198	195	188	210	218	189	226	224	210	247	223	212	224	231
State/local government	7	5	4	2	6	2	2	7	4	7	5	5	5	6	6	5
Joint/unknown sectors	78	96	80	39	44	57	54	40	42	27	24	21	14	8	8	5
Geosciences	9,237	9,835	9,891	9,787	10,081	9,227	11,499	10,447	11,120	11,361	11,223	12,472	11,993	11,311	11,608	12,088
Federal government	1,294	1,415	1,404	1,401	1,402	1,357	1,625	1,426	1,503	1,482	1,485	1,682	1,595	1,440	1,527	1,607

Appendix table 5-40

U.S. S&E articles, by field and sector: 1997–2012

Field and sector	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Industry	638	618	639	555	660	561	577	560	564	592	602	639	599	589	537	625
Academic	6,183	6,526	6,563	6,590	6,715	6,174	7,839	7,194	7,774	8,026	7,859	8,698	8,535	8,061	8,257	8,485
FFRDCs	480	508	517	495	498	411	632	498	498	506	475	608	495	461	556	588
Private nonprofit	398	467	478	472	503	450	506	503	503	509	518	576	541	536	509	538
State/local government	174	209	209	217	255	218	257	224	224	228	263	252	215	215	211	236
Joint/unknown sectors	69	91	82	56	49	55	63	42	54	19	20	18	13	9	11	10
Mathematics	3,062	3,497	3,573	3,767	3,666	3,568	3,774	3,574	3,933	3,940	3,813	4,482	4,275	3,841	3,995	4,159
Federal government	45	55	68	59	48	54	46	51	55	47	52	55	48	58	56	56
Industry	89	126	130	120	127	111	107	89	86	81	84	91	87	79	104	87
Academic	2,841	3,223	3,277	3,459	3,403	3,318	3,539	3,340	3,685	3,719	3,594	4,234	4,052	3,619	3,756	3,922
FFRDCs	41	41	41	70	39	39	42	55	63	57	48	65	52	45	43	57
Private nonprofit	37	43	46	52	46	39	29	34	37	34	27	31	32	35	36	36
State/local government	3	2	4	2	1	1	1	1	1	1	1	2	1	2	0 *	0 *
Joint/unknown sectors	6	6	6	4	4	6	10	4	6	1	6	4	4	4	0	0 *
Computer sciences	1,929	1,952	2,008	2,075	2,083	1,999	2,254	2,173	2,390	2,521	2,329	2,337	2,282	2,160	2,146	2,295
Federal government	50	49	61	41	42	41	35	34	42	40	56	35	32	36	35	36
Industry	434	445	448	481	461	443	410	343	366	376	321	352	286	260	281	306
Academic	1,352	1,364	1,398	1,475	1,482	1,454	1,736	1,729	1,912	2,024	1,875	1,885	1,888	1,812	1,761	1,887
FFRDCs	42	48	51	31	44	31	36	38	41	44	39	32	34	29	40	41
Private nonprofit	32	23	27	35	36	19	23	18	20	28	31	26	35	20	26	22
State/local government	1	1	1	1	1	0 *	2	0 *	1	2	1	1	2	1	2	3
Joint/unknown sectors	19	23	22	12	17	11	12	11	8	6	6	5	5	3	1	0 *
Agricultural sciences	3,605	3,464	2,804	3,640	3,203	3,924	3,903	3,526	3,561	3,964	3,624	3,859	3,490	3,371	3,391	3,406
Federal government	610	586	463	656	548	629	669	628	649	759	675	761	610	595	568	595
Industry	241	237	201	250	264	263	232	220	220	227	221	243	217	212	227	239
Academic	2,615	2,532	2,043	2,639	2,260	2,928	2,888	2,585	2,595	2,875	2,640	2,757	2,563	2,471	2,502	2,458
FFRDCs	16	12	8	12	8	9	21	11	17	18	21	12	14	15	13	16
Private nonprofit	52	38	40	44	48	46	54	49	50	56	42	55	56	48	55	75
State/local government	33	24	19	18	49	27	19	22	17	25	21	25	25	25	21	20
Joint/unknown sectors	38	35	29	20	26	22	20	12	13	4	4	6	5	5	4	2
Biological sciences	51,694	52,061	51,425	50,989	52,680	50,085	52,968	51,491	55,494	51,775	51,849	53,394	51,037	47,933	48,847	49,100
Federal government	4,633	4,574	4,500	4,469	4,516	4,263	4,412	4,257	4,546	4,202	4,126	4,241	3,908	3,693	3,871	3,888
Industry	3,689	3,649	3,627	3,597	3,554	3,299	3,501	3,153	3,321	2,942	2,888	3,047	2,922	2,691	2,658	2,674
Academic	37,484	38,002	37,582	37,180	38,664	36,887	39,155	38,275	41,464	38,998	39,192	40,309	38,681	36,247	36,914	37,056
FFRDCs	626	569	552	546	553	540	540	584	626	591	537	549	506	482	529	509
Private nonprofit	4,562	4,512	4,471	4,531	4,716	4,427	4,655	4,560	4,808	4,484	4,511	4,680	4,505	4,351	4,432	4,515
State/local government	509	519	489	516	532	506	512	535	560	495	528	507	469	439	415	430
Joint/unknown sectors	191	235	203	150	145	163	193	128	169	63	68	60	46	29	27	28
Medical sciences	52,146	52,402	52,550	51,886	53,437	51,384	56,128	53,541	60,130	57,052	57,535	62,017	59,898	57,174	60,273	59,286
Federal government	3,796	3,859	3,637	3,625	3,782	3,542	3,763	3,507	3,837	3,647	3,556	3,769	3,556	3,410	3,523	3,434
Industry	2,191	2,268	2,377	2,384	2,492	2,491	2,701	2,674	2,907	2,881	2,879	3,191	2,979	2,922	2,982	2,885
Academic	36,890	36,792	36,931	36,235	37,192	35,933	39,301	37,504	42,325	40,310	40,831	43,929	42,484	40,467	42,702	42,085

Appendix table 5-40

U.S. S&E articles, by field and sector: 1997–2012

Field and sector	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
FFRDCs	176	182	147	138	127	126	138	128	147	115	130	138	125	109	103	142
Private nonprofit	7,846	7,973	8,191	8,381	8,685	8,188	9,064	8,667	9,666	9,124	9,190	10,062	9,794	9,426	10,086	9,943
State/local government	778	794	783	757	808	709	765	740	912	846	808	816	880	790	822	752
Joint/unknown sectors	469	534	484	365	350	396	396	321	337	129	140	113	80	50	56	46
Other life sciences	3,009	3,009	2,876	2,942	3,146	2,958	2,964	2,699	3,670	4,456	3,947	4,706	4,714	4,394	4,426	4,680
Federal government	141	123	116	135	170	144	135	109	231	214	179	207	225	221	185	198
Industry	154	153	155	147	150	157	150	142	193	236	197	251	230	221	229	244
Academic	2,181	2,181	2,081	2,147	2,336	2,121	2,207	2,025	2,695	3,248	2,947	3,473	3,498	3,193	3,285	3,484
FFRDCs	1	0	0	1	1	1	2	0 *	1	0 *	0 *	0 *	0	0	1	0 *
Private nonprofit	376	368	388	387	372	410	367	348	447	649	549	679	668	679	660	665
State/local government	48	74	53	57	60	59	50	44	50	88	64	79	78	67	60	78
Joint/unknown sectors	107	110	82	69	58	66	54	30	53	20	11	18	15	13	6	11
Psychology	8,130	7,736	7,806	7,499	7,809	7,691	7,892	7,410	8,482	8,821	8,665	10,210	10,181	9,519	9,810	10,930
Federal government	248	225	240	237	221	218	218	183	216	231	211	288	227	258	279	340
Industry	169	143	170	165	183	147	141	131	173	140	125	183	171	154	146	171
Academic	7,053	6,755	6,850	6,575	6,867	6,796	7,058	6,636	7,599	7,904	7,822	9,169	9,236	8,580	8,853	9,836
FFRDCs	2	3	2	1	0	2	1	0 *	1	2	1	2	2	2	4	1
Private nonprofit	399	356	355	359	392	373	349	340	366	445	415	469	461	447	454	499
State/local government	116	106	85	70	69	66	59	72	63	82	66	78	74	71	67	69
Joint/unknown sectors	143	148	105	92	78	88	65	46	64	16	23	20	11	6	7	14
Social sciences	9,935	9,745	9,763	9,888	9,985	9,763	10,501	9,754	10,790	10,700	10,993	12,935	12,144	12,042	11,803	13,650
Federal government	382	343	354	368	353	380	357	307	390	378	404	414	363	425	413	458
Industry	271	209	203	190	170	140	157	144	150	125	141	195	171	192	188	203
Academic	8,456	8,416	8,463	8,617	8,773	8,536	9,199	8,612	9,547	9,538	9,767	11,525	10,911	10,651	10,401	12,102
FFRDCs	26	25	16	20	27	14	16	23	19	28	36	31	16	25	29	36
Private nonprofit	632	594	596	579	556	577	647	568	583	564	582	691	615	684	703	775
State/local government	74	55	47	56	42	44	48	45	41	42	38	48	43	46	48	54
Joint/unknown sectors	93	104	84	58	65	72	77	56	61	25	25	32	25	20	20	22

* = rounds to zero.

FFRDC = federally funded R&D center.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a sector on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple sectors, each sector receives fractional credit on the basis of the of proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	581,845	605,160	619,163	619,680	636,832	627,805	683,947	656,099	743,180	728,451	736,501	816,314	809,889	777,525	814,152	852,110
with multiple institutions	301,971	320,106	335,791	341,514	361,448	363,036	403,997	394,763	454,625	452,410	467,750	525,630	535,070	522,873	556,464	586,520
with domestic institutions only	490,978	506,736	513,061	510,054	518,103	507,026	548,854	524,312	591,365	576,441	577,251	635,531	622,781	592,222	615,311	640,269
with international institutions	90,867	98,424	106,102	109,626	118,729	120,779	135,093	131,787	151,815	152,010	159,250	180,783	187,108	185,303	198,841	211,841
Canada																
Total articles	27,541	27,535	28,447	28,006	28,194	28,399	31,399	30,333	35,638	35,765	36,832	40,409	41,301	39,386	40,543	42,424
with multiple institutions	16,932	17,425	18,287	18,306	18,873	19,241	21,465	21,086	24,911	25,265	26,602	29,553	30,670	29,701	30,954	32,766
with domestic institutions only	18,306	18,060	18,379	17,849	17,310	17,120	18,683	17,555	20,476	20,428	20,514	21,986	21,966	20,614	20,670	21,138
with international institutions	9,235	9,475	10,068	10,157	10,884	11,279	12,716	12,778	15,162	15,337	16,318	18,423	19,335	18,772	19,873	21,286
Mexico																
Total articles	2,939	3,460	3,857	3,977	4,374	4,466	4,978	5,013	5,543	5,439	5,584	6,200	6,069	5,871	6,024	6,398
with multiple institutions	1,914	2,394	2,761	2,884	3,203	3,297	3,614	3,721	4,192	4,151	4,259	4,821	4,806	4,712	4,874	5,213
with domestic institutions only	1,733	1,923	2,178	2,132	2,314	2,442	2,775	2,765	3,015	2,899	2,968	3,157	3,094	2,954	2,875	3,083
with international institutions	1,206	1,537	1,679	1,845	2,060	2,024	2,203	2,248	2,528	2,540	2,616	3,043	2,975	2,917	3,149	3,315
United States																
Total articles	209,898	211,834	214,066	212,781	219,879	214,737	233,211	223,073	249,152	242,216	240,491	263,092	256,758	245,235	255,040	262,666
with multiple institutions	123,239	126,322	130,081	131,272	138,510	137,312	151,759	147,485	166,729	164,603	167,272	185,655	185,209	179,124	189,455	196,725
with domestic institutions only	169,479	168,580	167,722	164,785	167,705	161,855	173,914	165,034	182,878	176,329	171,417	184,744	176,348	165,654	169,529	171,483
with international institutions	40,419	43,254	46,344	47,996	52,174	52,882	59,297	58,039	66,274	65,887	69,074	78,348	80,410	79,581	85,511	91,183
Argentina																
Total articles	2,976	3,187	3,395	3,553	3,803	4,038	4,019	3,762	4,424	4,310	4,460	5,108	5,177	5,100	5,325	5,653
with multiple institutions	1,794	1,989	2,205	2,354	2,608	2,759	2,804	2,778	3,270	3,204	3,372	3,891	4,078	4,062	4,346	4,602
with domestic institutions only	1,983	2,030	2,121	2,180	2,220	2,408	2,307	2,018	2,365	2,328	2,386	2,725	2,673	2,656	2,727	2,870
with international institutions	993	1,157	1,274	1,373	1,583	1,630	1,712	1,744	2,059	1,982	2,074	2,383	2,504	2,444	2,598	2,783
Brazil																
Total articles	5,632	6,642	7,521	7,897	9,050	9,607	10,739	11,265	12,595	13,289	13,490	16,981	15,862	15,490	16,383	18,574
with multiple institutions	3,857	4,545	5,157	5,509	6,362	6,850	7,653	8,053	9,191	9,694	10,218	12,945	12,354	12,348	13,368	15,116
with domestic institutions only	3,337	4,028	4,633	4,780	5,690	6,006	6,956	7,338	8,224	8,837	8,758	11,303	10,177	9,861	10,073	11,515
with international institutions	2,295	2,614	2,888	3,117	3,360	3,601	3,783	3,927	4,371	4,452	4,732	5,678	5,685	5,629	6,310	7,059
Chile																
Total articles	1,324	1,347	1,503	1,582	1,763	1,903	2,214	2,023	2,582	2,550	2,562	3,004	3,075	3,030	3,368	3,801
with multiple institutions	911	933	1,058	1,177	1,299	1,460	1,698	1,585	2,064	2,114	2,132	2,449	2,590	2,606	2,964	3,320
with domestic institutions only	706	714	735	746	817	824	990	848	1,114	997	969	1,201	1,151	1,072	1,110	1,228
with international institutions	618	633	768	836	946	1,079	1,224	1,175	1,468	1,553	1,593	1,803	1,924	1,958	2,258	2,573
Austria																
Total articles	5,255	5,653	5,836	5,921	6,442	6,318	7,009	6,697	7,450	7,040	7,426	8,308	8,301	8,242	8,960	9,206
with multiple institutions	3,555	3,806	4,132	4,228	4,658	4,627	5,184	5,114	5,853	5,487	5,906	6,669	6,753	6,867	7,533	7,859
with domestic institutions only	2,862	3,102	3,045	3,059	3,165	3,046	3,404	3,031	3,182	2,990	2,934	3,128	3,048	2,796	2,963	2,883
with international institutions	2,393	2,551	2,791	2,862	3,277	3,272	3,605	3,666	4,268	4,050	4,492	5,180	5,253	5,446	5,997	6,323

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	7,614	8,126	8,499	8,270	8,713	8,871	9,800	9,587	11,060	10,442	10,902	12,135	12,158	12,109	12,811	13,301
with multiple institutions	5,195	5,621	6,058	5,979	6,325	6,574	7,330	7,211	8,543	8,131	8,698	9,802	10,103	10,295	10,936	11,330
with domestic institutions only	3,942	4,104	4,059	3,889	4,036	3,879	4,319	4,201	4,651	4,272	4,367	4,717	4,488	4,146	4,313	4,425
with international institutions	3,672	4,022	4,440	4,381	4,677	4,992	5,481	5,386	6,409	6,170	6,535	7,418	7,670	7,963	8,498	8,876
Czech Republic																
Total articles	3,064	3,301	3,298	3,396	3,717	3,836	4,185	4,206	4,949	4,965	5,238	5,950	5,994	5,974	6,387	6,585
with multiple institutions	2,041	2,281	2,259	2,388	2,708	2,752	3,176	3,118	3,738	3,777	4,077	4,596	4,755	4,853	5,166	5,346
with domestic institutions only	1,597	1,629	1,619	1,698	1,786	1,897	2,046	2,055	2,351	2,452	2,498	2,884	2,773	2,667	2,853	2,795
with international institutions	1,467	1,672	1,679	1,698	1,931	1,939	2,139	2,151	2,598	2,513	2,740	3,066	3,221	3,307	3,534	3,790
Denmark																
Total articles	6,210	6,642	6,846	6,884	7,068	6,768	7,532	7,005	7,906	7,646	7,941	8,649	8,700	8,853	9,777	10,497
with multiple institutions	4,308	4,625	4,889	4,952	5,150	5,034	5,650	5,280	6,059	5,982	6,331	6,996	7,165	7,312	8,163	8,788
with domestic institutions only	3,274	3,478	3,519	3,512	3,488	3,304	3,696	3,366	3,671	3,396	3,404	3,611	3,449	3,561	3,872	4,042
with international institutions	2,936	3,164	3,327	3,372	3,580	3,464	3,836	3,639	4,235	4,250	4,537	5,038	5,251	5,292	5,905	6,455
Finland																
Total articles	5,667	5,812	6,266	6,441	6,625	6,408	6,937	6,484	7,091	6,932	6,953	7,679	7,545	7,204	7,467	7,802
with multiple institutions	4,090	4,270	4,722	4,925	5,039	4,955	5,450	5,074	5,672	5,548	5,634	6,253	6,261	6,036	6,356	6,619
with domestic institutions only	3,505	3,454	3,642	3,575	3,775	3,574	3,714	3,521	3,690	3,580	3,384	3,734	3,444	3,093	3,151	3,085
with international institutions	2,162	2,358	2,624	2,866	2,850	2,834	3,223	2,963	3,401	3,352	3,569	3,945	4,101	4,111	4,316	4,717
France																
Total articles	37,681	40,110	40,923	40,208	41,191	39,793	43,030	39,180	44,624	42,821	42,809	47,904	47,802	45,305	47,088	48,332
with multiple institutions	25,014	26,957	28,152	28,124	29,384	28,848	31,729	29,550	34,169	33,244	34,216	38,746	39,582	38,278	40,293	41,701
with domestic institutions only	23,614	24,817	24,760	23,412	23,352	22,052	23,217	20,314	22,692	21,367	20,481	22,807	21,766	19,821	20,140	20,182
with international institutions	14,067	15,293	16,163	16,796	17,839	17,741	19,813	18,866	21,932	21,454	22,328	25,097	26,036	25,484	26,948	28,150
Germany																
Total articles	50,614	54,859	55,265	55,648	56,871	55,374	59,177	55,718	63,767	60,672	60,961	66,390	67,065	64,682	67,579	70,533
with multiple institutions	29,000	32,048	33,398	34,473	36,407	36,511	39,714	38,375	44,439	42,989	44,314	48,922	50,864	50,184	53,022	55,575
with domestic institutions only	32,651	34,990	34,081	33,684	33,057	31,226	32,590	29,997	34,016	31,535	30,501	32,849	31,814	29,813	30,635	31,372
with international institutions	17,963	19,869	21,184	21,964	23,814	24,148	26,587	25,721	29,751	29,137	30,460	33,541	35,251	34,869	36,944	39,161
Greece																
Total articles	3,086	3,417	3,521	3,753	4,328	4,313	4,895	4,907	5,770	6,190	6,524	6,959	6,931	6,396	6,504	6,730
with multiple institutions	1,925	2,230	2,332	2,457	2,889	2,809	3,317	3,355	4,019	4,372	4,726	5,036	5,159	4,849	4,950	5,275
with domestic institutions only	1,872	2,065	2,058	2,223	2,529	2,641	2,890	2,938	3,487	3,674	3,773	3,961	3,750	3,359	3,221	3,113
with international institutions	1,214	1,352	1,463	1,530	1,799	1,672	2,005	1,969	2,283	2,516	2,751	2,998	3,181	3,037	3,283	3,617
Hungary																
Total articles	2,821	3,104	3,352	3,376	3,613	3,421	3,753	3,500	4,136	3,759	3,722	4,129	3,945	3,491	3,907	4,140
with multiple institutions	2,036	2,266	2,482	2,606	2,782	2,685	2,928	2,840	3,293	3,006	3,084	3,341	3,293	2,954	3,307	3,528
with domestic institutions only	1,302	1,457	1,547	1,498	1,631	1,488	1,621	1,493	1,828	1,664	1,499	1,736	1,541	1,325	1,407	1,492
with international institutions	1,519	1,647	1,805	1,878	1,982	1,933	2,132	2,007	2,308	2,095	2,223	2,393	2,404	2,166	2,500	2,648

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	1,745	1,999	2,045	2,161	2,234	2,281	2,486	2,649	3,216	3,365	3,651	4,291	4,424	4,648	4,883	5,040
with multiple institutions	1,086	1,215	1,310	1,402	1,503	1,581	1,748	1,876	2,300	2,485	2,654	3,213	3,447	3,700	3,905	4,142
with domestic institutions only	987	1,140	1,132	1,162	1,178	1,172	1,231	1,303	1,554	1,561	1,675	1,872	1,877	1,991	2,044	2,007
with international institutions	758	859	913	999	1,056	1,109	1,255	1,346	1,662	1,804	1,976	2,419	2,547	2,657	2,839	3,033
Italy																
Total articles	23,614	25,324	26,150	26,422	28,281	28,290	31,433	30,312	33,928	33,018	34,121	37,914	37,506	35,946	36,604	38,527
with multiple institutions	17,152	18,528	19,493	19,799	21,266	21,534	24,052	23,472	26,704	26,002	27,083	30,069	30,325	29,353	30,167	32,075
with domestic institutions only	15,091	15,805	16,045	16,214	17,037	17,044	18,808	17,915	19,507	18,931	19,012	20,778	19,855	18,535	18,300	18,830
with international institutions	8,523	9,519	10,105	10,208	11,244	11,246	12,625	12,397	14,421	14,087	15,109	17,136	17,651	17,411	18,304	19,697
Netherlands																
Total articles	16,039	16,231	16,331	16,443	16,799	16,796	18,329	17,826	20,415	19,926	20,113	22,260	22,920	22,849	23,773	25,509
with multiple institutions	10,611	11,020	11,313	11,820	12,325	12,535	13,881	13,661	15,982	15,734	16,204	18,118	18,981	19,196	20,120	21,802
with domestic institutions only	9,934	9,810	9,571	9,117	9,216	8,964	9,583	9,214	10,481	9,936	9,729	10,642	10,428	10,068	10,177	10,322
with international institutions	6,105	6,421	6,760	7,326	7,583	7,832	8,746	8,612	9,934	9,990	10,384	11,618	12,492	12,781	13,596	15,187
Poland																
Total articles	6,095	6,676	7,155	7,368	7,876	8,311	9,318	8,864	10,072	9,911	9,690	10,904	10,541	10,188	10,631	11,647
with multiple institutions	3,768	4,142	4,592	4,704	5,167	5,390	6,084	5,966	6,822	6,724	6,569	7,320	7,328	7,145	7,557	8,217
with domestic institutions only	3,212	3,577	3,749	3,911	4,085	4,412	5,001	4,591	5,290	5,192	5,150	5,919	5,524	5,284	5,644	6,123
with international institutions	2,883	3,099	3,406	3,457	3,791	3,899	4,317	4,273	4,782	4,719	4,540	4,985	5,017	4,904	4,987	5,524
Portugal																
Total articles	1,733	1,976	2,481	2,574	3,026	3,091	3,733	3,892	4,358	5,186	4,805	5,767	6,251	6,099	6,778	7,744
with multiple institutions	1,235	1,429	1,813	1,909	2,209	2,351	2,867	3,053	3,422	4,128	3,827	4,734	5,156	5,100	5,786	6,660
with domestic institutions only	864	966	1,194	1,212	1,421	1,412	1,737	1,780	2,014	2,384	2,187	2,542	2,774	2,601	2,817	3,190
with international institutions	869	1,010	1,287	1,362	1,605	1,679	1,996	2,112	2,344	2,802	2,618	3,225	3,477	3,498	3,961	4,554
Spain																
Total articles	15,869	17,014	18,398	18,491	19,695	20,146	21,558	21,309	24,892	25,744	26,699	30,691	30,579	30,178	32,440	34,394
with multiple institutions	9,611	10,513	11,485	11,776	12,803	13,258	14,597	14,650	17,304	18,167	19,148	22,554	23,261	23,606	25,830	27,691
with domestic institutions only	10,681	11,162	11,897	11,761	12,219	12,418	12,979	12,640	14,513	14,882	15,095	16,905	16,105	15,191	15,853	16,349
with international institutions	5,188	5,852	6,501	6,730	7,476	7,728	8,579	8,669	10,379	10,862	11,604	13,786	14,474	14,987	16,587	18,045
Sweden																
Total articles	12,426	12,945	13,354	13,136	13,956	13,500	14,205	13,296	15,060	14,278	14,558	15,356	15,211	14,886	15,218	16,307
with multiple institutions	8,554	8,858	9,355	9,195	10,096	9,932	10,526	9,909	11,336	10,912	11,390	12,149	12,238	12,229	12,661	13,533
with domestic institutions only	7,371	7,555	7,538	7,232	7,475	6,992	7,180	6,766	7,529	6,905	6,630	6,755	6,341	5,904	5,793	6,148
with international institutions	5,055	5,390	5,816	5,904	6,481	6,508	7,025	6,530	7,531	7,373	7,928	8,601	8,870	8,982	9,425	10,159
United Kingdom																
Total articles	54,323	56,940	58,730	59,855	58,846	56,884	60,894	58,200	64,452	62,801	63,524	68,850	68,063	65,797	67,777	71,156
with multiple institutions	30,135	32,404	34,274	35,462	36,498	36,120	39,330	38,581	43,399	42,853	44,484	49,197	49,800	48,772	51,368	54,053
with domestic institutions only	37,504	38,580	38,913	39,027	36,816	34,495	36,279	33,558	36,243	34,532	33,635	34,902	33,196	31,136	31,052	31,929
with international institutions	16,819	18,360	19,817	20,828	22,030	22,389	24,615	24,642	28,209	28,269	29,889	33,948	34,867	34,661	36,725	39,227

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	3,936	4,123	4,173	4,248	4,436	4,324	4,694	4,732	5,507	5,693	5,889	6,763	6,960	6,721	7,373	7,871
with multiple institutions	2,668	2,885	2,924	2,996	3,217	3,220	3,572	3,698	4,322	4,505	4,793	5,510	5,839	5,636	6,296	6,710
with domestic institutions only	2,281	2,315	2,324	2,383	2,344	2,181	2,326	2,228	2,670	2,687	2,617	3,048	2,966	2,821	2,988	3,072
with international institutions	1,655	1,808	1,849	1,865	2,092	2,143	2,368	2,504	2,837	3,006	3,272	3,715	3,994	3,900	4,385	4,799
Russia																
Total articles	22,022	21,731	21,253	22,568	20,320	20,396	20,589	19,069	19,909	16,856	18,999	19,172	18,928	17,485	18,142	18,272
with multiple institutions	9,357	9,908	10,225	11,004	10,752	11,180	11,706	10,914	11,883	10,237	11,136	11,335	11,147	10,449	11,053	11,531
with domestic institutions only	15,523	14,866	13,976	15,049	12,556	12,370	12,238	11,310	11,446	9,321	11,544	11,363	11,520	10,694	11,141	10,859
with international institutions	6,499	6,865	7,277	7,519	7,764	8,026	8,351	7,759	8,463	7,535	7,455	7,809	7,408	6,791	7,001	7,413
Switzerland																
Total articles	11,261	11,600	12,146	12,235	11,996	11,785	13,239	12,938	14,611	14,549	15,098	16,502	16,786	16,570	17,812	18,726
with multiple institutions	7,206	7,635	8,148	8,195	8,183	8,417	9,580	9,443	10,839	10,979	11,785	13,123	13,458	13,636	14,713	15,593
with domestic institutions only	5,680	5,750	5,774	5,922	5,567	5,090	5,579	5,379	5,944	5,757	5,449	5,774	5,645	5,280	5,585	5,695
with international institutions	5,581	5,850	6,372	6,313	6,429	6,695	7,660	7,559	8,667	8,792	9,649	10,728	11,141	11,290	12,227	13,031
Iran																
Total articles	440	626	804	961	1,154	1,461	2,092	2,299	3,183	3,749	4,864	6,093	7,288	7,875	9,127	10,628
with multiple institutions	262	343	427	508	672	808	1,190	1,321	1,891	2,263	3,093	3,788	4,543	4,969	5,877	6,897
with domestic institutions only	304	433	606	711	859	1,104	1,544	1,732	2,346	2,829	3,614	4,579	5,559	6,001	6,791	7,994
with international institutions	136	193	198	250	295	357	548	567	837	920	1,250	1,514	1,729	1,874	2,336	2,634
Israel																
Total articles	7,655	7,798	7,708	8,024	8,317	8,211	8,909	8,235	8,847	8,538	8,600	9,471	8,951	8,488	8,721	8,950
with multiple institutions	5,070	5,189	5,299	5,561	5,867	5,824	6,351	5,947	6,440	6,216	6,320	6,873	6,649	6,438	6,661	6,911
with domestic institutions only	4,786	4,774	4,603	4,740	4,814	4,753	5,154	4,700	4,997	4,812	4,884	5,206	4,797	4,295	4,280	4,392
with international institutions	2,869	3,024	3,105	3,284	3,503	3,458	3,755	3,535	3,850	3,726	3,716	4,265	4,154	4,193	4,441	4,558
Saudi Arabia																
Total articles	795	818	760	731	717	730	761	707	775	758	770	950	1,127	1,746	2,753	3,802
with multiple institutions	393	389	394	383	376	390	435	406	441	463	456	626	815	1,418	2,321	3,310
with domestic institutions only	570	594	527	483	474	468	429	413	463	414	426	457	448	509	644	754
with international institutions	225	224	233	248	243	262	332	294	312	344	344	493	679	1,237	2,109	3,048
Turkey																
Total articles	2,744	3,154	3,679	3,946	4,675	5,699	6,991	7,989	9,152	9,012	9,317	10,243	9,716	9,091	9,585	10,358
with multiple institutions	1,584	1,837	2,175	2,365	2,820	3,502	4,392	5,060	5,897	5,742	6,023	6,652	6,523	6,190	6,745	7,498
with domestic institutions only	2,144	2,514	2,859	3,065	3,605	4,496	5,495	6,430	7,446	7,284	7,467	8,046	7,411	6,870	7,036	7,361
with international institutions	600	640	820	881	1,070	1,203	1,496	1,559	1,706	1,728	1,850	2,197	2,305	2,221	2,549	2,997
Egypt																
Total articles	1,503	1,569	1,647	1,695	1,852	1,906	2,145	1,980	2,181	2,248	2,367	2,703	3,079	3,313	3,602	3,839
with multiple institutions	771	806	873	910	963	1,037	1,217	1,099	1,275	1,333	1,412	1,688	2,087	2,335	2,730	2,960
with domestic institutions only	1,031	1,083	1,126	1,110	1,299	1,291	1,388	1,290	1,398	1,461	1,491	1,640	1,685	1,763	1,690	1,701
with international institutions	472	486	521	585	553	615	757	690	783	787	876	1,063	1,394	1,550	1,912	2,138

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	2,683	2,773	2,907	2,810	2,998	3,129	3,132	2,994	3,554	3,737	3,809	4,558	4,410	4,487	4,867	5,542
with multiple institutions	1,548	1,650	1,769	1,733	1,866	1,976	2,077	2,044	2,402	2,556	2,675	3,240	3,303	3,418	3,829	4,368
with domestic institutions only	1,827	1,815	1,860	1,713	1,750	1,813	1,655	1,494	1,810	1,890	1,876	2,176	1,940	1,900	1,877	2,190
with international institutions	856	958	1,047	1,097	1,248	1,316	1,477	1,500	1,744	1,847	1,933	2,382	2,470	2,587	2,990	3,352
China																
Total articles	14,420	15,972	18,676	20,900	24,293	27,345	33,768	38,143	50,050	55,690	62,847	77,279	87,417	90,653	102,748	116,633
with multiple institutions	8,128	9,078	10,630	12,138	14,502	16,405	20,667	23,423	31,137	35,369	40,517	50,697	59,000	62,084	71,763	81,996
with domestic institutions only	10,721	11,744	13,756	15,429	17,736	20,022	24,766	28,342	37,615	41,821	47,268	57,979	65,021	66,489	74,964	85,552
with international institutions	3,699	4,228	4,920	5,471	6,557	7,323	9,002	9,801	12,435	13,869	15,579	19,300	22,396	24,164	27,784	31,081
India																
Total articles	10,303	11,155	11,735	11,281	12,514	13,088	14,465	14,635	17,348	18,829	19,768	22,842	23,479	23,794	25,740	28,083
with multiple institutions	4,032	4,540	4,959	4,955	5,609	6,158	6,855	6,941	8,649	9,547	10,325	12,309	13,226	13,701	15,022	16,711
with domestic institutions only	8,654	9,133	9,575	8,971	9,838	10,197	11,293	11,444	13,472	14,603	15,413	17,633	17,897	17,761	19,150	20,751
with international institutions	1,649	2,022	2,160	2,310	2,676	2,891	3,172	3,191	3,876	4,226	4,355	5,209	5,582	6,033	6,590	7,332
Japan																
Total articles	54,852	59,883	61,817	61,343	63,980	61,618	67,627	61,034	66,180	61,436	60,035	62,365	60,233	54,082	55,659	55,316
with multiple institutions	30,620	34,229	36,389	36,819	39,563	38,726	43,468	40,386	44,413	41,768	41,681	43,910	42,874	39,324	40,696	40,916
with domestic institutions only	45,841	49,883	50,868	49,941	51,386	49,081	53,124	47,291	50,968	46,542	45,245	46,327	44,144	38,938	39,565	38,725
with international institutions	9,011	10,000	10,949	11,402	12,594	12,537	14,503	13,743	15,212	14,894	14,790	16,038	16,089	15,144	16,094	16,591
Singapore																
Total articles	1,569	1,898	2,378	2,713	3,092	3,243	3,803	4,044	4,770	5,019	4,937	5,815	6,122	6,191	6,764	7,338
with multiple institutions	759	924	1,268	1,425	1,705	1,842	2,318	2,571	3,136	3,435	3,544	4,262	4,502	4,700	5,204	5,810
with domestic institutions only	1,064	1,312	1,562	1,843	2,024	2,080	2,372	2,480	2,830	2,872	2,629	2,912	2,975	2,767	2,960	2,979
with international institutions	505	586	816	870	1,068	1,163	1,431	1,564	1,940	2,147	2,308	2,903	3,147	3,424	3,804	4,359
South Korea																
Total articles	6,587	8,172	9,651	10,734	12,715	13,549	15,977	16,705	20,364	20,366	21,173	25,486	27,159	27,580	30,322	32,770
with multiple institutions	4,342	5,327	6,317	7,135	8,781	9,660	11,560	12,151	14,843	15,025	15,715	19,015	20,358	21,093	23,469	25,535
with domestic institutions only	4,774	6,117	7,238	8,171	9,459	9,994	11,532	12,164	14,740	14,579	15,138	18,170	19,523	19,516	21,165	22,691
with international institutions	1,813	2,055	2,413	2,563	3,256	3,555	4,445	4,541	5,624	5,787	6,035	7,316	7,636	8,064	9,157	10,079
Taiwan																
Total articles	6,430	7,090	7,536	7,758	9,004	8,982	10,268	10,757	12,865	13,477	14,031	16,193	16,477	16,087	17,049	16,730
with multiple institutions	3,503	3,888	4,387	4,590	5,650	5,714	6,781	7,298	8,981	9,606	10,317	12,165	12,654	12,608	13,356	13,245
with domestic institutions only	5,302	5,900	6,143	6,239	7,137	7,143	8,129	8,596	10,216	10,790	10,984	12,460	12,534	12,055	12,646	12,071
with international institutions	1,128	1,190	1,393	1,519	1,867	1,839	2,139	2,161	2,649	2,687	3,047	3,733	3,943	4,032	4,403	4,659
Australia																
Total articles	16,282	17,307	17,915	17,581	18,124	18,152	19,752	19,175	22,059	22,289	22,970	26,786	26,962	26,725	28,880	31,605
with multiple institutions	9,173	10,022	10,550	10,779	11,724	11,847	13,390	13,275	15,411	15,838	16,815	19,873	20,769	20,842	23,003	25,320
with domestic institutions only	11,493	11,995	12,359	11,727	11,513	11,322	12,047	11,384	13,030	12,979	12,788	14,675	13,983	13,537	14,003	15,030
with international institutions	4,789	5,312	5,556	5,854	6,611	6,830	7,705	7,791	9,029	9,310	10,182	12,111	12,979	13,188	14,877	16,575

Appendix table 5-41

S&E articles in all fields combined, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	3,253	3,578	3,543	3,743	3,623	3,585	3,882	3,670	4,396	4,298	4,438	5,066	4,814	5,076	5,199	5,783
with multiple institutions	1,743	2,014	1,995	2,226	2,151	2,208	2,488	2,376	3,013	2,989	3,181	3,643	3,512	3,812	3,999	4,350
with domestic institutions only	2,175	2,306	2,283	2,339	2,222	2,086	2,213	2,027	2,287	2,140	2,175	2,433	2,246	2,245	2,210	2,627
with international institutions	1,078	1,272	1,260	1,404	1,401	1,499	1,669	1,643	2,109	2,158	2,263	2,633	2,568	2,831	2,989	3,156

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	42,889	46,426	49,533	50,524	56,314	54,999	60,869	59,484	70,041	71,362	71,353	78,189	83,561	78,749	86,256	92,459
with multiple institutions	18,273	20,316	22,397	23,300	27,724	27,345	30,676	30,634	36,475	38,326	39,702	43,763	48,413	46,326	51,894	56,135
with domestic institutions only	37,239	40,072	42,142	42,841	46,822	45,651	50,403	49,123	58,106	58,593	57,907	63,485	67,181	62,752	68,265	72,353
with international institutions	5,650	6,354	7,391	7,683	9,492	9,348	10,466	10,361	11,935	12,769	13,446	14,704	16,380	15,997	17,991	20,106
Canada																
Total articles	1,984	2,011	2,150	2,093	2,077	2,180	2,475	2,449	3,022	3,223	3,249	3,601	3,852	3,628	3,758	4,048
with multiple institutions	1,016	1,051	1,143	1,137	1,167	1,234	1,423	1,412	1,658	1,852	1,938	2,097	2,373	2,232	2,408	2,570
with domestic institutions only	1,443	1,471	1,468	1,445	1,360	1,418	1,575	1,558	1,999	2,035	2,029	2,290	2,359	2,196	2,199	2,363
with international institutions	541	540	682	648	717	762	900	891	1,023	1,188	1,220	1,311	1,493	1,432	1,559	1,685
Mexico																
Total articles	174	215	273	285	372	410	421	482	445	534	541	530	654	610	632	636
with multiple institutions	111	134	187	200	268	304	289	348	329	371	385	400	498	491	497	494
with domestic institutions only	106	142	167	169	193	248	246	299	274	344	348	304	418	353	381	382
with international institutions	68	73	106	116	179	162	175	183	171	190	193	226	236	257	251	254
United States																
Total articles	12,892	13,103	13,728	13,138	14,369	14,248	15,540	14,625	16,707	16,701	16,508	17,838	18,286	16,668	18,131	18,573
with multiple institutions	6,321	6,642	7,095	7,140	8,106	8,211	8,957	8,540	9,887	10,254	10,577	11,495	12,087	11,133	12,274	12,771
with domestic institutions only	10,643	10,591	10,963	10,205	10,874	10,819	11,548	10,869	12,383	12,193	11,784	12,644	12,610	11,216	12,034	11,903
with international institutions	2,249	2,512	2,765	2,933	3,495	3,429	3,992	3,756	4,324	4,508	4,724	5,194	5,676	5,452	6,097	6,670
Argentina																
Total articles	156	154	181	224	238	240	238	250	295	284	282	332	322	401	331	372
with multiple institutions	88	95	118	136	158	164	158	179	222	201	200	234	248	302	249	277
with domestic institutions only	110	107	125	158	159	154	147	142	180	171	177	196	176	266	196	222
with international institutions	46	47	56	66	79	86	91	108	115	113	105	136	146	135	135	150
Brazil																
Total articles	343	460	655	717	784	825	980	922	1,017	1,205	1,017	1,180	1,251	1,208	1,324	1,351
with multiple institutions	208	298	421	456	502	565	634	616	685	777	691	843	923	910	1,006	1,023
with domestic institutions only	227	308	456	486	548	551	698	634	715	898	736	822	862	826	878	859
with international institutions	116	152	199	231	236	274	282	288	302	307	281	358	389	382	446	492
Chile																
Total articles	34	56	75	85	90	83	149	118	167	149	162	181	225	210	186	224
with multiple institutions	23	39	45	53	58	61	101	78	120	108	109	137	180	165	140	189
with domestic institutions only	18	24	39	49	51	37	86	55	84	70	74	82	89	96	71	75
with international institutions	16	32	36	36	39	46	63	63	83	79	88	99	136	114	115	149
Austria																
Total articles	309	280	305	334	416	433	420	434	451	524	538	625	594	605	624	722
with multiple institutions	195	171	204	227	294	310	292	313	320	395	411	479	474	483	485	575
with domestic institutions only	157	148	157	156	180	187	196	199	212	222	225	252	265	245	260	303
with international institutions	152	132	148	178	236	246	224	235	239	302	313	373	329	360	364	419

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	388	467	462	520	600	622	638	625	791	750	854	907	903	893	958	1,052
with multiple institutions	197	265	275	305	363	391	427	396	553	532	652	658	684	677	757	830
with domestic institutions only	240	280	267	309	344	324	325	338	387	344	401	435	411	403	410	430
with international institutions	148	187	195	211	256	298	313	287	404	406	453	472	492	490	548	622
Czech Republic																
Total articles	231	212	241	230	307	293	347	350	431	369	382	437	504	413	483	493
with multiple institutions	141	159	168	166	223	216	253	223	289	270	282	326	374	306	339	392
with domestic institutions only	129	87	107	102	137	122	156	168	210	162	173	206	253	199	259	223
with international institutions	102	125	134	128	170	171	191	182	221	207	209	231	251	214	224	270
Denmark																
Total articles	252	275	319	267	376	324	328	349	416	433	393	485	470	447	582	577
with multiple institutions	136	149	184	165	230	213	216	210	245	277	281	327	336	322	419	428
with domestic institutions only	149	164	187	140	194	155	163	188	235	223	184	237	213	219	259	262
with international institutions	103	111	132	127	182	169	165	161	181	210	209	248	257	228	323	315
Finland																
Total articles	284	352	395	379	476	471	524	472	540	580	525	558	584	563	601	697
with multiple institutions	157	188	244	203	300	291	328	278	322	354	331	380	406	401	418	508
with domestic institutions only	201	244	258	268	308	310	324	305	349	364	305	338	332	282	326	330
with international institutions	83	108	137	111	168	161	200	167	191	216	220	220	252	281	275	367
France																
Total articles	2,361	2,686	2,786	2,663	3,429	3,229	3,316	3,184	3,603	3,843	3,763	4,355	4,621	3,901	4,446	4,691
with multiple institutions	1,385	1,664	1,764	1,726	2,269	2,143	2,284	2,197	2,529	2,775	2,814	3,293	3,565	3,086	3,561	3,826
with domestic institutions only	1,618	1,753	1,779	1,643	2,067	1,946	1,932	1,837	2,095	2,153	2,041	2,386	2,415	2,074	2,246	2,292
with international institutions	743	933	1,007	1,020	1,362	1,283	1,384	1,347	1,508	1,690	1,722	1,969	2,206	1,827	2,200	2,399
Germany																
Total articles	3,408	3,606	3,774	3,839	4,694	4,072	4,293	4,037	4,278	4,569	4,436	4,449	4,799	4,327	4,896	5,258
with multiple institutions	1,652	1,813	2,096	2,074	2,721	2,431	2,525	2,464	2,678	2,816	2,974	2,888	3,381	3,120	3,509	3,784
with domestic institutions only	2,399	2,515	2,470	2,525	2,890	2,446	2,532	2,348	2,469	2,651	2,315	2,498	2,426	2,256	2,593	2,671
with international institutions	1,009	1,091	1,304	1,314	1,804	1,626	1,761	1,689	1,809	1,918	2,121	1,951	2,373	2,071	2,303	2,587
Greece																
Total articles	287	384	418	404	448	476	513	558	575	631	771	860	808	718	781	786
with multiple institutions	134	192	229	212	251	250	252	290	306	370	421	497	485	426	460	481
with domestic institutions only	201	266	256	261	276	326	350	394	384	423	523	542	564	481	501	487
with international institutions	86	118	162	143	172	150	163	164	191	208	248	318	244	237	280	299
Hungary																
Total articles	139	144	163	173	219	175	223	218	309	227	210	199	243	190	211	231
with multiple institutions	93	113	100	118	153	124	144	161	214	166	166	161	180	132	157	178
with domestic institutions only	61	55	86	80	103	79	130	91	163	111	87	79	105	90	86	98
with international institutions	78	89	77	93	116	96	93	127	146	116	123	120	138	100	125	133

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	73	146	138	142	166	143	193	212	286	264	330	331	348	343	377	388
with multiple institutions	43	72	81	74	112	86	128	144	187	172	218	234	244	263	271	291
with domestic institutions only	39	85	74	87	84	86	99	107	152	146	172	150	179	161	171	172
with international institutions	34	61	64	55	82	57	94	105	134	118	158	181	169	182	206	216
Italy																
Total articles	1,399	1,651	1,762	1,901	2,265	2,153	2,366	2,331	2,586	2,730	2,819	2,988	3,270	2,835	3,233	3,521
with multiple institutions	813	999	1,124	1,178	1,463	1,393	1,537	1,483	1,693	1,831	1,839	1,948	2,148	1,866	2,209	2,399
with domestic institutions only	1,007	1,140	1,185	1,332	1,476	1,418	1,570	1,571	1,702	1,747	1,786	1,881	2,032	1,729	1,907	2,060
with international institutions	392	511	577	569	789	735	796	760	884	983	1,033	1,107	1,238	1,106	1,326	1,461
Netherlands																
Total articles	798	857	874	978	1,051	1,017	1,031	1,000	1,175	1,201	1,208	1,302	1,342	1,366	1,331	1,604
with multiple institutions	434	465	496	597	654	647	665	703	776	854	868	954	1,000	995	1,013	1,213
with domestic institutions only	497	571	526	600	628	595	570	526	649	609	618	623	653	664	596	699
with international institutions	301	286	348	378	423	422	461	474	526	592	590	679	689	702	735	905
Poland																
Total articles	440	526	522	620	828	792	754	901	844	912	841	991	962	820	939	950
with multiple institutions	240	274	306	344	502	461	415	544	527	507	506	607	549	461	539	527
with domestic institutions only	257	317	298	360	451	463	452	515	464	548	500	559	600	511	585	626
with international institutions	183	209	224	260	377	329	302	386	380	364	341	432	362	309	354	324
Portugal																
Total articles	203	262	309	354	394	399	538	697	615	928	592	672	754	740	790	894
with multiple institutions	108	150	176	222	253	272	367	490	436	686	434	507	578	575	622	696
with domestic institutions only	131	173	188	224	232	232	327	426	358	554	328	368	389	393	432	465
with international institutions	72	89	121	130	162	167	211	271	257	374	264	304	365	347	358	429
Spain																
Total articles	864	1,046	1,110	1,123	1,504	1,538	1,523	1,596	1,952	2,184	2,297	2,700	2,780	2,653	3,024	3,240
with multiple institutions	456	550	596	636	875	879	910	982	1,164	1,307	1,460	1,717	1,855	1,772	2,081	2,273
with domestic institutions only	610	739	730	721	948	1,006	977	1,013	1,249	1,374	1,398	1,667	1,623	1,559	1,761	1,802
with international institutions	254	307	380	402	556	532	546	583	703	810	899	1,033	1,157	1,094	1,263	1,438
Sweden																
Total articles	678	703	891	827	1,090	953	959	936	1,112	1,127	1,058	1,122	1,125	1,100	1,193	1,358
with multiple institutions	351	380	502	458	695	550	587	563	692	719	715	755	802	812	863	1,002
with domestic institutions only	463	458	566	550	661	598	579	570	673	682	577	639	584	547	577	644
with international institutions	215	245	325	277	429	355	380	366	439	445	481	483	541	553	616	714
United Kingdom																
Total articles	3,168	3,797	4,061	4,158	4,310	3,725	4,190	3,882	4,468	4,444	4,266	4,487	4,704	4,189	4,527	4,873
with multiple institutions	1,465	1,706	1,946	2,033	2,307	2,013	2,328	2,207	2,580	2,604	2,672	2,816	3,128	2,820	3,137	3,451
with domestic institutions only	2,349	2,796	2,873	2,951	2,913	2,444	2,701	2,436	2,746	2,622	2,382	2,471	2,408	2,112	2,234	2,249
with international institutions	819	1,001	1,188	1,207	1,397	1,281	1,489	1,446	1,722	1,822	1,884	2,016	2,296	2,077	2,293	2,624

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	170	198	188	243	246	269	247	240	293	343	346	408	496	445	510	551
with multiple institutions	107	120	120	148	169	172	172	164	195	241	248	299	385	308	376	396
with domestic institutions only	104	124	115	147	140	148	128	127	160	198	180	214	258	253	244	287
with international institutions	66	74	73	96	106	121	119	113	133	145	166	194	238	192	266	264
Russia																
Total articles	1,827	1,733	1,607	1,929	1,883	1,834	1,726	1,521	1,525	1,216	1,443	1,208	1,339	1,118	1,270	1,488
with multiple institutions	692	701	687	824	1,038	953	934	824	850	734	855	665	764	627	719	821
with domestic institutions only	1,375	1,272	1,098	1,377	1,100	1,159	1,048	910	924	621	857	713	811	715	825	973
with international institutions	452	461	509	552	783	675	678	611	601	595	586	495	528	403	445	515
Switzerland																
Total articles	508	608	636	653	727	705	778	819	879	997	1,064	1,112	1,180	1,055	1,151	1,242
with multiple institutions	305	342	406	414	442	447	513	533	616	687	776	814	874	763	826	923
with domestic institutions only	265	341	304	325	382	343	365	402	393	457	434	468	463	427	502	506
with international institutions	243	267	332	328	345	362	413	417	486	540	630	644	717	628	649	736
Iran																
Total articles	54	71	95	121	169	173	283	322	439	574	739	1,029	1,573	1,881	2,235	2,610
with multiple institutions	34	38	68	77	111	102	154	174	255	307	391	553	829	978	1,191	1,509
with domestic institutions only	25	40	47	67	97	111	182	212	287	412	544	792	1,247	1,485	1,768	2,016
with international institutions	29	31	48	54	72	62	101	110	152	162	195	237	326	396	467	594
Israel																
Total articles	431	463	483	484	554	498	513	475	516	583	584	582	573	481	506	528
with multiple institutions	213	234	238	260	292	273	276	254	285	336	341	342	347	295	327	329
with domestic institutions only	300	308	332	308	361	314	343	313	328	374	368	373	347	294	280	323
with international institutions	131	155	151	176	193	184	170	162	188	209	216	209	226	187	226	205
Saudi Arabia																
Total articles	127	142	143	132	115	117	114	119	137	143	137	157	206	282	473	690
with multiple institutions	50	40	47	42	46	53	34	46	52	62	59	81	132	207	360	552
with domestic institutions only	85	115	108	101	78	76	86	89	96	95	92	91	92	95	145	177
with international institutions	42	27	35	31	37	41	28	30	41	48	45	66	114	187	328	513
Turkey																
Total articles	312	360	414	478	573	665	858	1,156	1,015	1,076	1,035	1,447	1,401	1,376	1,470	1,498
with multiple institutions	153	161	196	235	284	349	439	587	516	559	561	787	769	773	890	908
with domestic institutions only	235	276	313	350	428	493	634	959	793	860	790	1,140	1,078	1,080	1,108	1,072
with international institutions	77	84	101	128	145	172	224	197	222	216	245	307	323	296	362	426
Egypt																
Total articles	206	203	207	240	271	296	318	291	344	318	363	387	493	508	532	550
with multiple institutions	91	95	103	103	142	150	159	142	180	163	194	204	300	312	362	377
with domestic institutions only	152	144	150	181	196	207	237	210	249	221	256	262	312	306	302	286
with international institutions	54	59	57	59	75	89	81	81	95	97	107	125	181	202	230	264

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	122	132	143	182	201	164	217	175	235	249	288	288	289	343	400	387
with multiple institutions	57	56	75	84	95	89	116	103	126	124	167	168	186	227	266	273
with domestic institutions only	81	99	99	127	135	108	149	98	148	164	180	189	164	181	204	213
with international institutions	41	33	44	55	66	56	68	77	87	85	108	99	125	162	196	174
China																
Total articles	2,034	2,173	2,827	3,443	3,770	4,445	5,440	5,696	8,853	8,973	10,122	12,112	14,384	14,979	16,861	20,452
with multiple institutions	1,022	1,091	1,364	1,718	1,976	2,291	2,894	3,054	4,745	5,076	5,687	7,011	8,561	9,232	10,741	13,086
with domestic institutions only	1,508	1,617	2,122	2,654	2,821	3,320	4,131	4,362	7,001	6,934	7,990	9,463	11,187	11,312	12,639	15,479
with international institutions	526	556	705	789	949	1,125	1,309	1,334	1,852	2,039	2,132	2,649	3,197	3,667	4,222	4,973
India																
Total articles	1,191	1,306	1,511	1,458	1,655	1,716	1,808	1,965	2,253	2,684	3,171	3,571	3,787	3,829	4,145	4,408
with multiple institutions	423	511	590	621	721	835	876	1,002	1,073	1,366	1,639	1,851	2,131	2,217	2,320	2,582
with domestic institutions only	1,038	1,121	1,291	1,209	1,367	1,380	1,449	1,571	1,831	2,168	2,585	2,941	3,010	2,971	3,254	3,398
with international institutions	153	185	220	249	288	336	359	394	422	516	586	630	777	858	891	1,010
Japan																
Total articles	5,718	6,346	6,687	6,356	7,500	7,103	8,190	7,126	8,040	7,733	7,054	6,240	6,791	5,530	5,854	5,739
with multiple institutions	2,874	3,276	3,604	3,489	4,357	4,084	4,781	4,342	4,892	4,901	4,599	4,039	4,464	3,747	4,032	3,993
with domestic institutions only	4,948	5,487	5,656	5,300	6,200	5,810	6,700	5,701	6,425	6,046	5,522	4,774	5,142	4,058	4,233	4,025
with international institutions	770	859	1,031	1,056	1,300	1,293	1,490	1,425	1,615	1,687	1,532	1,466	1,649	1,472	1,621	1,714
Singapore																
Total articles	362	470	549	747	811	849	1,000	952	1,210	1,194	1,155	1,316	1,218	1,263	1,332	1,382
with multiple institutions	147	188	227	306	361	417	501	501	661	712	746	884	825	883	928	1,012
with domestic institutions only	261	361	405	565	587	571	677	642	815	760	698	757	672	654	685	635
with international institutions	101	109	144	182	224	278	323	310	395	434	457	559	546	609	647	747
South Korea																
Total articles	1,192	1,520	1,863	2,208	2,564	2,706	3,300	3,633	4,753	4,431	4,244	5,072	5,720	5,453	6,202	6,680
with multiple institutions	752	895	1,066	1,250	1,556	1,698	2,169	2,379	3,094	2,898	2,841	3,385	3,858	3,691	4,420	4,708
with domestic institutions only	894	1,212	1,485	1,807	2,031	2,100	2,560	2,785	3,753	3,426	3,147	3,813	4,326	4,081	4,627	4,912
with international institutions	298	308	378	401	533	606	740	848	1,000	1,005	1,097	1,259	1,394	1,372	1,575	1,768
Taiwan																
Total articles	1,206	1,365	1,361	1,530	1,731	1,642	2,028	2,013	2,439	2,842	2,783	3,247	3,299	3,167	3,304	3,206
with multiple institutions	455	501	540	618	823	725	970	1,012	1,309	1,603	1,646	1,952	2,032	2,017	2,181	2,078
with domestic institutions only	1,053	1,219	1,223	1,360	1,540	1,462	1,779	1,787	2,161	2,494	2,388	2,810	2,857	2,697	2,788	2,635
with international institutions	153	146	138	170	191	180	249	226	278	348	395	437	442	470	516	571
Australia																
Total articles	875	958	1,080	1,105	1,168	1,151	1,281	1,212	1,493	1,540	1,629	1,801	1,970	2,053	2,295	2,588
with multiple institutions	420	489	563	594	684	652	755	736	884	940	1,017	1,204	1,379	1,429	1,660	1,880
with domestic institutions only	625	670	733	737	730	683	767	696	894	903	902	950	987	1,011	1,122	1,196
with international institutions	250	288	347	368	438	468	514	516	599	637	727	851	983	1,042	1,173	1,392

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	135	169	170	140	191	167	204	189	207	239	235	265	249	259	262	313
with multiple institutions	46	88	86	80	105	101	115	113	137	168	166	169	165	185	194	224
with domestic institutions only	104	102	104	74	102	94	113	104	99	102	99	153	122	115	111	142
with international institutions	31	67	66	66	89	73	91	85	108	137	136	112	127	144	151	171

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	6,970	6,511	7,763	7,573	8,227	9,180	8,458	8,479	8,730	8,963	8,724	9,875	10,472	9,488	10,121	11,297
with multiple institutions	4,507	4,148	5,104	5,022	5,773	6,098	6,003	5,988	6,206	6,563	6,541	7,230	8,061	7,501	8,042	8,968
with domestic institutions only	4,213	3,793	4,501	4,330	4,401	5,079	4,440	4,436	4,455	4,535	4,160	4,926	4,891	4,211	4,482	4,928
with international institutions	2,757	2,718	3,262	3,243	3,826	4,101	4,018	4,043	4,275	4,428	4,564	4,949	5,581	5,277	5,639	6,369
Canada																
Total articles	304	275	350	333	342	435	399	449	458	500	538	594	676	785	757	880
with multiple institutions	251	227	275	252	298	350	342	373	379	438	472	509	622	722	698	811
with domestic institutions only	75	72	114	104	66	111	90	100	100	86	89	112	85	98	88	96
with international institutions	229	203	236	229	276	324	309	349	358	414	449	482	591	687	669	784
Mexico																
Total articles	124	142	195	166	208	219	178	214	212	176	220	216	260	226	213	243
with multiple institutions	95	117	174	143	172	184	146	173	176	153	173	191	233	194	189	211
with domestic institutions only	35	28	27	29	51	52	42	52	52	38	59	41	47	48	37	48
with international institutions	89	114	168	137	157	167	136	162	160	138	161	175	213	178	176	195
United States																
Total articles	3,366	2,669	3,836	3,554	3,855	4,268	3,939	4,180	4,172	4,252	4,314	4,520	5,260	4,690	4,771	5,565
with multiple institutions	2,523	1,998	2,897	2,747	3,104	3,352	3,225	3,399	3,374	3,518	3,636	3,807	4,561	4,145	4,264	4,937
with domestic institutions only	1,796	1,287	1,898	1,692	1,705	1,905	1,686	1,758	1,737	1,707	1,578	1,686	1,887	1,515	1,463	1,656
with international institutions	1,570	1,382	1,938	1,862	2,150	2,363	2,253	2,422	2,435	2,545	2,736	2,834	3,373	3,175	3,308	3,909
Argentina																
Total articles	59	62	93	78	119	125	111	95	109	114	108	140	126	122	166	155
with multiple institutions	46	50	74	64	100	100	93	77	101	102	97	133	113	117	150	148
with domestic institutions only	19	19	35	25	32	37	32	39	17	32	29	31	29	25	45	31
with international institutions	40	43	58	53	87	88	79	56	92	82	79	109	97	97	121	124
Brazil																
Total articles	141	127	143	160	145	206	143	140	173	183	163	223	204	209	236	230
with multiple institutions	108	100	106	126	110	162	115	105	134	144	135	172	174	174	200	205
with domestic institutions only	49	41	47	52	44	63	45	49	59	65	49	75	56	56	69	52
with international institutions	92	86	96	108	101	143	98	91	114	118	114	148	148	153	167	178
Chile																
Total articles	144	110	152	157	232	323	294	295	332	384	368	357	428	439	529	615
with multiple institutions	130	95	144	148	223	303	284	281	318	375	365	349	416	432	521	601
with domestic institutions only	17	15	9	13	12	22	14	18	18	15	3	11	14	14	10	18
with international institutions	127	95	143	144	220	301	280	277	314	369	365	346	414	425	519	597
Austria																
Total articles	63	84	79	63	77	78	98	92	108	113	124	146	186	219	216	233
with multiple institutions	51	62	63	56	69	66	85	71	95	101	118	135	168	215	208	227
with domestic institutions only	15	22	18	9	10	13	16	23	15	12	6	12	18	6	12	6
with international institutions	48	62	61	54	67	65	82	69	93	101	118	134	168	213	204	227

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	78	106	79	89	120	149	149	126	181	163	191	214	256	315	335	350
with multiple institutions	56	79	60	69	101	120	128	106	149	140	172	183	238	303	319	332
with domestic institutions only	26	33	27	26	23	36	33	22	39	26	25	38	23	20	23	25
with international institutions	52	73	52	63	97	113	116	104	142	137	166	176	233	295	312	325
Czech Republic																
Total articles	46	51	61	45	63	53	56	54	91	91	99	132	116	109	146	134
with multiple institutions	26	37	44	32	48	37	45	48	72	79	86	103	96	103	133	119
with domestic institutions only	21	14	19	15	20	19	13	6	26	18	18	36	28	15	21	28
with international institutions	25	37	42	30	43	34	43	48	65	73	81	96	88	94	125	106
Denmark																
Total articles	92	108	125	120	119	122	128	108	107	124	114	102	141	182	249	248
with multiple institutions	78	95	113	107	106	105	117	100	104	114	113	98	137	175	242	239
with domestic institutions only	18	16	17	16	16	22	15	11	4	11	3	8	5	10	13	12
with international institutions	74	92	108	104	103	100	113	97	103	113	111	94	136	172	236	236
Finland																
Total articles	62	76	74	81	106	100	106	92	121	124	112	135	152	121	138	205
with multiple institutions	51	67	70	73	86	83	96	80	113	117	109	127	145	116	132	192
with domestic institutions only	12	15	11	17	25	22	16	18	14	12	9	11	14	8	11	21
with international institutions	50	61	63	64	81	78	90	74	107	112	103	124	138	113	127	184
France																
Total articles	704	735	741	799	940	998	957	1,008	1,083	1,084	1,103	1,288	1,409	1,535	1,557	1,672
with multiple institutions	583	615	641	644	799	810	838	885	968	986	1,011	1,155	1,327	1,453	1,477	1,580
with domestic institutions only	201	187	170	230	244	276	198	205	204	213	174	254	200	176	204	204
with international institutions	503	548	571	569	696	722	759	803	879	871	929	1,034	1,209	1,359	1,353	1,468
Germany																
Total articles	1,079	983	1,005	1,105	1,260	1,430	1,386	1,387	1,419	1,503	1,575	1,759	1,951	2,031	2,189	2,530
with multiple institutions	860	769	849	913	1,066	1,155	1,154	1,174	1,253	1,332	1,388	1,519	1,795	1,878	2,051	2,362
with domestic institutions only	300	296	208	251	260	347	318	286	216	228	240	317	233	233	248	281
with international institutions	779	687	797	854	1,000	1,083	1,068	1,101	1,203	1,275	1,335	1,442	1,718	1,798	1,941	2,249
Greece																
Total articles	52	43	57	62	91	87	75	87	101	114	90	79	117	122	119	134
with multiple institutions	42	36	45	48	79	66	58	73	85	99	75	62	98	113	108	111
with domestic institutions only	15	12	15	20	20	30	22	23	23	29	20	29	27	12	18	32
with international institutions	37	31	42	42	71	57	53	64	78	85	70	50	90	110	101	102
Hungary																
Total articles	34	40	38	41	64	69	56	52	47	56	87	60	86	75	110	99
with multiple institutions	27	34	31	35	57	60	51	48	44	51	79	55	80	73	107	92
with domestic institutions only	7	8	9	8	13	13	9	9	4	10	22	9	7	3	7	13
with international institutions	27	32	29	33	51	56	47	43	43	46	65	51	79	72	103	86

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	25	26	33	29	15	36	37	45	70	63	82	95	108	119	124	141
with multiple institutions	23	24	27	27	12	31	29	42	62	59	79	90	99	112	116	136
with domestic institutions only	2	3	6	2	3	7	8	4	9	6	5	6	11	7	11	9
with international institutions	23	23	27	27	12	29	29	41	61	57	77	89	97	112	113	132
Italy																
Total articles	565	610	679	719	904	866	949	890	994	987	1,096	1,050	1,218	1,322	1,295	1,386
with multiple institutions	509	533	624	658	840	767	863	818	909	905	1,023	966	1,149	1,257	1,232	1,316
with domestic institutions only	193	200	170	179	213	221	230	222	233	227	232	232	189	196	187	183
with international institutions	372	410	509	540	691	645	719	668	761	760	864	818	1,029	1,126	1,108	1,203
Netherlands																
Total articles	365	335	392	433	482	492	501	457	503	520	499	487	582	691	692	814
with multiple institutions	314	289	361	389	448	441	453	411	460	487	482	448	549	663	661	779
with domestic institutions only	68	59	50	59	56	71	68	66	63	58	35	56	49	41	44	52
with international institutions	297	276	342	374	426	421	433	391	440	462	464	431	533	650	648	762
Poland																
Total articles	112	139	160	177	182	174	227	221	220	230	230	259	278	304	312	339
with multiple institutions	76	102	124	115	141	135	182	172	176	192	192	224	236	278	271	309
with domestic institutions only	43	49	52	69	49	43	59	60	62	49	46	51	54	39	56	44
with international institutions	69	90	108	108	133	131	168	161	158	181	184	208	224	265	256	295
Portugal																
Total articles	16	22	50	40	41	34	67	71	70	85	87	89	88	105	132	169
with multiple institutions	15	21	37	35	40	29	63	68	68	82	85	86	86	103	131	167
with domestic institutions only	2	3	18	9	2	7	9	5	3	4	5	10	10	5	11	11
with international institutions	14	19	32	31	39	27	58	66	67	81	82	79	78	100	121	158
Spain																
Total articles	366	386	485	384	575	537	523	559	591	623	679	730	902	1,057	1,010	1,179
with multiple institutions	298	321	390	338	499	479	471	511	542	562	633	668	823	1,019	981	1,128
with domestic institutions only	104	95	147	83	122	98	84	88	87	110	88	106	124	105	82	129
with international institutions	262	291	338	301	453	439	439	471	504	513	591	624	778	952	928	1,050
Sweden																
Total articles	132	108	106	116	144	173	152	151	163	152	154	199	216	324	274	312
with multiple institutions	110	83	87	94	124	139	127	129	139	135	143	180	202	310	261	300
with domestic institutions only	25	29	22	25	25	45	29	27	27	20	14	25	18	23	26	19
with international institutions	107	79	84	91	119	128	123	124	136	132	140	174	198	301	248	293
United Kingdom																
Total articles	1,005	1,058	1,130	1,151	1,355	1,493	1,526	1,442	1,532	1,650	1,639	1,719	1,951	2,040	2,086	2,261
with multiple institutions	776	798	895	879	1,114	1,199	1,219	1,189	1,257	1,387	1,397	1,473	1,701	1,812	1,859	2,047
with domestic institutions only	321	345	313	347	330	405	400	344	365	356	339	340	325	309	323	298
with international institutions	684	713	817	804	1,025	1,088	1,126	1,098	1,167	1,294	1,300	1,379	1,626	1,731	1,763	1,963

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	27	34	32	25	31	25	40	42	49	45	46	44	58	45	51	80
with multiple institutions	25	33	26	21	28	22	36	42	47	40	41	39	53	44	46	76
with domestic institutions only	2	1	8	5	5	3	4	2	3	8	5	9	12	5	9	6
with international institutions	25	33	24	20	26	22	36	40	46	37	41	35	46	40	42	74
Russia																
Total articles	404	450	506	493	561	561	515	472	530	485	459	632	612	518	593	609
with multiple institutions	256	258	312	336	376	392	377	346	385	348	334	473	437	384	454	465
with domestic institutions only	178	239	239	196	232	227	199	175	204	188	174	232	238	207	202	218
with international institutions	226	211	267	297	329	334	316	297	326	297	285	400	374	311	391	391
Switzerland																
Total articles	132	130	147	153	150	204	263	256	317	267	326	287	376	414	433	458
with multiple institutions	110	115	122	131	125	154	232	227	283	245	302	266	356	396	407	444
with domestic institutions only	24	23	35	32	27	58	42	35	43	30	29	29	27	24	34	20
with international institutions	108	107	112	121	123	146	221	221	274	237	297	258	349	390	399	438
Iran																
Total articles	5	2	4	8	9	14	14	14	15	22	26	21	31	43	84	117
with multiple institutions	3	-	2	7	4	12	8	8	11	17	19	15	24	30	62	83
with domestic institutions only	3	2	2	4	8	10	9	9	9	17	14	13	18	25	51	74
with international institutions	2	-	2	4	1	4	5	5	6	5	12	8	13	18	33	43
Israel																
Total articles	87	65	103	112	109	134	126	119	126	134	119	158	166	152	183	245
with multiple institutions	65	52	82	84	89	108	106	102	101	108	92	120	132	117	158	202
with domestic institutions only	31	20	26	29	23	31	30	32	34	35	33	45	42	41	35	56
with international institutions	56	45	77	83	86	103	96	87	92	99	86	113	124	111	148	189
Saudi Arabia																
Total articles	-	-	6	4	2	4	10	3	5	-	3	2	2	4	20	52
with multiple institutions	-	-	1	4	-	4	5	3	2	-	1	1	2	2	18	51
with domestic institutions only	-	-	5	-	2	-	5	-	3	-	3	1	-	2	2	2
with international institutions	-	-	1	4	-	4	5	3	2	-	-	1	2	2	18	50
Turkey																
Total articles	25	17	15	13	34	23	40	40	52	65	67	45	59	62	73	99
with multiple institutions	17	12	10	9	26	17	31	31	29	53	47	32	47	47	58	74
with domestic institutions only	13	7	8	6	13	10	15	17	32	29	25	25	25	25	28	39
with international institutions	12	10	7	7	21	13	25	23	20	36	42	20	34	37	45	60
Egypt																
Total articles	3	11	11	8	7	16	11	12	18	8	14	13	15	18	19	34
with multiple institutions	2	8	6	6	5	9	6	8	12	6	8	4	9	9	15	29
with domestic institutions only	2	3	7	3	2	11	5	6	7	2	6	9	7	12	6	8
with international institutions	1	8	4	5	5	5	6	6	11	6	8	4	8	6	13	26

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	71	78	71	68	76	101	80	76	87	88	104	114	131	132	175	224
with multiple institutions	58	67	56	52	63	79	59	65	76	76	94	103	118	115	162	214
with domestic institutions only	19	12	18	19	21	24	27	17	19	19	16	21	21	24	17	18
with international institutions	52	66	53	49	55	77	53	59	68	69	88	93	110	108	158	206
China																
Total articles	147	179	190	205	259	319	261	313	381	528	533	663	737	669	798	909
with multiple institutions	105	134	150	188	219	243	220	233	294	400	419	495	604	579	670	785
with domestic institutions only	88	97	109	100	137	175	110	141	181	283	280	336	360	296	399	406
with international institutions	59	82	81	105	122	144	151	172	200	245	253	327	377	373	399	503
India																
Total articles	169	164	200	169	248	229	194	173	221	270	239	344	326	344	400	487
with multiple institutions	101	102	107	105	158	127	129	125	160	187	185	248	241	259	273	364
with domestic institutions only	89	87	113	88	136	135	95	82	112	144	109	174	155	154	204	243
with international institutions	80	77	87	81	112	94	99	91	109	126	130	170	171	190	196	244
Japan																
Total articles	417	483	517	650	558	614	620	587	527	577	582	841	858	753	735	902
with multiple institutions	313	343	376	461	436	479	497	475	433	497	511	732	765	690	663	820
with domestic institutions only	218	275	294	384	259	267	279	265	222	224	200	296	284	223	234	265
with international institutions	199	208	223	266	299	347	341	322	305	353	382	545	574	530	501	637
Singapore																
Total articles	-	1	-	-	-	-	1	-	-	-	3	1	1	3	1	1
with multiple institutions	-	-	-	-	-	-	1	-	-	-	3	1	1	3	1	1
with domestic institutions only	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
with international institutions	-	-	-	-	-	-	1	-	-	-	3	1	1	3	1	1
South Korea																
Total articles	44	41	72	58	73	86	69	99	143	126	136	202	239	225	235	282
with multiple institutions	32	37	57	46	59	74	65	84	130	111	116	186	204	201	217	263
with domestic institutions only	15	14	25	21	23	30	18	22	24	30	33	40	54	35	47	46
with international institutions	29	27	47	37	50	56	51	77	119	96	103	162	185	190	188	236
Taiwan																
Total articles	16	15	36	29	47	34	45	65	51	70	116	122	155	168	176	237
with multiple institutions	13	14	35	26	40	27	41	56	46	67	111	112	145	163	167	229
with domestic institutions only	5	5	4	6	10	11	10	12	9	10	13	21	27	12	23	21
with international institutions	11	10	32	23	37	23	35	53	42	60	103	101	128	156	153	216
Australia																
Total articles	308	283	361	324	401	440	365	459	460	497	432	483	582	564	709	866
with multiple institutions	245	241	307	272	353	372	304	363	392	417	387	432	531	524	653	807
with domestic institutions only	85	68	82	76	76	85	88	120	97	112	79	74	70	76	80	112
with international institutions	223	215	279	248	325	355	277	339	363	385	353	409	512	488	629	754

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	12	22	24	21	19	31	21	30	27	23	13	19	31	36	37	62
with multiple institutions	8	21	17	15	14	28	18	25	24	18	12	17	28	31	32	52
with domestic institutions only	4	1	8	8	7	4	3	7	5	5	1	2	3	6	5	11
with international institutions	8	21	16	13	12	27	18	23	22	18	12	17	28	30	32	51

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	70,501	74,628	76,688	75,724	77,051	76,419	83,483	83,311	94,262	91,619	92,721	101,901	105,933	105,074	114,274	115,574
with multiple institutions	28,356	31,625	33,305	33,756	35,383	36,145	40,525	41,527	48,559	47,823	50,045	56,098	60,554	62,033	68,687	70,872
with domestic institutions only	60,851	63,864	65,297	64,223	64,798	64,090	69,858	69,499	78,280	76,176	76,456	83,999	85,970	84,507	91,443	92,206
with international institutions	9,650	10,764	11,391	11,501	12,253	12,329	13,625	13,812	15,982	15,443	16,265	17,902	19,963	20,567	22,831	23,368
Canada																
Total articles	2,262	2,254	2,302	2,257	2,169	2,112	2,454	2,362	2,866	2,831	2,835	2,994	3,221	2,966	3,294	3,296
with multiple institutions	1,008	1,050	1,078	1,059	1,078	1,080	1,243	1,263	1,579	1,526	1,636	1,712	1,840	1,738	2,004	2,061
with domestic institutions only	1,584	1,572	1,584	1,502	1,408	1,381	1,620	1,529	1,822	1,857	1,782	1,906	2,025	1,876	2,039	1,989
with international institutions	678	682	718	755	761	731	834	833	1,044	974	1,053	1,088	1,196	1,090	1,255	1,307
Mexico																
Total articles	310	360	385	381	441	428	471	517	683	499	581	637	646	649	670	646
with multiple institutions	210	270	302	296	336	339	357	391	514	382	433	489	501	498	515	508
with domestic institutions only	185	191	207	204	243	218	277	299	407	294	342	354	373	375	375	353
with international institutions	125	169	178	177	198	210	194	218	276	205	239	283	273	274	295	293
United States																
Total articles	15,852	16,001	16,185	16,282	16,146	15,874	17,807	17,141	19,521	18,518	17,684	19,377	20,113	20,196	21,003	20,952
with multiple institutions	6,981	7,310	7,566	7,719	7,874	7,936	9,040	9,052	10,616	10,071	10,110	11,336	12,214	12,719	13,548	13,916
with domestic institutions only	12,965	12,930	12,903	12,996	12,680	12,385	13,899	13,274	14,996	14,253	13,115	14,278	14,376	14,154	14,273	13,994
with international institutions	2,887	3,071	3,282	3,286	3,466	3,489	3,908	3,867	4,525	4,265	4,569	5,099	5,737	6,042	6,730	6,958
Argentina																
Total articles	352	429	455	456	466	486	513	482	570	524	521	636	664	646	673	646
with multiple institutions	183	231	262	269	277	300	316	337	375	346	381	450	494	492	523	499
with domestic institutions only	251	290	293	286	280	288	314	254	332	282	271	362	328	325	355	325
with international institutions	101	139	162	170	186	198	199	228	238	242	250	274	336	321	318	321
Brazil																
Total articles	604	718	814	1,050	1,140	1,259	1,310	1,391	1,633	1,686	1,598	1,850	1,863	1,716	1,852	1,906
with multiple institutions	367	416	468	668	718	786	798	896	1,051	1,084	1,067	1,274	1,311	1,262	1,397	1,457
with domestic institutions only	412	494	593	716	812	874	943	1,018	1,210	1,290	1,189	1,369	1,339	1,233	1,332	1,389
with international institutions	192	224	221	334	328	385	367	373	423	396	409	481	524	483	520	517
Chile																
Total articles	216	203	206	229	270	236	303	263	290	282	248	277	289	304	316	329
with multiple institutions	142	126	132	159	174	169	202	170	223	223	203	221	219	246	254	262
with domestic institutions only	112	118	118	111	157	125	164	142	132	131	102	122	135	131	144	156
with international institutions	104	85	88	118	113	111	139	121	158	151	146	155	154	173	172	173
Austria																
Total articles	544	578	571	596	635	558	638	669	693	626	667	745	834	787	842	813
with multiple institutions	308	326	343	376	411	357	424	439	483	456	508	548	665	624	677	674
with domestic institutions only	311	332	314	300	308	271	298	321	329	283	278	314	319	314	324	280
with international institutions	233	246	257	296	327	287	340	348	364	343	389	431	515	473	518	533

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	919	917	988	921	946	953	1,064	1,038	1,211	1,042	1,108	1,185	1,214	1,251	1,402	1,304
with multiple institutions	523	559	633	610	659	658	750	760	883	767	856	941	985	1,057	1,169	1,069
with domestic institutions only	521	491	507	439	432	445	492	477	538	443	455	448	462	443	487	475
with international institutions	398	426	481	482	514	508	572	561	673	599	653	737	752	808	915	829
Czech Republic																
Total articles	754	858	736	754	752	789	848	783	933	1,075	978	1,079	1,141	1,123	1,363	1,241
with multiple institutions	433	526	431	468	492	536	598	570	676	769	728	810	863	897	1,023	909
with domestic institutions only	480	530	468	455	467	469	517	470	497	660	528	615	609	600	775	672
with international institutions	274	328	268	299	285	320	331	313	436	415	450	464	532	523	588	569
Denmark																
Total articles	458	492	493	481	520	456	504	516	583	476	510	545	629	604	759	738
with multiple institutions	301	320	301	310	332	300	335	362	406	322	385	408	482	470	599	583
with domestic institutions only	237	260	269	258	284	222	271	248	292	244	226	247	274	267	317	279
with international institutions	221	232	224	223	236	234	233	268	291	232	284	298	355	337	442	459
Finland																
Total articles	443	403	494	493	489	516	511	523	558	550	562	580	628	627	654	618
with multiple institutions	258	254	304	305	306	367	346	370	401	407	423	436	467	514	525	504
with domestic institutions only	273	223	312	298	301	286	288	270	301	276	251	258	284	244	260	217
with international institutions	170	180	182	195	188	230	223	253	257	274	311	322	344	383	394	401
France																
Total articles	4,883	5,735	5,535	5,112	5,139	4,892	5,396	4,843	5,679	5,416	5,316	6,009	6,162	5,966	6,207	6,018
with multiple institutions	2,801	3,398	3,385	3,281	3,315	3,245	3,679	3,401	3,982	3,833	3,912	4,473	4,803	4,742	5,062	4,895
with domestic institutions only	3,306	3,823	3,577	3,157	3,117	2,865	3,072	2,678	3,054	2,879	2,704	3,141	3,021	2,869	2,917	2,874
with international institutions	1,577	1,912	1,958	1,955	2,022	2,027	2,324	2,165	2,625	2,537	2,612	2,868	3,141	3,097	3,290	3,144
Germany																
Total articles	7,250	7,808	7,686	7,316	6,888	6,676	6,980	6,935	7,989	7,345	7,435	7,987	8,645	8,487	9,098	9,011
with multiple institutions	3,313	3,725	3,822	3,812	3,702	3,699	4,011	4,184	4,711	4,489	4,675	5,165	5,868	5,836	6,348	6,465
with domestic institutions only	5,255	5,564	5,309	4,862	4,378	4,161	4,217	3,973	4,731	4,208	4,143	4,463	4,615	4,586	4,802	4,652
with international institutions	1,995	2,244	2,377	2,454	2,510	2,515	2,763	2,962	3,258	3,137	3,292	3,524	4,030	3,901	4,296	4,359
Greece																
Total articles	381	426	424	407	521	516	567	528	628	698	672	677	727	658	656	635
with multiple institutions	217	272	262	226	309	290	318	317	384	421	448	473	491	493	478	459
with domestic institutions only	242	250	261	260	321	335	375	335	390	453	393	368	406	333	348	315
with international institutions	139	176	163	147	200	181	192	193	238	245	279	309	321	325	308	320
Hungary																
Total articles	774	749	823	737	751	723	681	665	713	669	647	665	647	522	607	588
with multiple institutions	519	509	580	542	551	548	512	518	540	500	488	512	508	419	489	491
with domestic institutions only	446	434	474	408	424	390	339	341	386	372	311	338	308	258	279	261
with international institutions	328	315	349	329	327	333	342	324	327	297	336	327	339	264	328	327

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	177	201	204	174	190	203	255	254	282	271	316	371	421	517	552	546
with multiple institutions	105	109	113	101	118	138	167	156	185	175	206	229	296	372	415	430
with domestic institutions only	84	102	106	90	98	97	128	123	134	146	164	199	192	245	246	229
with international institutions	93	99	98	84	92	106	127	131	148	125	152	172	229	272	306	317
Italy																
Total articles	2,620	2,946	3,078	2,949	3,212	3,129	3,416	3,249	3,739	3,389	3,495	3,833	3,911	3,806	3,941	3,878
with multiple institutions	1,706	1,951	2,054	2,050	2,195	2,150	2,342	2,306	2,710	2,466	2,635	2,823	3,015	2,989	3,111	3,151
with domestic institutions only	1,803	2,014	2,104	1,961	2,162	2,121	2,280	2,109	2,357	2,126	2,093	2,364	2,204	2,126	2,247	2,052
with international institutions	817	932	974	988	1,050	1,008	1,136	1,140	1,382	1,263	1,402	1,469	1,707	1,680	1,694	1,826
Netherlands																
Total articles	1,382	1,415	1,409	1,331	1,432	1,318	1,391	1,423	1,615	1,494	1,331	1,389	1,648	1,564	1,668	1,532
with multiple institutions	730	798	806	818	903	846	932	962	1,133	1,065	986	1,079	1,252	1,208	1,304	1,208
with domestic institutions only	931	900	902	775	809	748	786	775	884	762	660	657	760	716	696	639
with international institutions	451	515	507	556	623	570	605	648	731	732	671	732	888	848	972	893
Poland																
Total articles	1,530	1,775	1,853	1,721	1,867	1,981	2,067	2,060	2,316	2,136	2,062	2,403	2,281	2,057	2,174	2,293
with multiple institutions	785	920	975	876	1,019	1,094	1,114	1,148	1,360	1,235	1,188	1,349	1,341	1,236	1,357	1,384
with domestic institutions only	978	1,182	1,223	1,176	1,216	1,272	1,408	1,363	1,483	1,366	1,324	1,595	1,432	1,274	1,361	1,477
with international institutions	552	593	630	545	651	709	659	697	833	770	738	808	849	783	813	816
Portugal																
Total articles	336	382	428	452	596	536	584	681	791	844	842	976	1,067	1,112	1,167	1,206
with multiple institutions	231	274	295	301	412	401	426	513	593	638	623	770	814	862	947	980
with domestic institutions only	172	174	217	232	285	249	285	318	386	430	435	489	565	575	558	579
with international institutions	164	208	211	220	311	287	299	363	405	414	407	487	502	537	609	627
Spain																
Total articles	2,884	3,009	3,271	3,356	3,523	3,619	3,724	3,712	4,267	4,175	4,374	4,440	4,660	4,642	5,045	5,023
with multiple institutions	1,514	1,643	1,750	1,837	2,017	2,067	2,235	2,195	2,689	2,608	2,749	3,018	3,181	3,349	3,685	3,776
with domestic institutions only	2,033	2,041	2,233	2,255	2,312	2,359	2,385	2,378	2,650	2,646	2,755	2,603	2,699	2,528	2,711	2,630
with international institutions	851	968	1,038	1,101	1,211	1,260	1,339	1,334	1,617	1,529	1,619	1,837	1,961	2,114	2,334	2,393
Sweden																
Total articles	990	1,069	1,032	1,044	1,088	1,068	1,132	1,143	1,243	1,213	1,179	1,149	1,198	1,243	1,301	1,307
with multiple institutions	570	634	629	651	652	731	730	749	845	819	850	825	876	973	1,037	1,026
with domestic institutions only	600	642	618	599	654	594	657	653	677	639	566	529	519	476	476	510
with international institutions	390	427	414	445	434	474	475	490	566	574	613	620	679	767	825	797
United Kingdom																
Total articles	5,115	5,240	5,361	5,183	5,099	4,895	4,976	4,870	5,178	5,003	4,823	5,158	5,509	5,476	5,804	5,365
with multiple institutions	2,607	2,881	2,965	2,931	3,053	2,936	2,996	3,033	3,351	3,224	3,292	3,517	3,893	3,813	4,133	3,888
with domestic institutions only	3,622	3,546	3,566	3,418	3,191	3,022	3,126	2,892	3,021	2,915	2,622	2,771	2,834	2,793	2,865	2,506
with international institutions	1,493	1,694	1,795	1,765	1,908	1,873	1,850	1,978	2,157	2,088	2,201	2,387	2,675	2,683	2,939	2,859

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	297	351	334	279	280	234	238	272	345	377	349	351	349	348	380	411
with multiple institutions	185	231	205	168	183	165	158	190	239	244	245	262	274	278	308	333
with domestic institutions only	166	191	204	167	152	119	124	135	185	206	175	168	166	139	159	164
with international institutions	131	160	130	112	128	115	114	137	160	171	174	183	183	209	221	247
Russia																
Total articles	4,983	4,544	4,692	4,751	4,857	4,780	4,896	4,669	4,848	3,955	5,243	5,151	4,878	4,617	4,792	4,133
with multiple institutions	1,667	1,759	1,915	1,972	2,062	2,107	2,325	2,238	2,508	2,071	2,607	2,555	2,511	2,445	2,542	2,324
with domestic institutions only	4,095	3,606	3,674	3,752	3,787	3,716	3,750	3,543	3,561	2,850	4,059	4,015	3,750	3,555	3,763	3,136
with international institutions	888	938	1,018	999	1,070	1,064	1,146	1,126	1,287	1,105	1,184	1,136	1,128	1,062	1,029	997
Switzerland																
Total articles	1,284	1,265	1,404	1,364	1,340	1,210	1,409	1,457	1,603	1,516	1,440	1,598	1,678	1,774	1,841	1,818
with multiple institutions	582	645	666	657	673	670	769	779	883	920	920	1,021	1,114	1,218	1,267	1,257
with domestic institutions only	831	767	886	850	798	699	816	834	888	769	690	753	761	781	781	775
with international institutions	453	498	518	514	542	511	593	623	715	747	750	845	917	993	1,060	1,043
Iran																
Total articles	121	201	337	335	417	547	750	847	1,091	1,187	1,348	1,607	1,761	1,956	2,188	2,649
with multiple institutions	45	76	119	100	189	247	353	374	530	608	742	831	961	1,097	1,267	1,538
with domestic institutions only	104	167	302	315	371	484	665	766	948	1,025	1,143	1,387	1,499	1,659	1,789	2,206
with international institutions	17	34	35	20	46	63	85	81	143	162	205	220	262	297	399	443
Israel																
Total articles	524	549	574	616	635	611	657	626	718	640	611	730	727	678	738	641
with multiple institutions	303	315	368	382	406	403	430	414	492	437	405	465	481	474	513	444
with domestic institutions only	319	330	319	336	368	344	386	346	388	371	368	446	414	391	403	343
with international institutions	205	219	255	280	267	267	271	280	330	269	243	284	313	287	335	298
Saudi Arabia																
Total articles	77	85	89	95	93	116	127	121	128	111	118	123	162	320	532	856
with multiple institutions	35	39	51	49	47	59	74	73	70	67	59	63	107	260	457	770
with domestic institutions only	47	55	43	56	57	71	72	59	72	64	71	70	66	76	109	145
with international institutions	30	30	46	39	36	45	55	62	56	47	47	53	96	244	423	711
Turkey																
Total articles	418	423	531	531	661	709	782	935	1,013	1,058	1,184	1,142	1,186	1,236	1,316	1,377
with multiple institutions	227	234	291	298	362	402	447	541	552	612	691	693	713	789	844	920
with domestic institutions only	335	355	430	420	510	563	611	732	814	866	981	912	952	977	1,018	1,027
with international institutions	83	68	101	111	151	146	171	203	199	192	203	230	234	259	298	350
Egypt																
Total articles	457	492	456	525	509	560	612	580	611	645	672	735	730	791	726	840
with multiple institutions	194	202	184	237	209	252	285	260	284	318	333	387	412	487	484	572
with domestic institutions only	364	400	371	386	420	452	468	437	460	498	504	530	471	497	399	461
with international institutions	93	92	85	139	89	108	144	143	151	147	168	205	259	294	327	379

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	257	243	262	229	256	285	310	300	312	320	327	336	366	411	495	538
with multiple institutions	102	108	130	113	117	130	158	167	179	173	200	178	239	265	344	375
with domestic institutions only	185	177	175	153	167	191	190	177	178	199	180	206	184	221	229	265
with international institutions	72	66	87	76	89	94	120	123	134	121	147	130	182	190	266	273
China																
Total articles	2,954	3,406	4,424	5,029	5,953	6,688	7,805	9,670	11,740	13,158	14,431	17,294	19,496	20,553	24,249	26,414
with multiple institutions	1,355	1,519	2,110	2,463	3,034	3,415	4,132	5,141	6,426	7,397	8,376	10,227	11,980	12,868	15,402	16,930
with domestic institutions only	2,503	2,913	3,810	4,354	5,126	5,764	6,666	8,384	10,168	11,385	12,410	14,862	16,424	17,025	20,062	21,953
with international institutions	451	493	614	675	827	924	1,139	1,286	1,572	1,773	2,021	2,432	3,072	3,528	4,187	4,461
India																
Total articles	2,517	2,886	2,880	2,752	3,078	3,314	3,728	3,942	4,545	4,906	4,923	5,499	5,568	5,947	6,688	7,558
with multiple institutions	777	888	964	963	1,063	1,236	1,392	1,468	1,874	2,045	2,138	2,450	2,595	2,824	3,334	3,904
with domestic institutions only	2,246	2,514	2,445	2,345	2,581	2,744	3,084	3,253	3,766	4,079	4,091	4,586	4,539	4,798	5,355	6,081
with international institutions	271	372	435	407	497	570	644	689	779	827	832	913	1,029	1,149	1,333	1,477
Japan																
Total articles	8,176	9,365	9,445	9,288	9,135	8,769	9,580	9,077	9,873	8,854	9,168	9,330	9,596	8,475	9,224	8,673
with multiple institutions	3,403	4,194	4,294	4,335	4,325	4,349	4,960	4,830	5,449	4,913	5,225	5,335	5,682	5,222	5,846	5,515
with domestic institutions only	7,253	8,299	8,278	8,135	7,974	7,573	8,129	7,701	8,300	7,348	7,562	7,665	7,746	6,674	7,085	6,654
with international institutions	923	1,066	1,167	1,153	1,161	1,196	1,451	1,376	1,573	1,506	1,606	1,665	1,850	1,801	2,139	2,019
Singapore																
Total articles	190	264	334	323	354	371	473	567	617	651	620	814	974	1,037	1,295	1,312
with multiple institutions	107	142	199	189	203	198	273	319	405	423	424	504	591	685	858	944
with domestic institutions only	126	184	226	226	252	265	333	398	395	403	364	488	591	589	738	703
with international institutions	64	80	108	97	102	106	140	169	222	248	256	326	383	448	557	609
South Korea																
Total articles	1,385	1,660	1,707	1,963	2,135	2,246	2,504	2,550	2,905	2,912	3,067	3,775	3,952	4,266	4,913	5,107
with multiple institutions	809	976	1,024	1,201	1,374	1,476	1,684	1,749	2,006	2,064	2,135	2,637	2,810	3,149	3,699	3,851
with domestic institutions only	1,162	1,397	1,443	1,668	1,767	1,866	2,021	2,069	2,265	2,200	2,363	2,887	2,976	3,085	3,419	3,597
with international institutions	223	263	264	295	368	380	483	481	640	712	704	888	976	1,181	1,494	1,510
Taiwan																
Total articles	907	971	1,207	1,093	1,225	1,255	1,407	1,444	1,674	1,795	1,691	1,933	2,066	2,066	2,338	2,236
with multiple institutions	365	365	511	477	542	629	763	782	976	1,060	1,071	1,273	1,419	1,461	1,561	1,499
with domestic institutions only	822	886	1,086	969	1,054	1,066	1,161	1,241	1,413	1,534	1,404	1,632	1,657	1,613	1,880	1,742
with international institutions	85	85	121	124	171	189	246	203	261	261	287	301	409	453	458	494
Australia																
Total articles	1,287	1,332	1,335	1,281	1,257	1,192	1,477	1,352	1,523	1,523	1,514	1,736	1,960	2,039	2,358	2,371
with multiple institutions	673	697	700	709	745	724	923	847	942	998	1,040	1,196	1,412	1,505	1,732	1,773
with domestic institutions only	915	942	941	877	778	744	880	832	911	905	832	911	1,052	1,051	1,197	1,180
with international institutions	372	390	394	404	479	448	597	520	612	618	682	825	908	988	1,161	1,191

Appendix table 5-44

S&E articles in chemistry, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	261	287	257	244	214	221	226	200	258	218	244	263	276	299	346	313
with multiple institutions	139	158	125	144	116	131	139	112	168	133	159	172	184	216	262	222
with domestic institutions only	154	160	156	128	125	109	110	112	114	121	124	123	146	128	148	154
with international institutions	107	127	101	116	89	112	116	88	144	97	120	140	130	171	198	159

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	82,831	84,980	87,269	84,340	86,724	88,378	96,918	91,228	104,273	102,608	100,965	115,461	109,558	102,239	106,754	110,814
with multiple institutions	42,106	43,701	46,641	46,078	48,686	50,355	55,623	53,361	61,146	60,584	60,917	71,009	68,222	64,745	68,386	71,553
with domestic institutions only	63,526	64,756	65,722	62,327	63,749	64,530	71,006	67,030	76,612	76,250	74,519	84,545	80,272	74,109	77,123	79,515
with international institutions	19,305	20,224	21,547	22,013	22,975	23,848	25,912	24,198	27,661	26,358	26,446	30,916	29,286	28,130	29,631	31,299
Canada																
Total articles	2,474	2,318	2,200	2,273	2,253	2,470	2,715	2,621	3,212	3,180	3,058	3,660	3,474	3,098	3,299	3,501
with multiple institutions	1,558	1,551	1,462	1,549	1,521	1,671	1,825	1,831	2,174	2,227	2,149	2,629	2,567	2,284	2,428	2,626
with domestic institutions only	1,279	1,107	1,059	1,037	1,004	1,133	1,244	1,149	1,447	1,470	1,368	1,593	1,480	1,322	1,389	1,388
with international institutions	1,195	1,211	1,141	1,236	1,249	1,337	1,471	1,472	1,765	1,710	1,690	2,067	1,994	1,776	1,910	2,113
Mexico																
Total articles	654	808	942	921	970	967	1,067	951	1,142	1,080	1,068	1,168	1,073	1,006	1,117	1,128
with multiple institutions	411	559	650	682	693	698	718	692	837	816	770	886	817	788	863	895
with domestic institutions only	383	396	507	442	477	485	593	512	614	571	593	595	540	491	519	466
with international institutions	271	412	435	479	493	482	474	439	528	509	475	573	533	515	598	662
United States																
Total articles	21,696	21,787	22,131	21,072	21,791	21,888	23,566	22,300	25,931	24,803	23,177	26,622	24,193	23,049	23,780	25,100
with multiple institutions	13,269	13,314	13,882	13,638	14,225	14,418	15,501	14,799	17,084	16,507	15,834	18,548	17,192	16,493	17,266	18,542
with domestic institutions only	14,690	14,528	14,502	13,247	13,497	13,305	14,454	13,724	15,967	15,485	14,050	15,749	13,795	13,157	13,263	13,597
with international institutions	7,006	7,259	7,629	7,825	8,294	8,583	9,112	8,576	9,964	9,318	9,127	10,873	10,398	9,892	10,517	11,503
Argentina																
Total articles	584	588	658	616	680	695	616	608	734	640	681	740	743	638	707	766
with multiple institutions	432	434	501	478	530	545	465	498	605	515	557	610	628	547	623	691
with domestic institutions only	308	308	327	292	300	337	299	239	301	287	315	319	331	267	281	264
with international institutions	276	280	331	324	380	358	317	369	433	353	366	421	412	371	426	502
Brazil																
Total articles	1,383	1,547	1,749	1,568	2,080	1,967	1,950	2,296	2,270	2,255	2,195	2,495	2,075	2,019	2,177	2,442
with multiple institutions	908	1,041	1,163	1,068	1,438	1,361	1,377	1,568	1,621	1,569	1,623	1,863	1,561	1,537	1,729	1,948
with domestic institutions only	737	846	993	860	1,179	1,082	1,144	1,387	1,337	1,363	1,261	1,395	1,126	1,078	1,069	1,148
with international institutions	646	701	756	708	901	885	806	909	933	892	934	1,100	949	941	1,108	1,294
Chile																
Total articles	116	140	131	151	142	152	222	187	242	287	261	311	300	301	373	537
with multiple institutions	86	97	100	120	109	110	150	140	195	227	214	246	246	252	335	458
with domestic institutions only	50	66	49	52	59	61	108	74	82	101	76	98	104	106	102	157
with international institutions	66	74	82	99	83	91	114	113	160	186	185	213	196	195	271	380
Austria																
Total articles	789	841	897	915	892	899	1,037	924	1,139	971	1,025	1,194	1,035	1,076	1,271	1,282
with multiple institutions	569	625	709	694	691	695	767	745	937	793	822	965	853	910	1,084	1,110
with domestic institutions only	272	275	252	297	276	263	353	265	298	272	298	350	301	287	290	281
with international institutions	517	566	645	618	616	636	684	659	841	699	727	844	734	789	981	1,001

Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	1,066	1,112	1,251	1,174	1,251	1,350	1,482	1,397	1,529	1,422	1,442	1,583	1,483	1,398	1,500	1,551
with multiple institutions	765	787	949	899	939	1,027	1,108	1,082	1,165	1,113	1,151	1,311	1,236	1,219	1,248	1,330
with domestic institutions only	387	409	417	359	419	442	514	453	527	457	431	469	457	353	418	416
with international institutions	679	703	834	815	832	908	968	944	1,002	965	1,011	1,114	1,026	1,045	1,082	1,135
Czech Republic																
Total articles	595	701	788	735	790	905	840	870	1,051	958	979	1,040	1,036	1,048	1,188	1,320
with multiple institutions	470	556	630	590	639	690	687	682	830	747	813	850	856	882	1,003	1,130
with domestic institutions only	196	211	242	214	218	308	250	277	335	321	311	304	304	290	323	319
with international institutions	399	490	546	521	572	597	590	593	716	637	668	736	732	758	865	1,001
Denmark																
Total articles	906	879	872	913	818	789	826	734	789	700	764	890	828	823	953	1,075
with multiple institutions	699	693	691	711	638	609	636	564	607	526	589	707	648	641	767	886
with domestic institutions only	270	260	249	273	254	253	279	236	258	263	246	283	269	267	291	290
with international institutions	636	619	623	640	564	536	547	498	531	437	518	607	559	556	662	785
Finland																
Total articles	632	666	700	740	720	686	798	749	812	830	830	976	937	852	1,026	1,014
with multiple institutions	457	508	567	595	531	505	590	566	620	626	639	763	758	701	876	864
with domestic institutions only	251	221	214	224	269	262	304	284	304	316	308	351	306	266	282	260
with international institutions	381	445	486	516	451	424	494	465	508	514	522	625	631	586	744	754
France																
Total articles	7,262	7,052	7,608	7,553	7,512	7,442	8,171	7,274	8,408	7,982	7,962	8,939	8,271	7,822	8,085	8,451
with multiple institutions	5,134	4,974	5,574	5,581	5,704	5,739	6,210	5,693	6,616	6,294	6,395	7,209	6,758	6,544	6,866	7,178
with domestic institutions only	3,580	3,361	3,574	3,319	3,226	3,166	3,424	2,888	3,325	3,178	3,072	3,448	3,181	2,770	2,833	2,939
with international institutions	3,682	3,691	4,034	4,234	4,286	4,276	4,747	4,386	5,083	4,804	4,890	5,491	5,090	5,052	5,252	5,512
Germany																
Total articles	10,203	11,196	10,846	10,788	10,653	10,815	11,482	10,267	11,965	11,136	10,573	12,170	11,342	11,037	11,636	12,043
with multiple institutions	6,403	7,127	7,068	7,286	7,325	7,612	8,193	7,444	8,704	8,171	7,924	9,208	8,682	8,680	9,251	9,551
with domestic institutions only	5,112	5,568	5,127	4,750	4,606	4,522	4,606	4,109	4,761	4,535	4,135	4,709	4,397	4,041	4,299	4,471
with international institutions	5,091	5,628	5,719	6,038	6,047	6,293	6,876	6,158	7,204	6,601	6,438	7,461	6,945	6,996	7,337	7,572
Greece																
Total articles	562	588	666	635	742	705	751	696	795	804	947	962	966	830	943	1,076
with multiple institutions	403	445	495	491	551	527	570	527	594	618	728	728	739	653	781	925
with domestic institutions only	220	224	257	225	296	297	289	247	318	321	394	391	363	282	261	275
with international institutions	342	364	409	410	446	408	462	449	477	483	553	571	603	548	682	801
Hungary																
Total articles	532	589	626	705	681	659	747	676	755	664	647	760	630	590	712	825
with multiple institutions	432	481	519	575	556	529	605	557	616	530	544	618	532	493	614	727
with domestic institutions only	150	167	168	191	187	184	196	219	226	217	177	228	162	166	172	180
with international institutions	382	422	458	514	494	475	551	457	529	447	470	532	468	424	540	645

Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	181	213	246	242	246	268	302	356	457	458	457	555	538	538	607	598
with multiple institutions	121	140	169	179	169	203	221	244	322	353	338	431	430	433	495	528
with domestic institutions only	72	86	98	87	111	96	99	147	176	151	169	194	189	203	229	173
with international institutions	109	127	148	155	135	172	203	209	281	307	288	361	349	335	378	425
Italy																
Total articles	4,541	4,613	4,717	4,655	4,984	5,158	5,668	5,600	5,832	5,561	5,396	6,150	5,352	5,201	5,089	5,522
with multiple institutions	3,707	3,794	3,933	3,926	4,243	4,414	4,824	4,821	5,042	4,758	4,580	5,316	4,643	4,490	4,469	4,915
with domestic institutions only	2,153	2,157	2,181	2,167	2,315	2,353	2,668	2,550	2,534	2,484	2,354	2,582	2,196	2,119	1,849	1,943
with international institutions	2,388	2,456	2,536	2,488	2,669	2,805	3,000	3,050	3,298	3,077	3,042	3,568	3,156	3,082	3,240	3,579
Netherlands																
Total articles	1,722	1,775	1,713	1,773	1,756	1,872	1,933	1,943	2,061	1,898	1,753	1,993	1,849	1,793	1,972	2,057
with multiple institutions	1,135	1,161	1,148	1,245	1,270	1,369	1,423	1,411	1,553	1,404	1,323	1,555	1,441	1,450	1,566	1,672
with domestic institutions only	794	821	802	733	718	773	758	753	759	729	648	696	650	564	690	636
with international institutions	928	954	911	1,040	1,038	1,099	1,175	1,190	1,302	1,169	1,105	1,297	1,199	1,229	1,282	1,421
Poland																
Total articles	2,075	2,039	2,293	2,350	2,417	2,513	2,872	2,523	2,943	2,740	2,575	2,939	2,546	2,554	2,571	2,867
with multiple institutions	1,457	1,443	1,650	1,702	1,752	1,785	2,024	1,858	2,136	1,967	1,855	2,100	1,870	1,861	1,864	2,081
with domestic institutions only	825	779	879	908	942	991	1,157	955	1,187	1,140	1,077	1,348	1,055	1,099	1,126	1,243
with international institutions	1,250	1,260	1,414	1,442	1,475	1,522	1,715	1,568	1,756	1,600	1,498	1,591	1,491	1,455	1,445	1,624
Portugal																
Total articles	329	359	529	492	569	583	696	646	716	839	756	903	885	842	942	1,122
with multiple institutions	267	278	421	404	453	468	571	546	603	732	625	777	787	758	869	1,021
with domestic institutions only	120	133	215	170	215	217	244	211	248	249	288	306	265	242	217	267
with international institutions	209	226	314	322	354	366	452	435	468	590	468	597	620	600	725	855
Spain																
Total articles	2,362	2,505	2,720	2,662	2,689	2,758	2,997	3,055	3,571	3,449	3,597	4,076	3,968	3,770	4,056	4,376
with multiple institutions	1,653	1,756	1,961	1,925	1,986	2,038	2,249	2,312	2,709	2,683	2,781	3,315	3,252	3,114	3,398	3,745
with domestic institutions only	1,159	1,182	1,234	1,166	1,180	1,196	1,292	1,284	1,454	1,355	1,463	1,523	1,434	1,292	1,313	1,320
with international institutions	1,203	1,323	1,486	1,496	1,509	1,562	1,705	1,771	2,117	2,094	2,134	2,553	2,534	2,478	2,743	3,056
Sweden																
Total articles	1,524	1,527	1,568	1,668	1,757	1,784	1,694	1,676	1,779	1,686	1,666	1,737	1,661	1,596	1,753	1,910
with multiple institutions	1,113	1,102	1,149	1,250	1,366	1,367	1,307	1,288	1,348	1,292	1,288	1,372	1,322	1,278	1,425	1,542
with domestic institutions only	594	617	602	640	629	648	581	591	613	580	535	533	486	455	481	513
with international institutions	930	910	966	1,028	1,128	1,136	1,113	1,085	1,166	1,106	1,131	1,204	1,175	1,141	1,272	1,397
United Kingdom																
Total articles	6,049	6,368	6,623	6,645	6,148	6,376	6,683	6,395	7,314	6,813	6,708	7,868	7,275	6,802	7,052	7,281
with multiple institutions	3,690	3,896	4,117	4,175	4,005	4,256	4,455	4,367	5,062	4,751	4,785	5,766	5,367	5,086	5,274	5,588
with domestic institutions only	3,209	3,401	3,409	3,337	2,969	2,964	3,059	2,860	3,199	2,952	2,818	3,026	2,815	2,586	2,624	2,533
with international institutions	2,840	2,967	3,214	3,308	3,179	3,412	3,624	3,535	4,115	3,861	3,890	4,842	4,460	4,216	4,428	4,748

Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	349	287	317	307	308	289	317	367	427	438	463	505	415	450	556	624
with multiple institutions	267	218	249	234	244	221	267	316	354	351	380	404	339	370	456	546
with domestic institutions only	122	95	92	103	92	91	71	85	111	122	140	132	118	117	177	132
with international institutions	227	192	225	204	216	198	246	282	316	316	323	373	297	333	379	492
Russia																
Total articles	8,198	8,549	8,644	8,188	7,815	7,869	7,983	7,208	7,573	7,086	6,796	7,424	7,462	6,805	7,182	7,159
with multiple institutions	4,013	4,270	4,525	4,477	4,467	4,747	4,900	4,423	4,840	4,393	4,260	4,613	4,566	4,208	4,563	4,687
with domestic institutions only	4,994	5,195	5,038	4,594	4,200	4,015	4,047	3,684	3,658	3,608	3,444	3,862	4,140	3,788	3,987	3,860
with international institutions	3,204	3,354	3,606	3,594	3,615	3,854	3,936	3,524	3,915	3,478	3,352	3,562	3,322	3,017	3,195	3,299
Switzerland																
Total articles	2,263	2,309	2,281	2,251	1,963	2,097	2,321	2,201	2,386	2,355	2,370	2,519	2,355	2,340	2,609	2,777
with multiple institutions	1,619	1,653	1,678	1,676	1,424	1,613	1,780	1,706	1,808	1,775	1,863	2,037	1,924	1,922	2,158	2,348
with domestic institutions only	776	822	737	714	637	589	665	650	736	738	654	634	557	559	620	576
with international institutions	1,487	1,487	1,544	1,537	1,326	1,508	1,656	1,551	1,650	1,617	1,716	1,885	1,798	1,781	1,989	2,201
Iran																
Total articles	76	107	113	157	159	232	294	349	480	582	641	1,026	1,204	1,200	1,534	1,809
with multiple institutions	57	86	87	104	113	145	190	230	286	354	391	595	665	715	906	1,074
with domestic institutions only	54	75	81	104	112	157	202	239	346	435	473	793	970	971	1,169	1,384
with international institutions	22	32	32	53	47	75	92	110	134	147	168	233	234	229	365	425
Israel																
Total articles	1,404	1,488	1,401	1,393	1,350	1,441	1,525	1,322	1,459	1,383	1,440	1,617	1,384	1,367	1,420	1,574
with multiple institutions	898	934	895	931	942	956	1,017	899	997	924	973	1,100	957	970	1,022	1,168
with domestic institutions only	680	734	699	658	563	655	711	600	683	622	658	729	613	559	565	630
with international institutions	724	754	702	735	787	786	814	722	776	761	782	888	771	808	855	944
Saudi Arabia																
Total articles	69	65	57	53	75	84	91	91	94	110	112	135	183	246	421	539
with multiple institutions	30	26	32	26	34	41	52	51	53	69	71	77	126	196	334	440
with domestic institutions only	50	44	32	32	48	51	49	53	49	49	53	69	74	65	106	129
with international institutions	19	21	25	21	27	33	42	38	45	61	59	66	109	181	315	410
Turkey																
Total articles	289	332	369	355	461	534	680	714	815	820	889	1,065	1,028	915	1,105	1,403
with multiple institutions	159	186	187	197	233	293	386	400	459	448	517	650	671	631	786	1,026
with domestic institutions only	184	218	245	211	300	336	452	495	567	579	639	716	679	571	641	760
with international institutions	105	114	124	144	161	198	228	219	248	241	250	349	349	344	464	643
Egypt																
Total articles	197	197	268	262	321	302	357	337	347	390	389	414	448	416	502	540
with multiple institutions	89	97	124	119	138	138	195	172	177	196	210	230	268	271	379	433
with domestic institutions only	144	134	199	182	235	225	244	231	242	293	270	294	266	256	209	188
with international institutions	53	63	69	80	86	77	113	106	105	97	119	120	182	160	293	352

Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	202	254	276	203	204	233	184	221	228	257	255	317	333	299	437	612
with multiple institutions	154	179	207	136	146	163	132	162	183	187	192	260	266	255	377	537
with domestic institutions only	77	109	109	86	86	104	66	81	66	111	94	105	123	96	119	184
with international institutions	125	145	167	117	118	129	118	140	162	146	161	212	210	203	318	428
China																
Total articles	4,475	4,405	4,610	5,069	5,733	6,388	8,357	9,160	12,047	13,238	14,556	17,936	18,880	17,885	19,574	21,595
with multiple institutions	2,827	2,913	3,014	3,308	3,764	4,220	5,371	5,770	7,546	8,141	8,957	11,204	12,077	11,476	12,934	14,257
with domestic institutions only	3,477	3,242	3,398	3,704	4,206	4,706	6,347	7,091	9,488	10,457	11,533	14,217	14,786	13,889	14,891	16,382
with international institutions	998	1,163	1,212	1,365	1,527	1,682	2,010	2,069	2,559	2,781	3,023	3,719	4,094	3,996	4,683	5,213
India																
Total articles	2,157	2,332	2,312	2,209	2,501	2,534	2,807	2,686	3,276	3,622	3,591	4,671	4,659	4,531	4,847	5,170
with multiple institutions	1,031	1,132	1,206	1,161	1,317	1,407	1,532	1,487	1,874	2,104	2,087	2,916	2,867	2,836	3,040	3,279
with domestic institutions only	1,647	1,738	1,695	1,540	1,739	1,752	1,937	1,857	2,194	2,544	2,535	3,244	3,293	3,121	3,354	3,495
with international institutions	510	594	617	669	762	782	870	829	1,082	1,078	1,056	1,427	1,366	1,410	1,493	1,675
Japan																
Total articles	10,978	11,319	12,173	11,906	12,545	12,452	14,429	12,357	13,083	12,517	11,881	12,508	11,334	10,319	10,521	10,428
with multiple institutions	5,847	6,308	7,050	7,088	7,677	7,626	9,126	8,125	8,748	8,324	8,202	8,775	7,941	7,381	7,665	7,580
with domestic institutions only	8,769	8,967	9,581	9,169	9,645	9,503	10,838	9,092	9,527	9,180	8,552	8,805	7,992	7,106	7,141	6,967
with international institutions	2,209	2,352	2,592	2,737	2,900	2,949	3,591	3,265	3,556	3,337	3,329	3,703	3,342	3,213	3,380	3,461
Singapore																
Total articles	273	335	474	548	666	689	706	838	960	1,082	1,074	1,253	1,373	1,172	1,306	1,353
with multiple institutions	147	185	272	320	392	390	457	561	658	761	778	978	1,041	917	1,014	1,098
with domestic institutions only	172	216	314	366	446	464	438	533	559	672	586	615	685	534	559	546
with international institutions	101	119	160	182	220	225	268	305	401	410	488	638	688	638	747	807
South Korea																
Total articles	1,937	2,183	2,584	2,533	2,981	3,400	3,796	3,764	4,243	4,215	4,514	5,305	5,494	4,917	5,407	5,483
with multiple institutions	1,297	1,437	1,730	1,742	2,090	2,418	2,710	2,640	2,987	3,003	3,242	3,839	3,959	3,583	4,061	4,143
with domestic institutions only	1,373	1,590	1,903	1,839	2,095	2,416	2,575	2,628	2,866	2,889	3,134	3,626	3,836	3,410	3,567	3,519
with international institutions	564	593	681	694	886	984	1,221	1,136	1,377	1,326	1,380	1,679	1,658	1,507	1,840	1,964
Taiwan																
Total articles	1,168	1,297	1,309	1,374	1,573	1,635	1,822	1,955	2,447	2,502	2,690	3,101	2,986	2,778	3,057	2,858
with multiple institutions	672	731	817	905	1,057	1,108	1,235	1,379	1,721	1,790	1,964	2,280	2,297	2,171	2,382	2,258
with domestic institutions only	905	1,012	960	964	1,103	1,132	1,293	1,394	1,782	1,885	1,983	2,249	2,140	1,994	2,106	1,856
with international institutions	263	285	349	410	470	503	529	561	665	617	707	852	846	784	951	1,002
Australia																
Total articles	1,474	1,547	1,456	1,299	1,423	1,412	1,562	1,466	1,731	1,714	1,841	2,112	2,121	1,954	2,066	2,423
with multiple institutions	791	912	869	799	910	927	1,028	969	1,155	1,164	1,275	1,521	1,538	1,416	1,544	1,901
with domestic institutions only	870	869	798	695	717	678	743	706	801	766	853	858	888	794	788	833
with international institutions	604	678	658	604	706	734	819	760	930	948	988	1,254	1,233	1,160	1,278	1,590

Appendix table 5-45

S&E articles in physics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	178	184	192	187	194	170	184	182	245	226	213	289	263	252	330	325
with multiple institutions	99	112	98	118	135	108	118	115	164	147	157	201	171	187	269	265
with domestic institutions only	88	88	106	80	73	73	84	82	109	112	89	122	112	91	92	87
with international institutions	90	96	86	107	121	97	100	100	136	114	124	167	151	161	238	238

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	27,540	29,675	31,085	31,586	32,780	31,397	36,779	35,204	38,799	39,587	40,202	44,838	46,452	43,204	45,040	49,429
with multiple institutions	14,373	15,889	17,143	17,943	18,734	18,637	22,549	21,988	24,746	25,753	26,811	30,659	32,209	31,040	32,810	36,246
with domestic institutions only	21,999	23,492	24,199	24,365	25,025	23,614	27,113	25,787	28,214	28,413	28,528	31,177	32,045	28,948	29,826	32,786
with international institutions	5,541	6,183	6,886	7,221	7,755	7,783	9,666	9,417	10,585	11,174	11,674	13,661	14,407	14,256	15,214	16,643
Canada																
Total articles	2,303	2,370	2,449	2,454	2,396	2,338	2,538	2,580	2,895	2,998	2,926	3,307	3,350	3,193	3,324	3,577
with multiple institutions	1,408	1,526	1,643	1,629	1,613	1,643	1,790	1,918	2,085	2,191	2,184	2,537	2,565	2,549	2,637	2,854
with domestic institutions only	1,488	1,433	1,456	1,533	1,406	1,341	1,410	1,349	1,576	1,605	1,479	1,569	1,651	1,479	1,527	1,627
with international institutions	815	937	993	921	990	997	1,128	1,231	1,319	1,393	1,447	1,738	1,699	1,714	1,797	1,950
Mexico																
Total articles	190	260	306	354	355	363	468	518	456	485	433	479	508	522	494	545
with multiple institutions	110	157	206	254	247	260	331	348	350	372	336	393	419	421	406	452
with domestic institutions only	112	164	183	194	185	197	247	299	246	236	226	208	235	271	228	264
with international institutions	78	96	123	160	170	166	221	219	210	249	207	271	273	251	266	281
United States																
Total articles	10,430	11,242	11,365	11,322	11,762	10,920	13,734	12,595	13,465	13,836	13,826	15,599	15,217	14,584	15,127	15,768
with multiple institutions	6,212	6,922	7,192	7,288	7,597	7,361	9,487	8,821	9,465	9,881	10,140	11,701	11,598	11,388	11,905	12,476
with domestic institutions only	8,037	8,456	8,454	8,274	8,444	7,646	9,373	8,456	8,972	9,074	8,853	9,660	9,199	8,456	8,601	8,964
with international institutions	2,393	2,786	2,911	3,048	3,318	3,274	4,361	4,139	4,493	4,762	4,973	5,939	6,018	6,128	6,526	6,804
Argentina																
Total articles	170	178	195	201	218	242	281	288	335	333	378	457	480	489	522	622
with multiple institutions	113	112	131	150	166	187	205	219	270	264	301	372	398	405	444	526
with domestic institutions only	110	109	113	112	110	134	157	155	177	188	212	241	258	242	269	347
with international institutions	60	69	82	89	108	108	124	133	158	145	166	216	222	247	253	275
Brazil																
Total articles	239	280	358	419	440	431	552	538	650	695	685	780	955	833	940	1,204
with multiple institutions	172	192	238	303	316	304	401	388	504	515	531	641	749	667	769	1,014
with domestic institutions only	110	136	192	211	235	237	281	299	367	372	385	417	553	457	508	663
with international institutions	129	144	166	208	205	194	271	239	283	323	300	363	402	376	432	541
Chile																
Total articles	77	75	140	136	175	176	207	203	229	246	249	290	316	292	348	358
with multiple institutions	58	51	99	103	125	137	165	161	190	213	212	247	284	261	325	333
with domestic institutions only	31	39	63	56	84	71	86	97	81	90	83	115	101	91	112	109
with international institutions	46	36	77	80	91	105	121	106	148	156	166	175	215	201	236	249
Austria																
Total articles	207	195	258	255	335	320	356	344	345	381	397	444	524	461	560	540
with multiple institutions	133	143	162	166	255	243	268	263	290	316	344	383	463	407	487	489
with domestic institutions only	95	71	123	118	119	101	115	134	95	104	86	94	103	88	128	99
with international institutions	112	124	135	137	216	219	241	210	250	277	311	350	421	373	432	441

Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	292	397	400	416	423	475	525	482	575	580	539	658	684	590	641	672
with multiple institutions	203	279	271	300	301	349	403	379	463	473	452	551	607	512	567	595
with domestic institutions only	128	164	182	175	184	178	215	180	203	200	172	200	191	147	180	177
with international institutions	164	233	218	241	239	297	310	302	372	380	367	458	493	443	461	495
Czech Republic																
Total articles	138	153	130	128	158	173	220	235	249	296	281	341	388	377	407	411
with multiple institutions	108	113	90	99	128	118	168	174	202	238	224	290	325	324	352	339
with domestic institutions only	51	68	61	47	56	91	94	116	102	121	127	136	170	159	151	164
with international institutions	87	85	69	81	102	82	126	119	147	175	154	205	218	218	256	247
Denmark																
Total articles	419	530	492	537	564	581	627	523	583	632	609	646	664	651	658	786
with multiple institutions	271	362	318	357	411	435	467	382	459	515	510	521	558	573	563	696
with domestic institutions only	200	260	226	262	240	235	251	215	217	201	188	205	189	161	192	203
with international institutions	219	270	266	275	324	346	376	308	366	431	421	441	475	490	466	583
Finland																
Total articles	301	356	309	358	405	348	435	405	441	401	439	527	482	468	498	545
with multiple institutions	207	241	212	274	289	265	334	316	350	339	361	429	408	401	441	476
with domestic institutions only	168	198	169	178	218	175	205	198	194	152	185	205	169	159	156	168
with international institutions	133	158	140	180	187	173	230	207	247	249	254	322	313	309	342	377
France																
Total articles	2,145	2,373	2,537	2,541	2,493	2,316	2,825	2,626	3,066	3,027	3,018	3,393	3,682	3,545	3,480	3,767
with multiple institutions	1,603	1,730	1,862	1,960	1,894	1,807	2,247	2,086	2,518	2,504	2,545	2,908	3,223	3,140	3,112	3,418
with domestic institutions only	1,081	1,249	1,334	1,223	1,212	1,067	1,215	1,139	1,255	1,187	1,130	1,241	1,305	1,233	1,151	1,191
with international institutions	1,064	1,124	1,203	1,318	1,281	1,249	1,610	1,487	1,811	1,840	1,888	2,152	2,377	2,312	2,329	2,576
Germany																
Total articles	2,158	2,189	2,470	2,552	2,555	2,501	2,972	2,676	3,095	2,981	3,037	3,486	3,669	3,507	3,748	4,081
with multiple institutions	1,334	1,363	1,564	1,675	1,730	1,751	2,162	2,015	2,337	2,305	2,421	2,823	3,016	2,978	3,208	3,498
with domestic institutions only	1,189	1,188	1,262	1,276	1,192	1,146	1,254	1,048	1,253	1,097	1,075	1,171	1,165	1,048	1,092	1,166
with international institutions	969	1,001	1,208	1,276	1,363	1,355	1,718	1,628	1,842	1,884	1,962	2,315	2,504	2,459	2,656	2,915
Greece																
Total articles	226	243	233	259	269	269	336	319	355	451	408	437	471	407	439	467
with multiple institutions	153	149	152	178	179	153	215	212	243	330	283	311	331	307	336	347
with domestic institutions only	125	142	135	133	132	173	182	177	203	233	224	234	241	195	194	219
with international institutions	101	101	98	126	137	96	154	142	152	218	184	203	230	212	245	248
Hungary																
Total articles	83	95	120	83	86	92	109	131	129	133	151	149	166	165	165	166
with multiple institutions	64	70	87	68	67	70	85	104	102	112	129	129	144	139	144	148
with domestic institutions only	31	45	55	28	32	34	49	71	43	46	42	48	57	47	62	55
with international institutions	52	50	65	55	54	58	60	60	86	87	109	101	109	118	103	111

Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	97	96	84	106	128	123	136	122	178	218	183	244	269	255	280	312
with multiple institutions	55	69	57	68	82	87	96	96	132	171	135	194	224	226	234	272
with domestic institutions only	55	37	37	43	53	48	56	42	64	78	68	73	90	63	81	81
with international institutions	42	59	47	63	75	75	80	80	114	140	115	171	179	192	199	231
Italy																
Total articles	860	973	1,154	1,267	1,292	1,263	1,598	1,567	1,681	1,852	1,883	2,158	2,296	2,140	2,142	2,380
with multiple institutions	590	679	813	907	910	926	1,179	1,160	1,258	1,380	1,439	1,714	1,805	1,702	1,727	1,945
with domestic institutions only	517	553	676	723	747	701	869	858	893	1,005	940	1,040	1,104	984	958	1,087
with international institutions	343	420	478	544	545	562	729	709	788	847	943	1,118	1,192	1,156	1,184	1,293
Netherlands																
Total articles	767	868	814	814	829	844	928	895	1,013	1,020	1,000	1,143	1,174	1,135	1,157	1,277
with multiple institutions	479	516	535	527	553	598	680	660	754	802	806	939	995	994	1,008	1,125
with domestic institutions only	421	521	411	404	393	407	388	380	420	392	334	380	378	304	318	323
with international institutions	346	347	403	410	436	437	540	515	593	628	666	763	796	831	839	954
Poland																
Total articles	192	193	182	222	220	235	291	299	336	345	357	407	499	452	430	566
with multiple institutions	108	133	113	147	136	148	187	196	218	228	236	263	340	320	309	385
with domestic institutions only	112	91	93	105	118	121	140	153	166	173	181	214	258	233	209	306
with international institutions	80	102	89	117	102	114	151	146	170	172	176	193	241	219	221	260
Portugal																
Total articles	80	142	174	183	198	254	304	272	368	458	491	586	710	583	614	803
with multiple institutions	60	104	131	132	132	190	225	204	285	358	400	491	562	517	551	708
with domestic institutions only	35	72	79	92	108	118	144	137	188	247	233	282	374	236	262	353
with international institutions	45	70	95	91	90	136	160	135	180	211	258	304	336	347	352	450
Spain																
Total articles	840	944	1,035	1,030	1,074	1,094	1,274	1,206	1,501	1,623	1,699	2,062	2,181	2,081	2,329	2,559
with multiple institutions	523	595	712	669	716	727	893	850	1,071	1,183	1,223	1,565	1,675	1,679	1,925	2,098
with domestic institutions only	527	575	582	616	620	650	703	671	846	856	917	1,061	1,088	1,012	1,035	1,135
with international institutions	313	369	453	414	454	444	571	535	655	767	782	1,001	1,093	1,069	1,294	1,424
Sweden																
Total articles	518	700	684	657	733	679	784	789	874	885	835	973	977	920	913	1,118
with multiple institutions	330	431	447	451	515	487	576	569	665	684	651	792	827	769	790	967
with domestic institutions only	283	357	358	309	333	301	326	352	363	339	310	311	289	276	243	318
with international institutions	235	343	326	348	400	378	458	437	511	546	525	662	688	644	670	800
United Kingdom																
Total articles	2,877	3,047	3,305	3,504	3,392	3,203	3,632	3,412	3,795	3,980	3,949	4,339	4,399	4,172	4,356	4,668
with multiple institutions	1,735	1,855	2,071	2,253	2,230	2,175	2,611	2,508	2,780	3,064	3,020	3,450	3,525	3,409	3,633	3,873
with domestic institutions only	1,730	1,840	1,937	1,969	1,859	1,669	1,709	1,518	1,708	1,700	1,657	1,685	1,624	1,449	1,514	1,567
with international institutions	1,147	1,207	1,368	1,535	1,533	1,534	1,923	1,894	2,087	2,280	2,292	2,654	2,775	2,723	2,842	3,101

Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	521	626	574	607	628	685	742	789	772	891	909	1,045	1,087	1,005	1,157	1,297
with multiple institutions	361	434	422	451	464	511	562	609	634	734	752	902	952	871	1,021	1,154
with domestic institutions only	295	331	270	285	302	317	338	345	310	343	336	376	330	326	365	380
with international institutions	226	295	304	322	326	368	404	444	462	548	573	669	757	679	792	917
Russia																
Total articles	957	980	982	1,164	1,273	1,235	1,332	1,305	1,327	804	1,663	1,376	1,340	1,254	1,120	1,431
with multiple institutions	514	591	553	676	738	771	834	842	888	616	996	899	856	828	759	989
with domestic institutions only	547	514	532	670	747	669	743	675	695	286	1,082	742	753	708	599	778
with international institutions	410	466	450	494	526	566	589	630	632	518	581	634	587	546	521	653
Switzerland																
Total articles	506	539	599	581	716	636	772	759	871	866	970	1,120	1,197	1,120	1,267	1,341
with multiple institutions	353	364	423	428	496	484	571	576	678	685	823	937	996	981	1,089	1,169
with domestic institutions only	243	259	266	244	315	229	295	270	319	290	291	337	326	259	332	325
with international institutions	263	280	333	337	401	407	477	489	552	576	679	783	871	861	935	1,016
Iran																
Total articles	16	22	17	20	35	36	61	78	103	138	235	213	394	304	397	478
with multiple institutions	14	15	11	16	29	24	48	59	75	97	159	141	276	216	293	336
with domestic institutions only	5	10	7	6	10	16	24	30	48	70	130	122	233	182	225	302
with international institutions	11	12	10	14	25	20	37	48	55	68	105	91	161	122	172	176
Israel																
Total articles	291	256	245	327	288	280	304	300	307	316	316	350	357	321	333	309
with multiple institutions	177	172	159	216	191	198	221	222	221	232	241	260	283	245	266	246
with domestic institutions only	176	145	139	193	154	161	143	153	154	158	153	180	151	157	142	130
with international institutions	115	111	106	134	134	119	161	147	153	158	163	170	206	164	191	179
Saudi Arabia																
Total articles	31	28	21	31	18	22	22	33	25	31	28	39	44	83	138	228
with multiple institutions	12	14	12	18	7	10	17	16	14	16	17	27	31	71	125	198
with domestic institutions only	23	18	11	17	13	13	6	18	11	18	12	17	19	21	23	42
with international institutions	8	10	10	14	5	9	16	15	14	13	16	22	25	62	115	186
Turkey																
Total articles	146	175	241	210	233	333	371	418	448	522	540	639	682	538	514	603
with multiple institutions	79	96	143	122	143	188	212	230	264	292	323	397	451	353	323	419
with domestic institutions only	93	123	155	142	150	209	247	308	313	381	410	477	493	358	351	401
with international institutions	53	52	86	68	83	124	124	110	135	141	130	162	189	180	163	202
Egypt																
Total articles	78	57	80	69	73	72	112	83	101	101	101	137	178	152	150	176
with multiple institutions	54	33	55	49	45	45	68	52	62	65	55	84	116	114	111	145
with domestic institutions only	39	33	37	34	39	38	54	41	49	49	52	74	93	63	61	54
with international institutions	39	24	43	35	34	34	58	42	52	52	49	63	85	89	89	122

Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	273	250	327	264	334	322	332	346	365	362	357	381	476	446	440	548
with multiple institutions	137	152	192	151	202	204	216	238	245	243	251	289	351	350	358	432
with domestic institutions only	188	155	210	165	190	177	167	160	185	172	177	154	229	159	150	220
with international institutions	85	95	117	99	144	145	165	186	180	190	180	227	247	287	290	328
China																
Total articles	684	638	784	868	1,091	1,273	1,629	1,812	2,215	2,754	3,052	3,719	4,563	4,679	5,307	6,167
with multiple institutions	401	385	486	562	718	892	1,179	1,327	1,683	2,050	2,378	2,887	3,494	3,689	4,254	4,937
with domestic institutions only	424	382	454	491	633	750	905	1,010	1,269	1,641	1,758	2,099	2,749	2,692	3,043	3,664
with international institutions	260	256	330	377	458	523	724	802	946	1,113	1,294	1,620	1,814	1,987	2,264	2,503
India																
Total articles	431	402	469	474	507	551	644	661	829	902	916	1,117	1,214	1,123	1,310	1,409
with multiple institutions	173	175	180	236	240	250	315	328	427	458	491	622	679	704	829	860
with domestic institutions only	357	293	373	350	385	400	463	491	626	655	689	800	883	769	860	952
with international institutions	74	109	96	124	122	151	181	170	203	247	227	317	331	354	450	457
Japan																
Total articles	1,550	1,891	1,855	1,997	2,253	2,113	2,479	2,555	2,736	2,814	2,536	2,932	2,878	2,529	2,609	2,689
with multiple institutions	941	1,181	1,148	1,280	1,505	1,438	1,784	1,863	1,978	2,085	1,953	2,227	2,256	2,049	2,094	2,220
with domestic institutions only	1,135	1,374	1,332	1,461	1,564	1,449	1,596	1,651	1,760	1,754	1,548	1,781	1,668	1,423	1,433	1,448
with international institutions	415	517	523	536	689	664	883	904	976	1,060	988	1,151	1,210	1,106	1,176	1,241
Singapore																
Total articles	57	66	50	76	88	93	122	109	118	104	96	126	107	117	152	180
with multiple institutions	17	25	28	38	51	53	67	64	78	66	68	95	83	82	127	145
with domestic institutions only	44	45	30	49	49	52	67	59	56	61	47	56	51	47	51	54
with international institutions	13	21	20	27	39	41	55	50	62	43	49	70	56	70	101	126
South Korea																
Total articles	135	219	220	259	423	440	552	669	636	710	675	855	922	944	940	1,195
with multiple institutions	102	155	153	178	302	328	411	514	528	559	548	688	725	768	753	1,002
with domestic institutions only	68	128	112	153	271	253	323	380	334	391	350	448	482	482	480	618
with international institutions	67	91	108	106	152	187	229	289	302	319	325	407	440	462	460	577
Taiwan																
Total articles	316	350	361	401	522	478	578	532	650	703	763	858	989	815	814	862
with multiple institutions	138	162	206	236	324	297	390	344	444	503	587	677	778	670	688	748
with domestic institutions only	241	279	261	300	353	353	426	390	447	494	521	522	615	475	413	431
with international institutions	75	71	100	101	169	125	152	142	203	209	242	336	374	340	401	431
Australia																
Total articles	1,286	1,472	1,690	1,597	1,694	1,603	1,875	1,835	2,119	2,046	2,102	2,498	2,435	2,415	2,690	3,011
with multiple institutions	725	861	1,013	974	1,091	1,051	1,294	1,276	1,493	1,488	1,597	1,904	1,877	1,946	2,203	2,496
with domestic institutions only	830	944	1,104	1,031	1,055	931	1,046	1,000	1,169	1,092	1,056	1,266	1,139	1,098	1,159	1,249
with international institutions	456	528	586	566	639	672	829	835	950	954	1,046	1,232	1,296	1,317	1,531	1,762

Appendix table 5-46

S&E articles in geosciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	384	448	448	427	427	503	542	492	558	556	532	601	559	654	654	786
with multiple institutions	218	254	272	263	253	309	348	337	385	423	410	461	431	529	543	620
with domestic institutions only	222	262	258	237	254	284	298	236	265	226	215	241	233	224	223	306
with international institutions	162	186	190	190	173	219	244	256	293	330	317	360	326	430	431	480

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	9,747	11,569	12,307	13,515	14,210	13,538	15,205	14,252	15,709	15,738	16,403	19,592	19,540	18,177	18,357	18,763
with multiple institutions	3,808	4,646	5,277	5,938	6,102	6,217	7,178	6,879	7,499	7,802	8,196	9,962	10,284	9,699	10,081	10,326
with domestic institutions only	7,668	8,995	9,326	10,124	10,746	9,981	11,002	10,434	11,446	11,350	11,974	14,158	13,884	12,848	12,696	13,051
with international institutions	2,079	2,574	2,981	3,391	3,464	3,557	4,203	3,818	4,263	4,388	4,429	5,434	5,656	5,329	5,661	5,712
Canada																
Total articles	530	574	615	605	608	623	742	716	842	815	807	969	1,007	902	871	893
with multiple institutions	330	342	381	385	385	431	498	487	585	549	543	679	689	620	614	636
with domestic institutions only	251	284	282	267	279	249	308	316	360	338	345	377	396	352	338	352
with international institutions	279	290	333	338	329	374	434	400	482	477	462	592	611	550	533	541
Mexico																
Total articles	49	58	75	73	99	108	108	124	140	115	117	156	125	145	132	144
with multiple institutions	31	40	48	48	65	79	69	92	99	88	84	108	94	112	103	110
with domestic institutions only	23	25	37	34	42	40	54	51	56	45	50	68	47	57	46	54
with international institutions	26	33	38	39	57	68	54	73	84	70	67	88	78	88	86	90
United States																
Total articles	3,580	4,113	4,267	4,532	4,469	4,389	4,667	4,402	4,854	4,872	4,761	5,608	5,411	4,896	5,125	5,342
with multiple institutions	1,829	2,148	2,305	2,512	2,487	2,569	2,733	2,624	2,819	2,936	2,934	3,454	3,414	3,087	3,280	3,427
with domestic institutions only	2,545	2,890	2,894	3,032	2,897	2,795	2,920	2,785	3,062	3,067	2,948	3,463	3,251	2,902	2,985	3,108
with international institutions	1,035	1,223	1,373	1,500	1,572	1,594	1,747	1,617	1,792	1,805	1,813	2,145	2,160	1,994	2,140	2,234
Argentina																
Total articles	39	26	58	78	65	84	74	72	78	85	113	119	123	123	109	129
with multiple institutions	17	14	30	45	29	53	47	49	49	57	85	77	96	88	89	99
with domestic institutions only	26	12	35	45	42	48	41	38	39	46	48	59	53	69	49	61
with international institutions	13	14	23	33	23	36	33	34	39	39	65	60	70	54	60	68
Brazil																
Total articles	128	165	175	208	236	253	287	259	289	301	283	377	397	410	381	413
with multiple institutions	72	101	117	145	161	161	201	169	200	201	206	257	284	300	292	307
with domestic institutions only	70	81	88	102	122	135	135	134	144	155	145	190	194	189	175	195
with international institutions	58	84	87	106	114	118	152	125	145	146	138	187	203	221	206	218
Chile																
Total articles	37	56	42	57	55	70	97	86	91	111	106	140	139	142	141	145
with multiple institutions	23	39	36	43	40	60	74	72	68	94	84	114	116	117	110	113
with domestic institutions only	19	25	14	21	19	20	34	25	29	36	32	41	38	43	46	49
with international institutions	18	31	28	36	36	50	63	61	62	75	74	99	101	99	95	96
Austria																
Total articles	87	98	100	131	165	167	188	157	190	211	218	258	260	234	270	261
with multiple institutions	45	54	56	70	82	95	109	94	121	136	147	174	185	152	168	172
with domestic institutions only	44	49	53	66	87	83	90	74	90	89	81	105	91	95	118	108
with international institutions	43	49	47	65	78	84	98	83	100	122	137	153	169	139	152	153

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	111	128	178	167	176	166	225	235	237	234	235	308	300	276	237	270
with multiple institutions	63	83	118	100	100	104	141	133	143	138	136	184	203	190	164	182
with domestic institutions only	49	52	70	75	85	71	94	113	114	111	121	149	119	112	98	107
with international institutions	62	76	108	92	91	95	131	122	123	123	114	159	181	164	139	163
Czech Republic																
Total articles	59	77	81	106	142	115	119	117	135	139	170	209	214	242	186	223
with multiple institutions	36	39	49	66	78	75	80	82	114	100	117	146	172	178	147	171
with domestic institutions only	24	42	35	46	70	51	48	53	41	57	67	93	64	92	59	83
with international institutions	35	35	46	60	72	64	71	64	94	82	103	116	150	150	127	140
Denmark																
Total articles	81	82	108	97	97	94	114	102	109	112	89	87	113	97	99	107
with multiple institutions	37	51	66	67	56	59	67	55	55	66	54	62	83	67	75	75
with domestic institutions only	46	35	47	36	50	44	53	54	57	51	40	27	37	37	31	37
with international institutions	35	47	61	61	47	50	61	48	52	61	49	60	76	60	68	70
Finland																
Total articles	55	62	83	103	90	93	118	103	95	113	119	130	126	121	133	143
with multiple institutions	27	41	44	69	54	49	83	71	61	66	76	78	86	78	89	95
with domestic institutions only	32	25	46	46	44	52	48	48	39	62	59	62	50	49	52	56
with international institutions	23	37	37	57	46	41	70	55	56	51	60	68	76	72	81	87
France																
Total articles	1,179	1,398	1,509	1,620	1,709	1,674	1,904	1,640	1,837	1,760	1,704	2,004	2,171	2,075	2,077	2,008
with multiple institutions	548	690	752	865	920	938	1,118	996	1,082	1,053	1,073	1,303	1,480	1,458	1,505	1,456
with domestic institutions only	821	943	997	1,029	1,050	1,009	1,107	914	1,069	1,027	930	1,039	1,074	1,031	971	937
with international institutions	358	455	512	591	659	665	797	726	768	733	774	965	1,097	1,044	1,106	1,071
Germany																
Total articles	837	1,065	1,201	1,329	1,292	1,228	1,363	1,244	1,375	1,338	1,347	1,628	1,592	1,436	1,582	1,647
with multiple institutions	388	513	643	732	678	694	783	723	793	823	826	1,033	979	942	1,046	1,051
with domestic institutions only	517	624	659	703	709	608	661	631	701	622	635	733	759	633	685	786
with international institutions	320	441	542	626	583	620	702	613	674	716	712	895	833	803	897	861
Greece																
Total articles	60	108	88	93	121	97	121	123	141	155	125	149	157	125	155	146
with multiple institutions	32	61	43	54	59	48	61	70	68	93	83	87	93	75	101	102
with domestic institutions only	34	68	58	47	76	66	78	71	94	82	61	83	84	71	76	58
with international institutions	26	40	30	46	45	31	43	52	47	73	64	66	73	54	79	88
Hungary																
Total articles	65	111	106	140	142	126	156	122	159	155	140	198	183	141	151	186
with multiple institutions	40	65	69	98	85	82	102	81	103	106	108	134	126	109	95	135
with domestic institutions only	27	48	46	47	60	51	61	50	66	61	44	85	80	45	65	73
with international institutions	38	63	60	93	82	75	95	72	93	94	96	113	103	96	86	113

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	36	46	59	70	59	48	58	59	76	88	80	88	79	92	94	84
with multiple institutions	19	23	41	42	36	31	40	39	60	58	59	68	53	66	63	48
with domestic institutions only	18	25	21	31	25	20	23	25	22	32	24	25	30	29	34	38
with international institutions	18	21	38	39	34	28	35	34	54	56	56	63	49	63	60	46
Italy																
Total articles	507	555	613	708	799	800	915	820	924	946	920	1,182	1,169	1,153	1,086	1,183
with multiple institutions	291	298	366	442	466	472	572	532	591	635	602	789	801	810	755	813
with domestic institutions only	296	326	376	390	494	470	498	458	511	506	506	627	606	603	531	590
with international institutions	211	229	237	318	305	330	417	362	413	440	414	555	563	550	555	593
Netherlands																
Total articles	186	188	204	257	243	211	288	227	243	240	221	260	284	249	265	246
with multiple institutions	102	105	137	177	159	141	204	149	167	166	154	180	198	188	207	178
with domestic institutions only	99	100	82	109	115	89	109	91	105	89	89	104	110	85	80	92
with international institutions	87	88	122	148	128	122	179	136	138	151	132	156	174	164	185	154
Poland																
Total articles	146	194	234	238	291	273	305	301	298	273	351	404	442	411	439	428
with multiple institutions	79	87	125	131	146	151	168	187	155	162	173	223	228	237	238	235
with domestic institutions only	75	119	123	132	166	146	165	141	169	135	210	218	259	221	242	230
with international institutions	71	75	111	106	125	127	140	160	129	138	141	186	183	190	197	198
Portugal																
Total articles	36	53	48	59	96	98	121	99	142	136	123	182	209	188	230	209
with multiple institutions	25	34	31	37	51	60	80	74	93	92	82	127	149	136	172	164
with domestic institutions only	13	24	18	29	56	48	62	39	78	67	60	84	104	88	99	88
with international institutions	23	29	30	30	40	50	59	60	64	69	63	98	105	100	131	121
Spain																
Total articles	370	410	540	644	653	619	770	700	753	774	822	1,011	996	949	876	954
with multiple institutions	204	208	294	369	367	363	487	409	497	503	552	669	703	672	657	680
with domestic institutions only	232	273	340	386	386	369	423	414	405	417	436	535	477	450	378	451
with international institutions	138	137	200	258	267	250	347	286	348	357	386	476	519	499	498	503
Sweden																
Total articles	117	153	183	189	166	177	217	217	227	225	223	248	243	228	199	204
with multiple institutions	61	73	106	115	86	113	136	134	122	122	134	162	165	149	137	142
with domestic institutions only	67	92	91	95	96	81	102	111	122	126	104	120	107	103	84	83
with international institutions	50	61	92	94	70	96	115	106	105	99	119	128	136	125	115	121
United Kingdom																
Total articles	745	878	941	1,018	996	963	1,057	965	1,060	1,163	1,179	1,344	1,356	1,248	1,363	1,310
with multiple institutions	373	445	518	568	546	567	626	585	655	694	710	845	856	781	891	870
with domestic institutions only	458	532	535	548	553	488	539	471	494	581	569	625	615	579	596	554
with international institutions	287	346	406	470	443	475	518	494	566	582	610	719	741	669	767	756

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	50	67	65	73	102	62	76	95	81	91	97	144	153	126	134	132
with multiple institutions	30	33	40	45	67	43	59	67	57	49	66	100	119	84	94	105
with domestic institutions only	25	39	42	37	50	26	28	40	32	49	44	62	51	52	51	43
with international institutions	25	28	23	36	52	36	48	55	49	42	53	82	102	74	83	89
Russia																
Total articles	331	411	398	580	670	672	696	641	701	436	700	710	664	618	543	722
with multiple institutions	130	177	205	269	288	286	320	300	329	239	288	311	313	307	296	372
with domestic institutions only	218	253	209	354	433	432	427	396	429	218	492	456	412	369	303	473
with international institutions	113	158	189	226	237	240	269	245	272	218	208	254	252	249	240	249
Switzerland																
Total articles	113	139	162	170	164	204	209	190	235	225	217	263	276	215	292	331
with multiple institutions	62	81	99	110	91	122	139	117	151	134	141	178	176	145	209	239
with domestic institutions only	54	59	69	65	80	86	74	80	92	94	83	93	107	79	90	98
with international institutions	59	80	93	105	84	118	135	110	143	131	134	170	169	136	202	233
Iran																
Total articles	10	25	30	28	45	36	52	69	88	83	141	189	216	212	225	267
with multiple institutions	2	7	13	16	35	22	33	46	55	49	71	103	112	122	134	172
with domestic institutions only	8	22	23	19	32	29	33	51	59	66	108	149	162	144	157	176
with international institutions	2	3	7	9	13	7	19	18	29	17	33	40	54	68	68	91
Israel																
Total articles	274	321	344	370	377	350	399	322	363	399	332	462	406	357	400	374
with multiple institutions	168	180	223	238	243	247	262	206	229	266	223	284	265	242	272	252
with domestic institutions only	127	168	149	161	163	140	172	135	166	176	148	232	178	148	160	161
with international institutions	147	153	195	209	214	210	227	187	197	223	184	230	228	209	240	213
Saudi Arabia																
Total articles	22	17	16	14	27	28	24	18	28	34	34	55	60	85	111	118
with multiple institutions	4	6	5	6	9	13	13	9	17	20	16	34	38	63	90	91
with domestic institutions only	19	11	13	9	20	16	11	9	14	14	18	23	24	25	24	28
with international institutions	3	6	3	5	7	12	13	9	14	20	16	32	36	60	87	90
Turkey																
Total articles	28	39	50	55	71	55	83	104	121	146	166	197	195	165	197	151
with multiple institutions	19	18	27	29	39	26	42	50	51	68	84	95	99	86	111	96
with domestic institutions only	12	24	26	27	38	32	48	67	84	104	107	131	135	113	124	82
with international institutions	16	15	24	28	33	23	35	37	37	42	59	66	60	52	73	69
Egypt																
Total articles	11	18	14	19	9	20	22	26	33	30	36	42	32	29	34	27
with multiple institutions	5	4	9	11	2	10	11	17	19	15	23	20	20	20	27	18
with domestic institutions only	6	15	6	8	8	10	14	13	20	21	20	25	16	12	19	11
with international institutions	5	3	8	11	1	10	8	13	13	9	16	17	16	17	15	16

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	34	47	62	64	56	62	62	49	54	69	82	85	96	59	86	85
with multiple institutions	19	29	20	36	35	36	45	34	33	42	55	54	62	35	60	57
with domestic institutions only	17	21	45	30	25	28	21	16	28	32	40	37	40	27	30	32
with international institutions	17	26	17	34	31	34	41	33	26	37	42	48	56	32	56	53
China																
Total articles	501	608	689	853	997	1,017	1,299	1,392	1,548	1,746	2,072	2,678	2,927	2,748	2,900	2,769
with multiple institutions	237	316	382	462	594	620	784	878	962	1,080	1,281	1,637	1,872	1,741	1,891	1,841
with domestic institutions only	347	409	436	560	652	659	838	916	1,034	1,167	1,463	1,905	2,044	1,920	2,008	1,855
with international institutions	154	199	253	293	345	358	461	476	514	579	609	773	883	828	892	914
India																
Total articles	134	149	180	179	175	173	201	206	214	215	231	280	330	291	302	296
with multiple institutions	52	82	92	84	95	88	96	102	122	126	115	162	206	173	175	167
with domestic institutions only	102	99	112	118	101	112	130	132	126	126	155	176	186	175	177	183
with international institutions	32	50	68	61	74	61	71	74	88	89	76	104	144	116	125	113
Japan																
Total articles	419	590	627	739	889	709	881	797	762	815	791	972	936	899	901	906
with multiple institutions	146	222	263	329	363	334	408	376	329	403	380	467	485	455	451	509
with domestic institutions only	344	468	495	563	687	518	648	585	553	539	561	710	638	621	620	589
with international institutions	75	122	132	176	202	191	233	212	209	276	230	262	298	278	281	317
Singapore																
Total articles	60	67	88	102	125	127	136	125	118	139	142	161	123	129	123	125
with multiple institutions	27	38	50	68	70	84	92	94	76	106	107	128	95	102	95	93
with domestic institutions only	36	33	40	36	59	61	60	48	53	49	53	62	35	39	36	40
with international institutions	24	34	48	66	66	66	76	77	65	90	89	99	88	90	87	85
South Korea																
Total articles	111	158	174	204	233	240	314	271	324	343	366	428	413	395	459	466
with multiple institutions	61	91	89	102	134	137	194	167	195	205	223	281	268	243	318	343
with domestic institutions only	70	94	113	143	140	150	182	167	184	201	210	247	230	240	249	230
with international institutions	41	64	61	61	93	90	132	104	140	142	156	181	183	155	210	236
Taiwan																
Total articles	123	160	164	192	212	184	197	211	222	246	253	359	372	341	271	280
with multiple institutions	43	73	80	105	119	110	130	130	153	161	164	243	255	229	176	198
with domestic institutions only	96	107	104	121	136	109	109	115	120	144	145	199	200	177	141	148
with international institutions	27	53	60	71	76	75	88	96	102	102	108	160	172	164	130	132
Australia																
Total articles	294	326	350	362	356	331	339	368	381	349	344	408	426	377	405	422
with multiple institutions	167	189	190	204	228	226	232	240	260	237	240	292	298	260	299	305
with domestic institutions only	144	155	186	184	156	125	129	155	144	134	129	141	163	140	132	159
with international institutions	150	171	164	178	200	206	210	213	237	215	215	267	263	237	273	263

Appendix table 5-47

S&E articles in mathematics, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	59	67	57	70	75	81	67	82	72	94	71	88	84	93	91	95
with multiple institutions	39	42	43	40	44	48	42	54	53	68	53	72	58	74	76	72
with domestic institutions only	24	28	18	32	34	38	28	33	21	29	19	17	30	24	21	27
with international institutions	35	39	39	38	41	43	39	49	51	65	52	71	54	69	70	68

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	4,406	4,746	5,071	5,351	5,709	5,628	6,217	6,017	6,709	7,198	7,393	8,146	8,243	8,556	9,046	9,583
with multiple institutions	2,083	2,356	2,493	2,573	2,841	2,913	3,289	3,209	3,614	3,940	4,133	4,724	4,865	5,138	5,574	6,020
with domestic institutions only	3,587	3,780	3,990	4,355	4,517	4,352	4,821	4,713	5,239	5,559	5,647	6,126	6,160	6,229	6,399	6,624
with international institutions	819	966	1,081	996	1,192	1,276	1,396	1,304	1,470	1,639	1,746	2,020	2,083	2,327	2,647	2,959
Canada																
Total articles	268	266	267	293	312	319	400	351	424	490	481	517	601	523	556	585
with multiple institutions	161	181	187	175	218	211	259	218	278	350	328	362	394	358	396	411
with domestic institutions only	145	130	109	166	143	145	193	171	216	225	236	231	286	241	239	241
with international institutions	123	136	158	127	169	174	207	180	208	265	245	286	315	282	317	344
Mexico																
Total articles	9	12	8	13	20	24	30	26	16	21	34	20	44	35	37	45
with multiple institutions	5	8	5	5	14	20	23	20	14	13	22	16	31	29	27	28
with domestic institutions only	4	5	3	9	9	6	12	13	8	10	17	9	22	16	20	23
with international institutions	5	7	5	4	11	18	18	13	8	11	17	11	22	19	17	22
United States																
Total articles	2,176	2,253	2,290	2,380	2,430	2,340	2,654	2,518	2,783	2,952	2,765	2,835	2,786	2,702	2,741	2,980
with multiple institutions	1,252	1,402	1,378	1,399	1,497	1,467	1,665	1,587	1,762	1,917	1,783	1,953	1,913	1,863	1,975	2,170
with domestic institutions only	1,673	1,639	1,714	1,767	1,740	1,668	1,868	1,821	1,995	2,095	1,887	1,855	1,819	1,666	1,616	1,675
with international institutions	503	614	576	613	690	672	786	697	788	857	878	980	967	1,036	1,125	1,305
Argentina																
Total articles	5	3	3	4	12	13	8	7	15	10	10	15	18	12	17	22
with multiple institutions	3	2	2	4	6	8	6	6	13	9	7	13	14	11	13	19
with domestic institutions only	3	1	1	0	7	6	2	2	4	7	6	5	10	5	7	8
with international institutions	2	2	2	4	5	7	6	5	11	3	4	10	8	7	10	14
Brazil																
Total articles	22	22	29	40	41	50	61	55	61	79	72	85	89	94	107	121
with multiple institutions	19	16	22	31	27	36	46	48	44	58	50	65	66	67	80	93
with domestic institutions only	9	7	8	17	24	21	29	19	34	44	38	35	52	64	61	66
with international institutions	13	15	21	23	17	29	32	36	27	35	34	50	37	30	46	55
Chile																
Total articles	11	8	8	13	12	11	18	17	19	8	23	28	21	20	36	32
with multiple institutions	5	5	7	11	6	9	15	15	15	8	19	23	14	17	31	30
with domestic institutions only	7	5	1	4	9	3	8	6	6	0	7	10	12	5	10	4
with international institutions	4	3	7	9	3	8	10	11	13	8	16	18	9	15	26	28
Austria																
Total articles	34	45	46	38	48	64	72	66	46	66	83	87	89	91	105	98
with multiple institutions	18	22	36	23	26	42	46	46	28	47	56	64	64	69	76	69
with domestic institutions only	21	25	14	18	26	30	39	26	25	25	36	28	42	39	34	41
with international institutions	13	20	32	20	22	34	33	40	21	41	47	59	47	52	71	57

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	72	55	69	40	72	68	97	68	79	102	114	108	118	106	135	130
with multiple institutions	46	36	38	18	45	41	57	42	41	67	70	69	72	76	101	99
with domestic institutions only	32	27	36	24	31	36	52	34	44	51	56	57	59	48	46	51
with international institutions	40	28	33	16	41	32	45	34	35	51	58	51	59	58	89	79
Czech Republic																
Total articles	17	16	21	24	31	31	45	43	46	41	54	72	79	78	96	87
with multiple institutions	10	11	12	12	19	18	27	33	28	24	35	48	53	55	55	50
with domestic institutions only	7	5	10	16	16	15	23	15	25	21	26	28	41	27	49	44
with international institutions	10	11	11	8	15	16	22	28	21	20	28	44	38	51	47	43
Denmark																
Total articles	42	33	45	37	52	43	45	55	40	57	49	52	46	49	57	88
with multiple institutions	29	20	27	27	34	32	27	40	28	36	28	29	32	35	43	65
with domestic institutions only	14	13	23	12	22	15	21	20	15	25	30	29	16	16	17	35
with international institutions	28	20	22	25	30	28	24	35	25	32	19	23	30	33	40	53
Finland																
Total articles	31	41	38	49	45	65	55	38	61	75	78	77	71	74	73	85
with multiple institutions	17	24	23	32	24	41	41	15	32	45	51	49	46	51	57	56
with domestic institutions only	18	26	22	33	30	38	25	30	39	46	40	43	36	37	33	40
with international institutions	13	15	16	16	15	27	30	8	22	29	38	34	35	37	40	45
France																
Total articles	242	245	262	292	313	377	399	342	393	458	409	513	527	526	636	621
with multiple institutions	138	140	138	164	183	230	252	213	259	311	289	372	396	412	516	499
with domestic institutions only	149	157	164	184	194	218	248	211	212	241	211	268	260	244	279	257
with international institutions	93	88	98	108	119	159	151	131	181	217	198	245	267	282	357	364
Germany																
Total articles	267	302	326	332	359	345	392	345	398	419	425	411	458	442	557	584
with multiple institutions	141	165	182	200	207	215	226	224	251	267	293	283	300	312	391	445
with domestic institutions only	162	176	189	183	190	176	219	173	200	211	204	197	232	198	239	221
with international institutions	105	126	137	149	169	169	173	172	198	208	221	214	226	244	318	363
Greece																
Total articles	35	40	58	61	61	87	89	91	95	119	124	140	140	166	140	143
with multiple institutions	18	18	29	35	28	50	46	58	57	81	82	89	96	118	92	96
with domestic institutions only	22	25	37	36	40	56	56	62	66	72	80	93	86	93	88	91
with international institutions	13	15	21	25	21	31	33	29	29	47	44	47	54	73	52	52
Hungary																
Total articles	30	39	47	30	37	50	43	24	41	32	36	43	31	38	52	37
with multiple institutions	21	24	23	22	20	35	34	17	27	22	22	22	22	23	36	29
with domestic institutions only	11	23	26	16	18	20	15	10	19	14	17	25	12	19	22	9
with international institutions	19	16	21	14	19	30	28	14	22	18	19	18	19	19	30	28

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	7	13	15	13	16	16	22	32	48	41	54	60	53	57	40	51
with multiple institutions	6	5	10	7	9	7	15	9	24	29	31	38	29	40	30	35
with domestic institutions only	4	9	6	7	8	10	8	26	33	21	30	31	33	23	15	17
with international institutions	3	4	9	6	8	6	14	6	15	20	24	29	20	34	25	34
Italy																
Total articles	193	234	296	259	300	298	298	291	289	340	349	407	401	379	406	404
with multiple institutions	117	159	184	157	187	196	205	178	173	196	220	243	256	247	269	275
with domestic institutions only	124	136	184	175	190	182	175	183	190	213	201	252	242	224	212	226
with international institutions	69	98	112	84	110	116	123	108	99	127	148	155	159	155	194	178
Netherlands																
Total articles	101	89	111	119	134	136	150	125	155	178	162	173	198	169	219	209
with multiple institutions	63	57	66	66	96	96	87	79	100	111	114	108	144	124	160	161
with domestic institutions only	59	41	63	66	72	62	86	65	85	95	80	95	102	75	101	73
with international institutions	42	48	48	53	62	74	64	60	70	83	82	78	96	94	118	136
Poland																
Total articles	25	44	31	36	47	55	49	58	52	63	40	64	82	88	81	111
with multiple institutions	15	22	19	17	28	28	31	36	35	33	22	39	51	45	57	72
with domestic institutions only	10	26	13	22	23	28	21	30	21	35	23	30	37	50	35	49
with international institutions	15	18	18	14	24	27	28	28	31	28	17	34	45	38	46	62
Portugal																
Total articles	9	17	14	19	23	26	40	34	40	39	37	47	47	65	62	80
with multiple institutions	5	7	9	13	16	13	28	19	27	24	22	38	30	46	47	58
with domestic institutions only	6	14	9	12	15	17	23	19	18	23	26	23	26	31	29	45
with international institutions	3	3	5	7	8	9	17	15	22	16	11	24	21	34	33	35
Spain																
Total articles	87	101	136	138	193	203	215	229	249	269	299	363	421	436	466	551
with multiple institutions	44	51	74	70	104	110	125	136	142	159	204	237	273	305	312	361
with domestic institutions only	54	68	82	102	142	131	142	158	157	169	171	222	258	251	283	307
with international institutions	33	33	54	36	51	72	73	71	92	100	128	141	163	185	183	244
Sweden																
Total articles	55	71	83	48	72	102	73	78	80	80	80	84	94	91	104	100
with multiple institutions	30	38	40	31	42	57	36	58	59	55	50	54	60	63	76	79
with domestic institutions only	37	45	51	23	37	50	53	29	29	41	48	35	41	42	43	33
with international institutions	18	26	32	25	35	52	20	49	51	39	32	49	53	49	61	67
United Kingdom																
Total articles	243	289	344	349	387	418	410	412	435	524	539	633	582	553	618	646
with multiple institutions	108	126	174	185	191	245	232	238	254	305	339	424	398	378	428	493
with domestic institutions only	161	199	220	221	254	238	235	250	244	295	291	301	270	244	269	242
with international institutions	82	90	124	128	133	180	175	162	191	229	248	332	312	309	349	404

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	31	15	34	30	33	29	29	48	55	67	46	55	76	83	66	105
with multiple institutions	14	9	24	15	19	17	14	32	36	45	34	43	54	57	59	83
with domestic institutions only	24	8	15	19	17	18	17	21	29	34	19	18	32	39	12	34
with international institutions	7	7	19	11	16	11	12	27	26	33	27	37	44	44	54	71
Russia																
Total articles	62	33	39	30	40	35	27	36	34	26	20	38	27	37	35	34
with multiple institutions	33	18	25	14	20	24	20	30	23	19	12	26	16	27	26	25
with domestic institutions only	35	17	18	16	23	14	8	8	11	7	9	14	11	10	12	11
with international institutions	27	16	21	14	17	21	19	28	23	19	11	24	16	27	23	23
Switzerland																
Total articles	48	58	61	58	82	61	92	90	117	137	150	175	155	176	174	248
with multiple institutions	27	34	33	38	50	43	59	58	71	94	113	123	117	142	127	190
with domestic institutions only	25	29	35	26	39	25	40	39	59	54	48	65	51	47	58	87
with international institutions	23	29	26	32	43	36	52	51	58	83	102	110	104	129	116	161
Iran																
Total articles	9	4	4	9	7	8	16	9	25	20	46	97	86	158	152	144
with multiple institutions	6	3	1	6	4	5	13	4	14	8	28	58	53	113	104	78
with domestic institutions only	3	1	3	5	5	5	7	6	16	15	29	69	63	103	90	103
with international institutions	6	3	1	4	2	3	9	3	9	5	17	28	23	55	62	41
Israel																
Total articles	158	196	174	178	167	190	186	179	215	212	222	260	277	262	246	247
with multiple institutions	100	134	126	125	107	121	124	114	131	127	143	160	186	192	157	182
with domestic institutions only	77	77	69	84	85	94	81	93	112	120	129	150	132	103	131	104
with international institutions	81	119	105	94	82	96	105	86	103	92	93	110	145	159	115	143
Saudi Arabia																
Total articles	7	15	7	11	8	9	8	5	6	12	8	12	8	26	48	74
with multiple institutions	5	9	5	4	3	4	5	1	4	7	7	10	6	25	43	65
with domestic institutions only	2	8	3	7	5	7	3	4	2	5	1	3	2	2	6	11
with international institutions	5	7	4	4	3	2	5	1	4	7	7	9	6	24	42	63
Turkey																
Total articles	17	25	24	44	26	39	39	53	59	69	111	115	106	162	160	149
with multiple institutions	7	15	12	24	9	20	20	38	35	41	59	62	61	84	104	91
with domestic institutions only	12	12	14	32	19	21	23	26	36	47	74	77	68	104	99	95
with international institutions	5	13	10	12	7	18	16	27	23	22	37	38	38	58	61	54
Egypt																
Total articles	17	21	21	15	18	13	9	11	13	16	15	39	37	41	32	25
with multiple institutions	2	13	13	5	7	8	3	6	7	10	9	23	23	23	22	19
with domestic institutions only	16	14	11	12	14	8	7	5	7	9	11	19	19	26	14	9
with international institutions	1	7	10	3	4	5	2	6	6	7	4	20	18	15	18	16

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	9	5	9	12	13	12	18	11	15	20	14	22	13	23	20	21
with multiple institutions	3	3	5	7	8	8	13	6	6	8	3	12	8	15	15	13
with domestic institutions only	7	2	4	8	8	7	12	8	12	13	11	15	6	12	7	11
with international institutions	2	3	5	4	5	5	6	3	3	7	3	7	7	11	13	10
China																
Total articles	156	242	281	285	392	437	473	574	637	658	926	1,136	1,214	1,585	1,775	1,971
with multiple institutions	89	136	150	145	246	252	305	378	424	438	612	760	879	1,096	1,291	1,477
with domestic institutions only	99	144	183	203	222	293	299	364	422	400	612	766	767	1,036	1,104	1,157
with international institutions	57	98	98	82	170	144	174	210	215	258	314	370	447	549	671	814
India																
Total articles	96	121	112	106	119	105	110	116	118	149	149	188	161	203	223	229
with multiple institutions	41	62	52	49	60	71	69	63	74	98	93	107	97	125	149	162
with domestic institutions only	71	84	80	74	77	59	73	76	72	83	94	125	102	126	124	120
with international institutions	25	37	32	32	42	46	37	40	46	66	55	63	59	77	99	109
Japan																
Total articles	192	242	256	264	252	266	261	236	250	229	236	219	238	217	222	271
with multiple institutions	96	138	156	145	159	165	170	140	155	144	157	158	163	157	161	203
with domestic institutions only	144	175	159	185	166	164	169	160	167	160	149	124	142	117	113	137
with international institutions	48	67	97	79	86	102	92	76	83	69	87	95	96	100	109	134
Singapore																
Total articles	46	49	95	60	95	100	112	109	150	160	138	172	150	169	196	256
with multiple institutions	26	23	62	29	59	61	62	64	94	96	103	126	120	129	158	204
with domestic institutions only	22	31	39	35	46	52	66	59	83	88	58	76	53	55	55	73
with international institutions	24	18	56	25	49	48	46	50	67	72	80	96	97	114	141	183
South Korea																
Total articles	96	135	116	137	185	149	186	180	228	226	249	304	301	402	394	427
with multiple institutions	68	94	69	90	109	89	118	117	154	139	165	212	208	285	271	298
with domestic institutions only	56	79	77	92	134	101	126	119	151	151	155	176	199	244	232	242
with international institutions	40	56	39	45	51	48	60	61	77	75	94	128	102	158	162	185
Taiwan																
Total articles	177	213	214	243	242	199	226	237	262	243	351	378	347	355	365	405
with multiple institutions	83	89	102	109	118	100	118	120	145	143	192	248	212	227	213	265
with domestic institutions only	140	171	171	203	206	169	180	200	220	206	304	316	293	277	298	322
with international institutions	37	42	43	40	36	30	46	37	42	37	47	62	54	78	67	83
Australia																
Total articles	112	114	137	140	144	144	151	140	152	185	177	188	246	233	305	336
with multiple institutions	67	66	82	79	87	87	104	89	113	124	122	129	188	181	235	264
with domestic institutions only	71	62	66	87	71	71	73	73	63	90	75	85	101	91	105	117
with international institutions	41	52	71	53	73	73	78	67	89	95	102	103	145	142	200	219

Appendix table 5-48

S&E articles in computer sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	10	23	21	12	19	31	30	22	22	35	27	31	31	29	40	40
with multiple institutions	6	13	13	11	10	15	20	10	16	23	17	27	24	18	32	29
with domestic institutions only	4	12	9	3	9	18	15	13	10	15	13	8	10	12	17	14
with international institutions	6	11	12	9	10	13	15	9	12	20	14	23	21	17	23	26

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	12,189	12,533	11,888	13,430	12,551	13,957	14,435	13,622	15,788	16,686	16,920	18,626	18,244	17,798	18,834	19,360
with multiple institutions	5,706	6,084	5,894	6,991	6,699	7,613	8,290	8,067	9,476	10,339	10,700	12,150	12,493	12,301	13,065	13,590
with domestic institutions only	10,656	10,846	10,216	11,329	10,540	11,700	11,918	11,238	12,838	13,435	13,487	14,709	14,204	13,882	14,398	14,855
with international institutions	1,533	1,687	1,672	2,101	2,011	2,257	2,517	2,384	2,950	3,251	3,433	3,917	4,040	3,916	4,436	4,505
Canada																
Total articles	913	950	858	932	837	893	934	869	967	968	1,138	1,131	1,174	1,047	1,086	1,114
with multiple institutions	491	524	481	582	533	561	636	568	639	674	784	808	874	775	796	852
with domestic institutions only	722	748	691	697	624	644	656	605	661	635	777	729	731	650	662	666
with international institutions	191	202	167	235	213	249	278	264	306	333	361	402	443	397	424	448
Mexico																
Total articles	105	98	87	130	127	154	180	172	190	237	239	220	220	228	261	254
with multiple institutions	75	76	68	101	98	108	146	145	153	204	208	182	191	188	225	220
with domestic institutions only	50	44	41	57	72	87	80	76	81	101	81	102	101	119	115	132
with international institutions	55	54	46	73	55	67	100	96	109	136	158	118	119	109	146	122
United States																
Total articles	3,877	3,760	3,084	4,030	3,552	4,328	4,368	3,937	4,046	4,508	4,218	4,517	4,161	4,031	4,127	4,171
with multiple institutions	2,089	1,989	1,731	2,300	2,032	2,547	2,710	2,508	2,697	3,031	2,903	3,126	3,042	2,931	3,032	3,112
with domestic institutions only	3,326	3,176	2,528	3,266	2,862	3,527	3,450	3,130	3,096	3,454	3,095	3,249	2,896	2,814	2,754	2,761
with international institutions	551	584	556	764	690	801	918	807	950	1,054	1,123	1,268	1,265	1,217	1,373	1,410
Argentina																
Total articles	132	121	138	137	166	219	163	174	230	235	235	270	247	280	286	327
with multiple institutions	73	62	81	95	107	139	112	126	161	170	168	210	202	216	241	264
with domestic institutions only	102	97	108	102	125	162	103	116	153	158	156	189	161	203	182	211
with international institutions	30	24	30	35	41	57	60	58	77	77	79	81	86	77	104	116
Brazil																
Total articles	123	180	157	181	175	283	284	273	343	419	432	476	561	545	697	792
with multiple institutions	88	143	120	140	128	201	223	209	254	321	341	368	450	434	557	647
with domestic institutions only	58	83	80	96	92	166	161	162	226	271	263	309	351	371	468	547
with international institutions	65	97	77	85	83	117	123	111	117	148	169	167	210	174	229	245
Chile																
Total articles	19	15	24	22	24	49	36	64	56	72	77	82	100	79	111	117
with multiple institutions	12	11	12	16	18	30	28	53	41	61	62	66	81	73	93	98
with domestic institutions only	9	8	16	11	9	26	17	28	30	30	30	38	44	28	47	53
with international institutions	10	7	8	11	15	23	19	36	26	42	47	44	56	51	64	64
Austria																
Total articles	58	55	64	74	83	85	72	58	94	122	99	108	139	144	156	136
with multiple institutions	35	30	40	44	57	69	55	48	80	93	80	89	114	117	135	121
with domestic institutions only	35	36	39	43	37	33	33	28	36	54	46	41	50	54	44	36
with international institutions	23	19	25	31	46	52	39	30	58	68	53	67	89	90	112	100

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	153	166	185	207	191	192	248	272	335	367	344	369	337	337	351	359
with multiple institutions	91	101	107	119	116	119	162	173	240	268	252	295	276	286	303	315
with domestic institutions only	97	100	110	130	116	113	153	156	181	187	174	187	153	162	161	166
with international institutions	56	66	75	77	75	79	95	116	154	180	170	182	184	175	190	193
Czech Republic																
Total articles	34	40	35	42	41	57	59	66	70	86	90	105	132	108	119	123
with multiple institutions	22	23	19	22	29	42	37	49	45	63	66	73	92	71	87	92
with domestic institutions only	22	25	24	30	25	31	36	30	45	54	62	75	88	65	72	72
with international institutions	12	15	11	12	16	26	23	36	25	32	28	30	44	43	47	51
Denmark																
Total articles	172	234	224	281	257	244	314	278	310	308	364	321	291	312	368	381
with multiple institutions	87	123	145	190	146	155	223	187	198	223	250	244	222	235	300	308
with domestic institutions only	119	170	146	171	179	168	199	191	200	180	215	180	141	169	177	174
with international institutions	53	64	78	110	78	76	115	87	110	128	149	141	150	143	191	207
Finland																
Total articles	120	120	109	141	138	170	140	137	151	170	164	157	177	169	145	169
with multiple institutions	62	69	71	92	86	109	87	96	114	126	131	125	144	133	112	139
with domestic institutions only	89	84	69	83	96	115	96	91	101	110	114	90	92	100	79	79
with international institutions	31	36	40	58	42	55	44	46	50	60	50	67	85	69	66	90
France																
Total articles	533	601	572	695	644	653	597	705	698	779	803	831	888	823	818	821
with multiple institutions	317	360	375	430	414	440	407	502	524	614	655	661	747	727	706	728
with domestic institutions only	390	430	399	462	433	426	384	441	428	437	409	463	478	365	375	392
with international institutions	143	171	173	233	211	227	213	264	270	342	394	368	410	458	443	429
Germany																
Total articles	733	775	748	837	787	843	772	729	988	973	872	963	995	1,002	1,095	1,100
with multiple institutions	329	364	362	457	444	479	431	442	576	627	601	662	697	711	807	771
with domestic institutions only	566	570	557	569	517	547	510	488	646	586	497	561	568	574	583	623
with international institutions	167	205	191	268	270	296	262	241	342	387	375	402	427	428	512	477
Greece																
Total articles	93	87	106	124	146	152	158	151	219	250	230	229	220	194	174	210
with multiple institutions	51	52	54	60	82	77	95	99	138	143	142	159	155	138	121	153
with domestic institutions only	72	57	88	97	110	121	116	104	173	195	171	172	157	129	107	146
with international institutions	21	30	18	27	36	31	42	47	46	55	59	57	63	65	67	64
Hungary																
Total articles	35	50	44	50	41	56	57	36	94	77	51	55	83	64	60	60
with multiple institutions	25	32	35	37	31	44	34	24	77	56	42	47	66	53	51	48
with domestic institutions only	17	33	21	36	20	31	36	19	47	39	17	18	44	27	23	29
with international institutions	18	17	23	14	21	25	21	17	47	38	34	37	39	37	37	31

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	87	133	140	170	165	170	139	131	184	242	219	267	269	267	257	281
with multiple institutions	54	88	77	115	112	113	94	78	127	154	153	192	206	197	201	237
with domestic institutions only	57	98	117	103	114	122	93	95	112	157	114	156	165	188	147	145
with international institutions	30	35	23	67	51	48	46	36	72	85	105	111	104	79	110	136
Italy																
Total articles	280	336	302	371	382	451	466	511	620	598	715	874	888	899	947	950
with multiple institutions	173	217	196	228	241	319	303	331	413	393	501	598	658	656	695	719
with domestic institutions only	198	237	206	271	271	306	347	369	455	415	498	588	564	597	584	605
with international institutions	82	99	96	100	111	145	119	142	165	183	217	286	324	302	363	345
Netherlands																
Total articles	390	424	372	433	346	374	433	382	440	448	470	440	441	402	498	477
with multiple institutions	234	276	232	296	232	266	312	297	355	356	383	369	386	348	429	406
with domestic institutions only	247	262	233	235	181	217	260	204	203	204	225	204	168	168	202	193
with international institutions	143	162	139	198	165	157	173	178	237	244	245	236	273	234	296	284
Poland																
Total articles	89	118	107	125	105	153	156	152	221	186	222	247	234	236	254	334
with multiple institutions	54	69	57	84	70	79	91	81	124	116	127	146	158	149	171	200
with domestic institutions only	52	70	70	69	57	100	105	109	149	121	149	171	143	156	177	227
with international institutions	37	48	37	56	48	53	51	43	72	65	73	76	91	80	77	107
Portugal																
Total articles	64	80	74	94	91	101	114	111	141	174	189	203	220	226	282	250
with multiple institutions	40	51	42	61	66	63	84	84	107	129	141	161	185	184	231	217
with domestic institutions only	36	47	50	60	47	58	58	67	81	108	111	120	128	122	157	137
with international institutions	28	33	24	34	44	43	56	44	60	66	78	83	92	104	125	113
Spain																
Total articles	596	636	660	726	675	829	904	931	1,117	1,251	1,263	1,458	1,507	1,400	1,560	1,584
with multiple institutions	236	277	279	356	329	440	479	479	597	712	722	866	963	933	1,077	1,055
with domestic institutions only	506	530	558	578	551	626	683	714	856	941	944	1,054	1,067	930	1,008	1,027
with international institutions	90	106	102	148	124	203	221	217	261	310	319	404	440	470	552	557
Sweden																
Total articles	180	215	199	261	196	206	228	211	239	207	241	226	216	204	263	246
with multiple institutions	94	119	126	176	136	129	169	141	175	153	185	173	166	168	203	204
with domestic institutions only	120	142	119	148	105	109	113	120	125	104	109	103	110	87	118	92
with international institutions	60	73	80	113	91	97	115	91	114	103	132	123	106	117	145	154
United Kingdom																
Total articles	945	1,068	1,020	1,071	930	888	937	774	875	829	912	920	825	762	783	764
with multiple institutions	498	596	539	647	587	552	631	546	619	591	690	704	659	601	614	601
with domestic institutions only	680	752	700	675	586	552	550	431	466	436	430	430	372	318	311	301
with international institutions	265	316	320	396	344	336	387	343	409	393	482	490	453	444	472	463

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	72	83	107	116	97	106	114	127	175	163	162	167	163	148	172	169
with multiple institutions	43	46	62	75	62	69	82	104	145	126	138	141	144	133	145	139
with domestic institutions only	46	59	67	69	54	63	74	76	95	86	86	88	79	76	93	85
with international institutions	26	24	40	47	43	43	40	51	80	77	76	79	84	72	79	84
Russia																
Total articles	354	205	175	192	177	179	59	29	34	46	43	35	37	23	29	27
with multiple institutions	71	69	57	70	65	54	37	25	30	41	40	34	34	20	26	21
with domestic institutions only	325	164	149	166	154	155	29	6	7	10	7	3	6	5	6	9
with international institutions	29	41	26	26	23	24	30	23	27	36	36	32	31	18	23	18
Switzerland																
Total articles	143	125	141	159	146	154	188	147	207	187	229	253	215	234	266	225
with multiple institutions	75	82	80	92	81	99	135	96	151	136	168	194	161	194	217	185
with domestic institutions only	84	69	74	91	96	85	96	71	102	82	93	102	90	79	80	78
with international institutions	59	56	67	68	50	69	92	76	105	105	136	151	125	155	186	147
Iran																
Total articles	11	11	10	20	19	32	60	63	76	135	166	209	231	262	279	323
with multiple institutions	9	8	8	15	12	16	40	44	53	102	121	147	173	198	195	241
with domestic institutions only	3	5	2	10	12	19	35	38	40	69	115	129	135	181	197	216
with international institutions	8	6	8	10	7	13	25	25	36	66	51	80	96	81	82	107
Israel																
Total articles	115	110	117	168	127	142	150	128	139	114	121	143	144	110	141	127
with multiple institutions	60	60	73	110	88	103	100	92	100	83	81	113	106	79	112	97
with domestic institutions only	87	84	71	95	68	87	84	74	84	68	82	70	91	69	76	84
with international institutions	28	26	46	73	59	55	66	54	55	46	39	73	53	41	65	43
Saudi Arabia																
Total articles	16	18	13	16	9	8	7	8	6	4	6	7	10	29	45	58
with multiple institutions	4	5	2	1	4	1	6	4	5	2	5	4	10	23	40	54
with domestic institutions only	14	14	13	15	7	7	2	5	4	2	2	4	1	8	7	11
with international institutions	2	4	-	1	2	1	5	3	2	2	4	3	9	21	38	47
Turkey																
Total articles	52	85	86	124	136	198	285	382	423	472	390	393	380	317	374	340
with multiple institutions	25	36	47	56	74	98	149	212	218	247	202	238	238	209	262	236
with domestic institutions only	41	73	57	98	103	153	212	299	343	397	322	314	284	251	292	252
with international institutions	11	12	29	26	33	45	73	83	80	75	68	79	96	66	82	88
Egypt																
Total articles	59	66	60	69	55	61	50	47	49	61	61	75	106	104	143	118
with multiple institutions	32	38	37	39	29	41	37	37	33	42	34	58	91	88	114	95
with domestic institutions only	38	44	35	38	38	38	20	20	24	33	40	32	38	42	52	38
with international institutions	21	22	25	31	17	23	30	27	25	28	21	43	68	62	91	80

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	61	59	62	73	60	79	88	90	110	107	109	116	129	133	141	161
with multiple institutions	38	37	36	43	37	45	62	58	64	72	75	77	86	87	108	123
with domestic institutions only	48	43	45	44	36	52	53	59	68	53	66	68	75	86	68	86
with international institutions	13	16	17	29	24	27	35	31	42	54	43	48	54	47	73	75
China																
Total articles	91	130	149	177	208	267	343	416	639	876	1,153	1,624	1,713	1,855	2,180	2,483
with multiple institutions	66	90	78	134	146	190	255	325	464	626	813	1,207	1,333	1,407	1,638	1,892
with domestic institutions only	34	59	89	82	103	131	166	221	386	556	783	1,081	1,112	1,219	1,478	1,755
with international institutions	57	71	60	95	105	136	177	195	253	320	370	543	601	636	702	728
India																
Total articles	258	266	299	334	306	307	336	340	394	530	595	565	548	571	573	579
with multiple institutions	86	96	114	126	126	132	139	150	189	249	295	267	269	317	328	308
with domestic institutions only	217	230	253	280	250	251	269	278	324	433	477	460	453	439	438	467
with international institutions	41	36	46	54	56	56	67	62	70	97	118	105	95	132	135	112
Japan																
Total articles	989	1,047	1,189	1,206	1,276	1,229	1,382	1,069	1,521	1,257	1,310	1,458	1,401	1,237	1,339	1,185
with multiple institutions	477	520	604	639	680	681	792	682	891	821	845	999	978	880	922	804
with domestic institutions only	879	928	1,058	1,052	1,090	1,068	1,188	895	1,260	1,011	1,051	1,143	1,119	1,000	1,056	921
with international institutions	110	119	131	154	186	161	194	174	261	246	259	315	282	237	283	264
Singapore																
Total articles	10	4	10	3	9	19	11	18	28	38	25	31	26	37	32	38
with multiple institutions	8	2	6	-	5	13	5	9	15	23	19	23	25	34	27	34
with domestic institutions only	4	3	4	3	5	10	6	10	14	21	9	11	9	14	10	15
with international institutions	6	1	6	-	4	9	5	8	14	17	16	20	17	23	22	23
South Korea																
Total articles	65	74	109	156	172	189	284	224	316	312	322	482	515	584	572	616
with multiple institutions	49	57	93	127	132	152	224	172	251	257	267	405	426	492	475	506
with domestic institutions only	39	44	61	88	101	125	168	146	186	187	191	288	347	385	397	417
with international institutions	26	30	48	68	71	64	116	78	130	125	131	194	168	199	175	199
Taiwan																
Total articles	72	84	105	111	135	163	153	162	205	233	266	266	325	343	366	308
with multiple institutions	32	42	44	54	85	100	98	102	137	157	208	219	277	302	316	260
with domestic institutions only	60	67	89	93	113	140	123	140	173	198	221	224	274	291	302	249
with international institutions	12	17	16	18	22	23	30	22	32	35	45	42	51	52	64	59
Australia																
Total articles	689	747	652	703	701	634	720	691	747	843	831	917	861	822	816	904
with multiple institutions	420	475	426	473	481	424	496	456	533	609	607	736	655	645	660	749
with domestic institutions only	561	584	515	536	548	473	545	517	550	601	577	574	560	517	486	507
with international institutions	128	163	137	167	153	161	175	174	197	242	254	343	301	305	330	397

Appendix table 5-49

S&E articles in agricultural sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	276	284	299	292	293	263	305	287	308	319	312	374	298	290	295	358
with multiple institutions	147	163	168	158	172	171	188	190	218	231	223	245	219	212	220	271
with domestic institutions only	216	212	250	225	220	179	211	207	198	187	182	236	161	175	170	212
with international institutions	60	72	49	67	73	84	94	80	110	132	130	138	137	115	125	146

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	140,943	145,934	146,185	145,113	147,473	143,704	153,913	147,658	164,000	154,310	156,877	165,129	161,957	155,694	159,687	165,912
with multiple institutions	79,643	84,171	86,486	87,114	91,437	90,480	99,356	97,104	109,729	105,802	109,737	117,635	117,741	114,862	120,152	126,026
with domestic institutions only	117,439	120,398	119,066	117,624	117,883	114,184	121,291	115,385	127,127	118,529	119,075	124,436	120,491	114,538	116,511	120,442
with international institutions	23,504	25,536	27,119	27,489	29,590	29,520	32,622	32,273	36,873	35,781	37,802	40,693	41,466	41,156	43,176	45,470
Canada																
Total articles	7,073	7,114	7,368	7,102	7,244	7,136	7,678	7,382	8,597	8,162	8,612	8,879	8,719	8,446	8,429	8,781
with multiple institutions	4,641	4,821	5,072	4,943	5,141	5,092	5,617	5,439	6,406	6,074	6,566	6,909	6,877	6,715	6,870	7,237
with domestic institutions only	4,586	4,569	4,623	4,453	4,364	4,268	4,485	4,167	4,820	4,501	4,648	4,703	4,463	4,271	4,064	4,160
with international institutions	2,487	2,545	2,745	2,649	2,880	2,868	3,193	3,215	3,777	3,661	3,964	4,176	4,256	4,175	4,365	4,621
Mexico																
Total articles	765	878	828	869	977	994	1,167	1,152	1,330	1,254	1,351	1,445	1,415	1,339	1,409	1,491
with multiple institutions	516	622	601	629	723	734	888	892	1,031	973	1,085	1,193	1,135	1,091	1,162	1,254
with domestic institutions only	443	498	485	475	523	571	645	621	721	662	682	712	706	642	674	723
with international institutions	322	380	343	394	454	423	522	531	609	592	669	733	709	697	735	768
United States																
Total articles	57,491	58,375	58,088	57,909	60,088	57,513	61,134	59,722	64,814	60,816	61,465	63,756	61,563	58,438	60,028	60,781
with multiple institutions	36,167	37,259	37,801	38,016	40,165	39,000	42,144	41,683	45,938	44,148	45,195	47,594	46,799	45,119	47,202	48,010
with domestic institutions only	45,960	45,878	44,825	44,301	45,475	42,934	45,161	43,630	46,706	43,246	42,903	43,886	41,430	38,340	38,830	38,603
with international institutions	11,531	12,497	13,263	13,608	14,613	14,579	15,973	16,092	18,108	17,570	18,562	19,870	20,133	20,098	21,198	22,178
Argentina																
Total articles	843	977	908	1,012	1,074	1,189	1,280	1,096	1,278	1,320	1,351	1,443	1,509	1,431	1,516	1,596
with multiple institutions	480	598	588	635	705	761	879	781	920	959	994	1,092	1,137	1,110	1,209	1,241
with domestic institutions only	591	641	583	662	666	757	758	622	704	735	735	815	852	794	847	926
with international institutions	252	336	325	350	408	432	522	474	574	585	616	628	657	637	669	670
Brazil																
Total articles	1,565	1,849	2,009	2,013	2,250	2,453	2,926	3,052	3,227	3,259	3,570	4,105	3,977	4,014	4,191	4,715
with multiple institutions	1,157	1,329	1,493	1,523	1,701	1,865	2,232	2,339	2,519	2,597	2,887	3,361	3,270	3,344	3,614	4,036
with domestic institutions only	947	1,166	1,247	1,203	1,465	1,612	1,959	2,010	2,111	2,159	2,333	2,717	2,631	2,621	2,664	3,017
with international institutions	618	683	762	810	785	841	967	1,042	1,116	1,100	1,237	1,388	1,346	1,393	1,527	1,698
Chile																
Total articles	288	304	325	312	336	380	412	411	520	447	494	550	550	542	560	602
with multiple institutions	203	216	234	227	257	291	331	328	417	377	422	470	475	483	513	542
with domestic institutions only	160	151	146	146	147	181	177	189	243	181	209	224	215	213	185	201
with international institutions	128	153	179	166	189	199	235	222	277	266	285	326	335	329	375	401
Austria																
Total articles	1,243	1,282	1,376	1,289	1,422	1,431	1,546	1,513	1,708	1,555	1,628	1,754	1,754	1,860	1,860	1,891
with multiple institutions	880	902	1,013	974	1,060	1,071	1,185	1,193	1,365	1,235	1,326	1,446	1,441	1,570	1,605	1,665
with domestic institutions only	616	624	677	589	636	628	648	601	685	591	582	605	589	602	576	569
with international institutions	627	658	699	700	786	803	898	912	1,023	964	1,046	1,149	1,165	1,258	1,284	1,322

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	2,121	2,103	2,260	2,082	2,216	2,164	2,360	2,331	2,726	2,307	2,455	2,700	2,690	2,695	2,843	2,919
with multiple institutions	1,548	1,540	1,698	1,581	1,702	1,708	1,874	1,847	2,211	1,870	2,059	2,295	2,365	2,411	2,526	2,646
with domestic institutions only	1,052	1,000	1,024	919	980	895	935	979	1,073	927	922	994	953	872	946	897
with international institutions	1,069	1,103	1,236	1,163	1,236	1,269	1,425	1,352	1,653	1,380	1,533	1,706	1,737	1,823	1,897	2,022
Czech Republic																
Total articles	735	739	783	833	889	893	1,026	1,027	1,186	1,084	1,253	1,382	1,375	1,409	1,351	1,433
with multiple institutions	537	531	556	618	669	671	819	810	953	884	1,026	1,157	1,142	1,187	1,169	1,246
with domestic institutions only	368	385	393	453	454	471	543	525	616	543	602	694	665	655	601	629
with international institutions	367	354	390	380	435	422	483	502	570	541	651	688	710	754	750	804
Denmark																
Total articles	1,754	1,815	1,894	1,937	1,996	1,930	2,079	2,004	2,106	2,062	2,074	2,234	2,202	2,264	2,323	2,473
with multiple institutions	1,232	1,278	1,395	1,423	1,486	1,467	1,574	1,555	1,674	1,684	1,750	1,902	1,896	1,950	2,049	2,187
with domestic institutions only	910	914	925	985	936	892	981	917	872	805	774	810	756	791	751	827
with international institutions	844	901	969	952	1,060	1,038	1,098	1,087	1,234	1,257	1,300	1,424	1,446	1,473	1,572	1,646
Finland																
Total articles	1,369	1,508	1,673	1,659	1,734	1,660	1,728	1,620	1,785	1,684	1,755	1,826	1,763	1,661	1,688	1,744
with multiple institutions	1,042	1,151	1,309	1,325	1,383	1,338	1,432	1,296	1,478	1,401	1,484	1,553	1,522	1,444	1,491	1,533
with domestic institutions only	798	883	927	903	957	887	886	867	901	850	779	864	774	669	698	661
with international institutions	571	625	746	756	777	773	842	753	884	834	976	962	989	992	990	1,083
France																
Total articles	9,564	9,871	10,008	9,629	9,796	9,299	9,693	9,035	10,045	9,101	9,225	9,761	9,588	8,981	9,109	9,205
with multiple institutions	6,513	6,982	7,178	6,987	7,369	7,008	7,532	7,094	8,116	7,422	7,783	8,397	8,355	8,000	8,140	8,386
with domestic institutions only	6,008	6,052	5,984	5,605	5,396	5,078	5,163	4,673	4,980	4,436	4,314	4,419	4,161	3,811	3,808	3,649
with international institutions	3,556	3,819	4,024	4,024	4,400	4,221	4,530	4,362	5,065	4,665	4,911	5,342	5,427	5,170	5,301	5,556
Germany																
Total articles	11,254	12,251	12,308	11,984	12,363	11,915	12,578	12,006	13,816	12,570	12,927	13,608	13,455	13,019	13,120	13,612
with multiple institutions	6,942	7,784	7,949	8,005	8,487	8,371	8,990	8,797	10,180	9,495	9,891	10,682	10,894	10,634	10,842	11,365
with domestic institutions only	6,933	7,409	7,249	6,960	6,800	6,501	6,725	6,236	7,063	6,164	6,161	6,335	5,977	5,552	5,515	5,654
with international institutions	4,321	4,842	5,059	5,024	5,563	5,414	5,853	5,770	6,753	6,406	6,766	7,273	7,478	7,467	7,605	7,958
Greece																
Total articles	481	582	535	653	715	727	760	805	924	998	1,027	1,155	1,081	1,039	980	1,063
with multiple institutions	323	404	373	439	503	502	559	588	712	742	827	886	876	821	813	897
with domestic institutions only	291	347	307	390	418	432	433	479	545	583	569	668	550	545	472	475
with international institutions	190	235	228	263	297	295	327	326	379	415	458	487	531	494	508	588
Hungary																
Total articles	578	693	793	704	770	745	832	800	956	860	856	984	905	779	975	922
with multiple institutions	417	520	601	555	616	611	684	686	793	724	739	845	790	676	855	782
with domestic institutions only	279	329	366	306	344	329	370	320	438	366	382	407	371	332	358	399
with international institutions	299	364	427	398	426	416	462	480	518	494	474	577	534	447	617	523

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	399	481	502	484	534	531	545	572	706	687	785	877	906	979	1,035	1,043
with multiple institutions	252	312	326	334	387	394	409	438	532	553	608	703	738	810	871	911
with domestic institutions only	230	259	291	255	261	251	271	257	343	296	331	345	352	390	408	397
with international institutions	169	222	211	229	273	280	274	315	363	391	454	532	554	589	627	646
Italy																
Total articles	5,373	5,620	5,751	5,628	5,658	5,785	6,294	5,990	6,992	6,455	6,812	7,194	7,141	6,666	6,653	7,057
with multiple institutions	3,979	4,236	4,441	4,334	4,449	4,559	5,041	4,743	5,691	5,307	5,594	5,907	6,028	5,657	5,735	6,131
with domestic institutions only	3,397	3,427	3,450	3,352	3,296	3,478	3,713	3,547	3,949	3,674	3,757	3,866	3,760	3,432	3,325	3,487
with international institutions	1,976	2,193	2,301	2,276	2,362	2,307	2,581	2,443	3,043	2,781	3,055	3,328	3,381	3,234	3,328	3,570
Netherlands																
Total articles	4,134	4,088	4,199	4,034	4,100	4,091	4,271	4,111	4,656	4,240	4,435	4,768	4,696	4,696	4,873	5,279
with multiple institutions	2,832	2,946	3,042	3,035	3,167	3,186	3,374	3,325	3,834	3,529	3,786	4,073	4,087	4,177	4,337	4,733
with domestic institutions only	2,426	2,242	2,231	2,067	2,087	1,995	2,035	1,921	2,101	1,860	1,811	1,947	1,829	1,752	1,794	1,793
with international institutions	1,708	1,846	1,968	1,967	2,013	2,096	2,236	2,190	2,555	2,380	2,624	2,821	2,867	2,944	3,079	3,486
Poland																
Total articles	868	961	1,011	1,091	1,096	1,217	1,506	1,319	1,598	1,644	1,630	1,682	1,632	1,675	1,779	1,869
with multiple institutions	564	636	667	732	772	845	1,065	956	1,122	1,230	1,204	1,237	1,260	1,252	1,400	1,461
with domestic institutions only	471	529	561	614	578	689	850	690	918	904	887	898	881	907	1,005	1,041
with international institutions	397	432	450	477	518	528	656	629	680	740	743	784	751	768	774	828
Portugal																
Total articles	382	372	482	562	654	651	834	801	917	987	1,010	1,141	1,254	1,170	1,327	1,523
with multiple institutions	287	303	385	462	512	537	682	671	776	824	870	980	1,098	1,025	1,179	1,370
with domestic institutions only	190	159	205	228	293	284	381	329	383	389	399	432	488	433	515	546
with international institutions	192	213	277	334	361	367	453	472	534	598	611	709	766	737	812	977
Spain																
Total articles	3,912	4,060	4,445	4,174	4,521	4,638	5,010	4,720	5,442	5,514	5,650	6,122	6,283	6,059	6,425	6,825
with multiple institutions	2,329	2,505	2,725	2,715	2,952	3,101	3,359	3,401	3,865	4,063	4,287	4,756	4,993	4,912	5,341	5,792
with domestic institutions only	2,710	2,684	2,988	2,727	2,904	2,938	3,185	2,850	3,230	3,222	3,141	3,300	3,341	3,073	3,106	3,207
with international institutions	1,202	1,376	1,457	1,447	1,617	1,700	1,825	1,870	2,212	2,292	2,509	2,822	2,942	2,986	3,319	3,618
Sweden																
Total articles	3,359	3,549	3,674	3,425	3,768	3,547	3,810	3,448	3,781	3,530	3,623	3,678	3,571	3,374	3,367	3,574
with multiple institutions	2,358	2,511	2,620	2,414	2,712	2,648	2,845	2,637	2,902	2,776	2,907	2,995	2,951	2,841	2,883	3,056
with domestic institutions only	1,877	1,927	1,946	1,774	1,911	1,711	1,802	1,609	1,711	1,527	1,477	1,489	1,319	1,180	1,091	1,167
with international institutions	1,482	1,622	1,728	1,651	1,857	1,836	2,008	1,839	2,070	2,003	2,146	2,189	2,252	2,194	2,276	2,407
United Kingdom																
Total articles	13,810	14,413	14,248	14,312	14,298	13,763	14,520	13,983	14,944	13,940	14,157	15,040	14,825	14,396	14,313	14,682
with multiple institutions	8,187	8,841	9,003	9,165	9,580	9,311	9,978	9,932	10,747	10,249	10,671	11,382	11,469	11,328	11,505	11,992
with domestic institutions only	8,919	9,073	8,661	8,524	8,087	7,641	7,937	7,317	7,572	6,822	6,588	6,863	6,555	6,099	5,821	5,612
with international institutions	4,891	5,340	5,587	5,788	6,211	6,122	6,583	6,666	7,372	7,118	7,569	8,177	8,270	8,297	8,492	9,070

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	880	933	975	1,005	1,120	1,043	1,103	1,068	1,228	1,245	1,276	1,311	1,329	1,299	1,397	1,400
with multiple institutions	599	690	696	732	823	804	869	837	982	1,048	1,061	1,105	1,153	1,129	1,256	1,264
with domestic institutions only	501	500	525	539	571	479	535	471	569	516	522	544	537	478	487	465
with international institutions	379	433	450	466	549	564	568	597	659	729	754	767	792	821	910	935
Russia																
Total articles	3,797	3,721	3,025	4,021	2,114	2,121	2,267	2,181	2,200	1,795	1,618	1,570	1,453	1,358	1,391	1,485
with multiple institutions	1,591	1,612	1,469	1,849	1,252	1,299	1,419	1,391	1,428	1,242	1,217	1,150	1,077	1,021	1,040	1,169
with domestic institutions only	2,886	2,769	2,098	3,005	1,235	1,209	1,264	1,229	1,219	898	741	694	639	593	637	655
with international institutions	911	952	927	1,016	879	912	1,003	952	981	897	877	876	814	765	754	830
Switzerland																
Total articles	3,074	3,034	3,259	3,160	3,167	3,074	3,249	3,194	3,531	3,420	3,528	3,725	3,803	3,776	3,953	4,167
with multiple institutions	2,027	2,104	2,249	2,177	2,250	2,221	2,394	2,396	2,699	2,698	2,858	3,085	3,149	3,229	3,387	3,598
with domestic institutions only	1,461	1,366	1,451	1,415	1,356	1,313	1,331	1,254	1,324	1,244	1,173	1,137	1,162	1,099	1,118	1,155
with international institutions	1,613	1,668	1,808	1,745	1,811	1,761	1,918	1,940	2,207	2,176	2,355	2,588	2,641	2,677	2,835	3,012
Iran																
Total articles	78	87	99	130	143	184	298	292	469	441	748	727	814	839	1,012	1,151
with multiple institutions	53	53	59	89	82	117	183	203	334	332	597	605	674	699	862	972
with domestic institutions only	53	50	69	87	104	125	210	202	312	309	478	453	530	537	657	771
with international institutions	25	37	30	43	39	59	88	90	157	132	270	274	284	302	355	380
Israel																
Total articles	1,756	1,793	1,761	1,860	1,906	1,871	2,068	1,951	1,948	1,817	1,906	2,019	1,874	1,794	1,819	1,857
with multiple institutions	1,248	1,281	1,262	1,351	1,424	1,389	1,563	1,514	1,494	1,395	1,453	1,597	1,472	1,465	1,482	1,502
with domestic institutions only	1,039	1,034	1,004	1,079	1,056	1,071	1,142	1,049	1,013	976	1,033	1,054	958	827	862	847
with international institutions	717	759	757	781	850	800	926	902	935	841	873	965	916	967	957	1,010
Saudi Arabia																
Total articles	158	143	131	119	149	130	154	115	113	112	123	143	184	304	484	635
with multiple institutions	90	77	77	77	103	77	97	79	70	83	86	121	164	282	443	602
with domestic institutions only	112	100	81	60	81	82	80	60	65	49	58	43	53	58	92	81
with international institutions	46	43	50	59	68	48	74	55	48	63	65	100	131	246	392	554
Turkey																
Total articles	391	458	501	524	582	817	1,045	1,139	1,329	1,274	1,273	1,239	1,151	1,124	1,200	1,255
with multiple institutions	280	318	361	366	409	573	787	851	977	950	973	918	873	895	987	1,031
with domestic institutions only	285	327	349	367	402	617	774	835	1,021	985	969	907	809	767	840	867
with international institutions	106	131	152	157	180	200	271	304	308	289	304	332	342	357	360	388
Egypt																
Total articles	205	225	240	236	273	291	311	246	302	287	289	343	429	475	598	703
with multiple institutions	132	147	153	155	185	203	221	161	231	219	225	271	367	404	511	589
with domestic institutions only	112	124	135	128	155	148	155	139	141	140	127	143	157	170	210	260
with international institutions	93	101	105	108	118	143	156	107	161	147	162	200	272	305	388	443

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	817	855	858	907	983	986	967	919	1,149	1,096	1,167	1,302	1,333	1,285	1,310	1,349
with multiple institutions	485	489	553	592	645	655	679	655	828	834	893	1,039	1,080	1,032	1,082	1,104
with domestic institutions only	570	578	539	553	566	553	472	434	561	496	506	531	502	515	477	475
with international institutions	247	277	319	354	417	433	495	485	588	600	661	771	831	770	833	874
China																
Total articles	1,583	2,184	2,557	2,664	3,164	3,485	4,593	5,086	7,065	8,147	9,313	11,190	12,948	14,104	15,791	18,673
with multiple institutions	963	1,275	1,552	1,677	2,032	2,261	3,100	3,538	5,061	6,073	7,051	8,545	10,077	11,036	12,519	14,923
with domestic institutions only	1,018	1,528	1,737	1,787	2,096	2,292	2,998	3,251	4,641	5,454	6,246	7,538	8,751	9,530	10,623	12,821
with international institutions	565	656	820	877	1,068	1,193	1,595	1,835	2,424	2,693	3,067	3,652	4,197	4,574	5,168	5,852
India																
Total articles	2,005	2,134	2,309	2,083	2,380	2,552	2,814	2,790	3,343	3,296	3,595	3,749	3,963	3,928	4,375	4,752
with multiple institutions	720	820	910	856	1,029	1,171	1,344	1,293	1,631	1,641	1,905	2,008	2,277	2,233	2,598	2,886
with domestic institutions only	1,725	1,801	1,977	1,723	1,957	2,064	2,321	2,293	2,695	2,604	2,864	2,970	3,090	3,032	3,347	3,599
with international institutions	280	333	332	360	423	488	493	497	648	692	731	779	873	896	1,028	1,153
Japan																
Total articles	13,089	14,355	14,306	14,167	14,587	14,060	14,719	13,581	14,434	13,470	13,182	13,528	12,788	11,716	11,746	11,696
with multiple institutions	8,351	9,199	9,503	9,640	10,163	9,932	10,681	10,012	10,867	10,176	10,168	10,617	10,079	9,365	9,454	9,526
with domestic institutions only	10,611	11,553	11,354	11,136	11,249	10,773	11,109	10,014	10,678	9,777	9,501	9,708	8,972	8,157	7,980	7,853
with international institutions	2,478	2,802	2,952	3,031	3,338	3,287	3,610	3,567	3,756	3,693	3,681	3,820	3,816	3,559	3,766	3,843
Singapore																
Total articles	247	264	339	337	402	442	534	607	754	774	769	854	981	1,068	1,061	1,233
with multiple institutions	127	143	183	185	244	276	396	440	574	599	616	672	802	888	931	1,065
with domestic institutions only	160	167	209	205	234	258	283	319	396	360	355	393	408	407	393	410
with international institutions	87	97	130	132	168	184	251	288	358	414	414	461	573	661	668	823
South Korea																
Total articles	856	1,236	1,502	1,700	1,985	2,203	2,640	2,926	3,494	3,483	3,595	3,992	4,167	4,473	4,856	5,469
with multiple institutions	633	895	1,114	1,295	1,542	1,793	2,205	2,473	2,906	2,960	3,070	3,372	3,549	3,864	4,157	4,712
with domestic institutions only	581	893	1,048	1,211	1,427	1,523	1,850	2,072	2,465	2,392	2,508	2,797	2,888	3,030	3,305	3,770
with international institutions	275	343	454	489	558	680	790	854	1,029	1,091	1,087	1,195	1,279	1,443	1,551	1,699
Taiwan																
Total articles	1,000	1,085	1,070	1,086	1,382	1,282	1,410	1,574	1,918	1,881	1,916	2,297	2,200	2,294	2,368	2,381
with multiple institutions	668	771	779	795	1,063	993	1,088	1,277	1,591	1,640	1,664	2,034	1,983	2,049	2,141	2,187
with domestic institutions only	792	852	817	817	1,026	971	1,080	1,187	1,448	1,422	1,411	1,670	1,618	1,665	1,653	1,706
with international institutions	208	233	253	269	356	311	330	387	470	459	505	627	582	629	715	675
Australia																
Total articles	4,400	4,721	4,717	4,704	4,835	4,861	5,086	4,921	5,521	5,368	5,584	5,982	6,079	6,057	6,344	6,644
with multiple institutions	2,619	2,828	2,884	3,047	3,336	3,320	3,620	3,645	4,169	4,097	4,359	4,827	4,987	5,062	5,315	5,658
with domestic institutions only	3,034	3,206	3,197	3,053	2,970	3,016	3,027	2,846	3,105	3,009	2,938	3,087	3,048	2,893	2,924	2,953
with international institutions	1,366	1,515	1,520	1,651	1,865	1,845	2,059	2,075	2,416	2,359	2,646	2,895	3,031	3,164	3,420	3,691

Appendix table 5-50

S&E articles in biological sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	824	995	942	1,045	1,018	971	1,075	974	1,246	1,169	1,164	1,251	1,260	1,394	1,322	1,443
with multiple institutions	447	578	554	621	612	615	724	666	869	815	870	972	949	1,077	1,024	1,123
with domestic institutions only	543	638	608	662	614	555	612	530	653	593	554	550	577	618	582	650
with international institutions	281	357	334	383	404	416	463	444	593	576	610	701	683	776	740	793

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	144,503	148,907	151,757	152,159	154,159	150,025	163,622	155,033	176,389	168,443	170,666	185,769	182,471	175,910	182,457	184,905
with multiple institutions	89,104	92,947	96,545	97,320	101,428	100,296	111,451	107,842	125,492	121,470	124,988	138,335	138,781	135,446	142,555	145,242
with domestic institutions only	127,642	130,910	132,519	131,876	132,281	127,720	138,281	130,007	146,601	138,662	139,189	149,840	145,155	138,694	142,678	143,903
with international institutions	16,861	17,997	19,238	20,283	21,878	22,305	25,341	25,026	29,788	29,781	31,477	35,929	37,316	37,216	39,779	41,002
Canada																
Total articles	6,786	6,795	7,324	7,192	7,184	7,143	8,022	7,691	9,085	9,065	9,358	10,342	10,589	10,291	10,621	10,745
with multiple institutions	4,930	5,020	5,406	5,409	5,551	5,517	6,236	6,062	7,335	7,383	7,728	8,659	9,030	8,920	9,230	9,397
with domestic institutions only	4,671	4,687	5,029	4,746	4,600	4,442	4,934	4,614	5,198	5,233	5,238	5,591	5,482	5,193	5,248	5,214
with international institutions	2,115	2,108	2,295	2,446	2,584	2,701	3,088	3,077	3,887	3,832	4,120	4,751	5,107	5,098	5,373	5,531
Mexico																
Total articles	399	468	583	611	618	606	647	623	701	788	719	862	784	805	814	899
with multiple institutions	274	324	434	435	487	449	503	483	564	635	588	709	647	691	701	776
with domestic institutions only	272	321	394	402	387	396	421	390	400	443	396	470	418	412	366	438
with international institutions	127	147	189	209	231	210	226	233	301	345	323	392	366	393	448	461
United States																
Total articles	56,486	57,065	57,616	57,181	59,264	57,304	62,934	60,380	68,305	65,161	66,098	71,864	69,960	67,284	71,225	70,557
with multiple institutions	37,470	38,380	39,152	39,171	41,445	40,451	45,216	44,110	50,926	49,008	50,471	55,621	55,175	53,524	57,356	57,381
with domestic institutions only	47,778	47,720	47,654	46,743	47,812	45,701	49,675	47,123	52,612	49,595	49,607	53,025	50,733	48,080	50,438	49,344
with international institutions	8,708	9,345	9,962	10,438	11,452	11,603	13,259	13,257	15,693	15,566	16,491	18,839	19,227	19,204	20,787	21,213
Argentina																
Total articles	569	576	639	694	683	677	656	617	696	665	700	729	807	839	857	850
with multiple institutions	331	356	389	451	490	459	471	460	512	525	536	575	659	688	697	714
with domestic institutions only	414	394	457	461	446	452	409	373	405	368	387	356	394	409	435	388
with international institutions	155	182	182	233	237	225	247	244	291	297	313	373	413	430	422	462
Brazil																
Total articles	967	1,146	1,277	1,369	1,557	1,708	2,056	2,126	2,675	2,906	3,168	4,299	4,067	3,994	4,015	4,781
with multiple institutions	695	828	927	954	1,157	1,306	1,519	1,594	2,028	2,236	2,484	3,443	3,276	3,347	3,391	3,940
with domestic institutions only	648	777	841	927	1,034	1,160	1,439	1,491	1,854	2,035	2,174	3,079	2,765	2,691	2,581	3,213
with international institutions	319	369	436	442	523	548	617	635	821	871	994	1,220	1,302	1,303	1,434	1,568
Chile																
Total articles	343	350	371	370	390	386	413	327	562	456	472	538	544	557	576	606
with multiple institutions	213	237	231	271	275	269	317	256	429	367	374	442	444	462	494	520
with domestic institutions only	257	247	263	253	244	258	258	189	372	278	307	306	320	279	296	293
with international institutions	86	103	108	117	146	128	155	138	190	178	165	232	224	278	280	313
Austria																
Total articles	1,760	2,011	1,973	2,045	2,173	2,095	2,339	2,178	2,402	2,193	2,340	2,469	2,438	2,286	2,554	2,624
with multiple institutions	1,262	1,393	1,444	1,511	1,629	1,583	1,822	1,755	1,968	1,760	1,892	2,089	2,041	1,995	2,250	2,328
with domestic institutions only	1,176	1,395	1,278	1,343	1,353	1,318	1,468	1,211	1,259	1,181	1,149	1,076	1,055	857	969	911
with international institutions	584	616	695	702	820	777	871	967	1,143	1,012	1,191	1,393	1,383	1,429	1,585	1,713

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	2,120	2,339	2,293	2,292	2,318	2,347	2,527	2,471	2,757	2,805	2,858	3,138	3,193	3,181	3,326	3,376
with multiple institutions	1,557	1,711	1,722	1,769	1,806	1,827	2,001	1,973	2,302	2,354	2,411	2,682	2,771	2,799	3,001	2,998
with domestic institutions only	1,222	1,364	1,242	1,232	1,183	1,135	1,245	1,162	1,217	1,157	1,194	1,248	1,196	1,085	1,062	1,087
with international institutions	898	975	1,051	1,060	1,135	1,212	1,282	1,309	1,540	1,648	1,664	1,890	1,997	2,096	2,264	2,289
Czech Republic																
Total articles	300	317	289	363	401	376	505	469	584	637	706	775	755	806	763	823
with multiple institutions	207	245	220	277	327	304	410	380	475	530	606	666	665	716	695	750
with domestic institutions only	173	150	154	210	216	191	279	243	304	338	378	379	354	379	340	348
with international institutions	127	167	135	153	185	185	226	226	280	299	328	396	401	427	423	475
Denmark																
Total articles	1,883	1,991	2,052	1,995	1,979	1,910	2,277	2,025	2,503	2,382	2,540	2,721	2,743	2,851	3,108	3,205
with multiple institutions	1,366	1,453	1,553	1,510	1,576	1,533	1,847	1,673	2,107	2,006	2,140	2,371	2,430	2,503	2,730	2,803
with domestic institutions only	1,211	1,238	1,279	1,194	1,123	1,106	1,273	1,077	1,276	1,182	1,237	1,257	1,232	1,308	1,478	1,478
with international institutions	672	753	773	801	856	804	1,004	948	1,227	1,200	1,303	1,464	1,511	1,543	1,630	1,727
Finland																
Total articles	2,120	1,946	2,120	2,173	2,121	1,974	2,135	2,000	2,175	2,027	1,940	2,152	2,036	1,993	1,968	1,943
with multiple institutions	1,701	1,579	1,755	1,820	1,821	1,720	1,889	1,787	1,978	1,825	1,767	1,972	1,887	1,834	1,841	1,798
with domestic institutions only	1,466	1,322	1,397	1,333	1,306	1,206	1,255	1,153	1,211	1,159	1,047	1,139	1,015	934	921	873
with international institutions	654	624	723	840	815	768	880	847	964	868	893	1,013	1,021	1,059	1,047	1,070
France																
Total articles	7,930	8,403	8,368	8,227	8,299	7,887	8,626	7,418	8,514	8,011	8,014	8,723	8,661	8,396	8,713	8,844
with multiple institutions	5,558	5,907	6,010	5,928	6,017	5,928	6,540	5,834	6,821	6,625	6,816	7,598	7,671	7,506	7,906	8,087
with domestic institutions only	5,832	6,146	6,070	5,798	5,787	5,296	5,702	4,613	5,221	4,750	4,587	4,913	4,656	4,302	4,349	4,276
with international institutions	2,098	2,257	2,298	2,429	2,512	2,591	2,924	2,805	3,293	3,261	3,427	3,810	4,005	4,094	4,364	4,568
Germany																
Total articles	11,740	12,950	13,165	13,703	13,983	13,544	14,782	13,919	15,935	14,938	15,304	15,974	16,302	15,640	15,618	15,872
with multiple institutions	7,116	7,832	8,283	8,622	9,224	9,259	10,313	9,904	11,703	11,213	11,721	12,462	12,927	12,698	12,883	13,128
with domestic institutions only	8,819	9,684	9,669	10,144	9,981	9,293	9,949	9,153	10,262	9,275	9,128	9,331	9,133	8,503	8,302	8,102
with international institutions	2,921	3,266	3,496	3,559	4,002	4,251	4,833	4,766	5,673	5,663	6,176	6,643	7,169	7,137	7,316	7,770
Greece																
Total articles	801	804	847	943	1,095	1,064	1,332	1,349	1,715	1,705	1,899	1,936	1,931	1,825	1,774	1,696
with multiple institutions	504	555	599	662	781	772	1,043	1,014	1,321	1,334	1,513	1,551	1,609	1,513	1,462	1,449
with domestic institutions only	573	594	593	671	762	718	857	913	1,137	1,120	1,188	1,170	1,059	1,030	939	804
with international institutions	228	210	254	272	333	346	475	436	578	585	711	766	872	795	835	892
Hungary																
Total articles	489	535	538	656	746	656	759	690	847	787	774	839	836	804	738	820
with multiple institutions	369	394	401	527	607	536	623	587	726	682	682	719	744	746	667	745
with domestic institutions only	233	277	271	344	384	318	371	320	388	378	341	386	337	284	268	277
with international institutions	256	258	267	312	362	338	388	370	459	409	433	453	499	520	470	543

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	557	499	515	557	552	576	633	689	702	787	822	980	1,014	1,045	1,087	1,066
with multiple institutions	368	325	367	381	370	413	463	539	546	622	647	796	864	902	940	919
with domestic institutions only	354	327	305	341	334	328	342	369	369	397	411	448	408	449	462	441
with international institutions	203	172	210	216	218	248	291	320	333	390	411	532	606	596	625	625
Italy																
Total articles	6,824	7,314	7,350	7,445	7,882	7,799	8,768	8,357	9,530	9,210	9,534	10,448	10,355	10,061	10,197	10,269
with multiple institutions	4,994	5,398	5,504	5,631	5,916	5,975	6,738	6,669	7,772	7,524	7,936	8,671	8,799	8,612	8,832	8,952
with domestic institutions only	5,116	5,311	5,233	5,334	5,496	5,427	6,062	5,627	6,240	6,007	6,016	6,418	6,124	5,716	5,594	5,546
with international institutions	1,708	2,003	2,117	2,111	2,386	2,372	2,706	2,730	3,290	3,203	3,518	4,030	4,231	4,345	4,603	4,723
Netherlands																
Total articles	5,049	5,005	5,058	5,065	5,113	5,142	5,871	5,789	6,784	6,744	6,840	7,588	7,845	7,812	8,117	8,585
with multiple institutions	3,730	3,813	3,890	4,029	4,127	4,202	4,819	4,784	5,750	5,727	5,907	6,600	6,939	6,979	7,326	7,802
with domestic institutions only	3,533	3,421	3,399	3,201	3,229	3,141	3,509	3,437	4,041	3,874	3,837	4,197	4,077	3,985	3,997	4,011
with international institutions	1,516	1,584	1,659	1,864	1,884	2,001	2,362	2,352	2,743	2,870	3,003	3,391	3,768	3,827	4,120	4,574
Poland																
Total articles	548	626	692	713	758	830	993	927	1,130	1,240	1,199	1,266	1,410	1,418	1,411	1,555
with multiple institutions	352	424	520	514	568	610	757	730	906	990	962	1,022	1,201	1,202	1,200	1,337
with domestic institutions only	352	379	395	417	451	508	588	515	607	629	646	674	703	695	704	702
with international institutions	196	247	297	296	307	322	405	412	523	611	553	592	707	723	707	853
Portugal																
Total articles	247	242	310	265	294	331	353	378	429	513	490	664	727	739	827	992
with multiple institutions	182	185	252	208	233	269	289	322	360	446	420	599	653	660	734	905
with domestic institutions only	138	142	163	130	135	146	164	173	197	208	208	252	294	305	342	442
with international institutions	109	100	147	135	159	185	189	205	232	305	282	412	433	434	485	550
Spain																
Total articles	3,179	3,514	3,562	3,772	3,732	3,749	3,923	3,935	4,650	4,719	4,731	5,663	5,431	5,611	5,986	6,051
with multiple institutions	2,152	2,415	2,495	2,612	2,646	2,751	2,980	3,005	3,566	3,746	3,809	4,628	4,585	4,828	5,215	5,317
with domestic institutions only	2,461	2,691	2,706	2,801	2,680	2,649	2,675	2,619	3,065	2,992	2,941	3,415	3,134	3,088	3,209	3,156
with international institutions	718	823	856	971	1,052	1,100	1,248	1,316	1,585	1,727	1,790	2,248	2,297	2,523	2,777	2,895
Sweden																
Total articles	4,321	4,273	4,308	4,218	4,253	4,097	4,334	3,910	4,647	4,224	4,423	4,574	4,591	4,488	4,529	4,619
with multiple institutions	3,273	3,214	3,338	3,201	3,378	3,297	3,536	3,225	3,871	3,570	3,799	3,969	4,007	4,011	4,051	4,176
with domestic institutions only	2,889	2,792	2,685	2,550	2,520	2,336	2,337	2,153	2,530	2,174	2,144	2,074	2,020	1,897	1,883	1,817
with international institutions	1,432	1,481	1,623	1,668	1,733	1,761	1,997	1,757	2,117	2,050	2,279	2,500	2,571	2,591	2,646	2,802
United Kingdom																
Total articles	15,360	15,471	16,284	16,529	16,168	15,743	16,737	16,117	18,010	17,064	17,240	18,250	17,774	17,400	17,927	18,624
with multiple institutions	8,914	9,200	9,953	10,277	10,329	10,360	11,262	11,125	12,740	12,347	12,708	13,796	13,764	13,679	14,564	15,075
with domestic institutions only	11,834	11,755	12,221	12,167	11,573	10,935	11,378	10,655	11,390	10,557	10,220	10,318	9,616	8,987	8,886	9,239
with international institutions	3,526	3,716	4,063	4,362	4,595	4,808	5,359	5,462	6,620	6,507	7,020	7,932	8,158	8,413	9,041	9,385

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	1,229	1,232	1,239	1,249	1,249	1,198	1,339	1,287	1,620	1,526	1,611	1,855	2,017	1,914	2,021	2,031
with multiple institutions	918	938	955	962	987	997	1,116	1,118	1,385	1,345	1,466	1,687	1,851	1,778	1,890	1,904
with domestic institutions only	750	750	757	774	718	646	707	658	859	785	754	879	892	848	868	851
with international institutions	479	482	482	475	531	552	632	629	761	741	857	976	1,125	1,066	1,153	1,180
Russia																
Total articles	700	742	717	783	596	711	673	613	844	725	711	766	812	768	782	760
with multiple institutions	309	377	378	423	368	434	431	411	528	453	446	511	506	491	507	508
with domestic institutions only	509	518	506	534	360	436	377	345	502	415	433	437	509	446	475	449
with international institutions	191	224	211	249	236	275	296	268	342	310	278	329	303	322	307	311
Switzerland																
Total articles	2,916	3,088	3,198	3,334	3,157	3,119	3,466	3,388	3,900	3,881	4,061	4,408	4,534	4,413	4,730	4,796
with multiple institutions	1,930	2,082	2,260	2,311	2,372	2,407	2,696	2,698	3,153	3,177	3,344	3,773	3,932	3,897	4,231	4,305
with domestic institutions only	1,737	1,808	1,767	1,939	1,581	1,464	1,591	1,511	1,710	1,647	1,618	1,661	1,620	1,476	1,528	1,505
with international institutions	1,179	1,280	1,431	1,395	1,576	1,655	1,875	1,877	2,190	2,234	2,443	2,747	2,914	2,937	3,202	3,291
Iran																
Total articles	53	88	88	114	142	172	231	227	356	498	675	851	844	871	877	888
with multiple institutions	36	51	54	67	88	103	152	163	252	342	512	656	686	693	740	757
with domestic institutions only	41	59	67	85	103	133	159	158	258	369	514	589	606	618	612	625
with international institutions	12	29	21	29	39	39	72	69	98	129	161	262	238	253	265	263
Israel																
Total articles	2,039	1,960	1,946	1,971	2,178	2,093	2,305	2,204	2,429	2,218	2,231	2,203	2,135	2,089	2,031	2,052
with multiple institutions	1,583	1,564	1,605	1,608	1,778	1,720	1,911	1,811	2,038	1,873	1,928	1,885	1,851	1,805	1,765	1,832
with domestic institutions only	1,530	1,438	1,410	1,418	1,536	1,436	1,590	1,493	1,600	1,444	1,437	1,277	1,276	1,155	1,070	1,095
with international institutions	509	522	536	553	642	657	715	711	829	774	794	926	859	934	961	957
Saudi Arabia																
Total articles	280	290	257	244	215	200	190	179	217	186	194	256	247	332	456	514
with multiple institutions	162	172	158	152	123	125	123	117	149	130	132	194	185	270	393	457
with domestic institutions only	211	215	202	178	157	135	110	107	136	109	112	126	109	138	120	119
with international institutions	69	75	55	66	58	65	80	72	81	77	82	130	138	194	336	395
Turkey																
Total articles	982	1,152	1,356	1,495	1,736	2,155	2,595	2,811	3,549	3,142	3,212	3,267	2,948	2,609	2,651	2,812
with multiple institutions	597	734	856	990	1,169	1,457	1,782	2,021	2,644	2,301	2,351	2,468	2,304	2,000	2,107	2,288
with domestic institutions only	866	1,030	1,205	1,325	1,531	1,946	2,325	2,501	3,190	2,746	2,797	2,776	2,436	2,155	2,121	2,280
with international institutions	116	122	151	170	205	209	270	310	359	396	415	491	512	454	530	532
Egypt																
Total articles	259	252	276	238	294	260	330	331	349	375	396	486	559	728	812	737
with multiple institutions	166	154	182	176	188	174	225	235	266	288	304	380	445	571	664	622
with domestic institutions only	150	157	168	131	178	145	178	179	188	189	188	243	282	361	398	352
with international institutions	109	95	108	107	116	115	152	152	161	186	208	243	277	367	414	385

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	582	622	610	591	574	594	586	527	658	674	678	880	786	829	890	963
with multiple institutions	404	446	417	427	418	442	453	417	504	573	550	716	648	711	776	838
with domestic institutions only	428	446	437	379	348	363	312	276	323	288	304	378	340	294	321	351
with international institutions	154	176	173	212	226	231	274	251	335	386	374	502	446	535	569	612
China																
Total articles	1,395	1,634	1,747	1,860	2,212	2,486	3,003	3,363	4,268	4,814	5,659	7,615	9,124	9,952	11,543	12,912
with multiple institutions	884	1,029	1,133	1,244	1,508	1,696	2,085	2,383	3,108	3,561	4,253	5,828	7,067	7,722	9,084	10,122
with domestic institutions only	963	1,126	1,158	1,217	1,424	1,623	1,985	2,230	2,672	3,119	3,664	5,027	6,138	6,771	7,865	8,999
with international institutions	432	508	589	643	788	863	1,018	1,133	1,596	1,695	1,995	2,588	2,986	3,181	3,678	3,913
India																
Total articles	1,137	1,218	1,261	1,298	1,323	1,391	1,604	1,511	1,903	1,993	2,019	2,426	2,535	2,621	2,518	2,717
with multiple institutions	572	604	685	675	728	767	865	827	1,126	1,136	1,213	1,473	1,648	1,788	1,756	1,888
with domestic institutions only	992	1,035	1,078	1,077	1,068	1,138	1,325	1,221	1,529	1,592	1,579	1,857	1,950	1,917	1,840	1,958
with international institutions	145	183	183	221	255	253	279	290	374	401	440	569	585	704	678	759
Japan																
Total articles	12,696	13,558	14,056	14,089	14,257	13,601	14,339	12,957	14,037	12,279	12,303	13,104	12,293	11,341	11,424	11,513
with multiple institutions	7,909	8,547	9,091	9,120	9,561	9,277	9,913	9,178	10,198	9,030	9,112	9,827	9,395	8,712	8,733	8,874
with domestic institutions only	11,035	11,838	12,107	12,000	12,012	11,428	11,903	10,711	11,374	9,850	9,871	10,408	9,630	8,813	8,920	9,003
with international institutions	1,661	1,720	1,949	2,089	2,245	2,173	2,436	2,246	2,663	2,429	2,432	2,696	2,663	2,528	2,504	2,510
Singapore																
Total articles	252	296	339	402	403	443	525	564	650	649	679	783	818	852	924	971
with multiple institutions	133	151	199	254	276	305	393	449	507	547	558	677	697	748	830	884
with domestic institutions only	183	211	231	274	244	278	314	316	350	309	329	296	320	288	305	302
with international institutions	69	85	108	128	159	165	211	248	300	340	350	487	498	564	619	669
South Korea																
Total articles	662	850	1,138	1,392	1,755	1,694	2,057	2,137	3,013	3,255	3,576	4,389	4,830	5,258	5,689	6,096
with multiple institutions	479	630	837	1,033	1,357	1,387	1,618	1,713	2,413	2,600	2,815	3,570	3,938	4,348	4,650	5,050
with domestic institutions only	466	624	872	1,078	1,346	1,304	1,552	1,622	2,320	2,513	2,827	3,435	3,860	4,194	4,479	4,811
with international institutions	196	226	266	314	409	390	505	515	693	742	749	954	970	1,064	1,210	1,285
Taiwan																
Total articles	1,321	1,428	1,552	1,531	1,728	1,876	2,147	2,288	2,598	2,541	2,629	2,806	2,891	2,869	2,991	2,801
with multiple institutions	973	1,070	1,183	1,178	1,372	1,487	1,814	1,933	2,207	2,231	2,341	2,550	2,665	2,657	2,810	2,659
with domestic institutions only	1,107	1,227	1,330	1,287	1,460	1,571	1,778	1,926	2,150	2,081	2,158	2,217	2,247	2,214	2,298	2,137
with international institutions	214	201	222	244	268	305	369	362	448	460	471	589	644	655	693	664
Australia																
Total articles	4,006	4,133	4,393	4,365	4,361	4,683	5,070	5,003	5,600	5,827	5,886	6,899	6,949	6,745	7,501	7,716
with multiple institutions	2,460	2,681	2,846	2,917	3,037	3,282	3,730	3,799	4,298	4,562	4,735	5,627	5,851	5,737	6,473	6,667
with domestic institutions only	3,070	3,093	3,301	3,099	3,013	3,265	3,431	3,178	3,544	3,649	3,484	4,046	3,799	3,650	3,904	4,018
with international institutions	936	1,040	1,092	1,266	1,348	1,418	1,639	1,825	2,056	2,178	2,402	2,853	3,150	3,095	3,597	3,698

Appendix table 5-51

S&E articles in medical sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	797	786	775	953	793	813	816	832	985	878	1,040	1,159	1,105	1,092	1,128	1,255
with multiple institutions	469	467	480	626	519	523	568	569	734	670	803	891	882	877	903	983
with domestic institutions only	588	578	505	644	528	519	467	473	528	433	523	559	513	492	504	585
with international institutions	209	208	270	309	265	294	349	359	457	445	517	600	592	600	624	670

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	4,907	5,041	4,880	5,114	5,424	5,199	5,546	5,061	6,865	7,723	8,027	10,328	9,796	9,240	9,566	10,429
with multiple institutions	2,239	2,291	2,271	2,588	2,690	2,790	3,047	2,849	3,973	4,418	4,844	6,348	6,468	6,231	6,550	7,461
with domestic institutions only	4,685	4,762	4,629	4,786	5,083	4,827	5,036	4,567	6,170	6,994	7,073	8,987	8,349	7,857	8,115	8,676
with international institutions	222	279	251	328	341	372	510	494	695	729	954	1,341	1,447	1,383	1,451	1,753
Canada																
Total articles	275	249	265	280	263	344	384	330	480	520	605	646	784	701	742	720
with multiple institutions	162	138	152	183	167	230	250	229	331	350	429	458	587	519	584	591
with domestic institutions only	215	179	212	210	196	264	287	231	349	403	421	446	523	490	519	462
with international institutions	60	70	53	70	67	80	97	99	131	117	184	200	261	211	223	258
Mexico																
Total articles	53	56	59	49	54	77	61	88	61	52	87	83	104	88	41	112
with multiple institutions	29	31	36	32	32	54	47	61	46	38	67	66	77	56	36	93
with domestic institutions only	47	48	49	38	46	69	51	68	46	41	60	42	73	65	20	66
with international institutions	6	8	10	11	8	8	10	20	15	11	27	41	31	23	21	46
United States																
Total articles	3,079	3,082	2,942	3,036	3,243	3,051	3,095	2,832	3,851	4,654	4,190	5,054	5,091	4,739	4,787	5,138
with multiple institutions	1,477	1,467	1,451	1,569	1,647	1,623	1,718	1,575	2,227	2,637	2,562	3,110	3,318	3,082	3,175	3,602
with domestic institutions only	2,936	2,932	2,804	2,848	3,050	2,864	2,828	2,572	3,492	4,251	3,710	4,380	4,370	4,077	4,102	4,262
with international institutions	143	150	138	188	193	187	267	260	359	403	480	674	721	662	685	876
Argentina																
Total articles	4	2	4	2	3	2	3	2	5	3	5	14	11	11	7	20
with multiple institutions	-	1	-	1	2	-	1	1	4	2	5	11	9	11	6	19
with domestic institutions only	4	2	4	2	2	2	2	2	1	1	2	6	2	1	1	8
with international institutions	-	-	-	-	1	-	1	-	4	2	3	8	9	10	6	12
Brazil																
Total articles	5	9	8	10	11	12	16	16	24	28	58	506	67	64	86	103
with multiple institutions	3	9	5	9	8	8	13	12	17	22	38	325	54	48	72	87
with domestic institutions only	4	1	4	8	9	8	11	9	15	18	36	448	37	39	48	59
with international institutions	1	8	4	2	2	4	5	7	9	10	22	58	30	25	38	44
Chile																
Total articles	3	1	3	3	4	2	3	3	1	5	6	27	14	7	9	9
with multiple institutions	-	1	2	2	2	2	1	3	1	5	4	11	12	6	8	8
with domestic institutions only	3	-	1	3	3	1	2	2	-	2	3	17	5	3	1	2
with international institutions	-	1	2	-	1	1	1	1	1	3	3	10	9	4	8	7
Austria																
Total articles	4	2	4	7	5	10	13	10	14	11	8	22	27	17	23	28
with multiple institutions	3	1	1	5	2	5	9	8	12	9	6	18	25	15	19	26
with domestic institutions only	1	2	3	3	3	9	8	5	5	7	5	6	8	3	7	5
with international institutions	3	-	1	4	2	1	5	5	9	4	3	16	19	14	16	23

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	24	28	23	30	33	32	45	42	69	71	74	97	114	125	144	165
with multiple institutions	11	16	10	17	17	27	25	34	43	57	54	75	81	106	125	144
with domestic institutions only	17	18	14	17	21	9	27	23	36	31	36	46	53	59	64	55
with international institutions	7	10	9	13	12	23	18	19	33	40	38	51	61	66	80	110
Czech Republic																
Total articles	2	2	1	-	-	2	-	-	5	1	8	5	5	11	9	10
with multiple institutions	2	2	1	-	-	1	-	-	3	1	4	4	5	11	6	8
with domestic institutions only	-	-	-	-	-	1	-	-	4	-	5	3	1	-	4	3
with international institutions	2	2	1	-	-	1	-	-	1	1	3	2	4	11	5	7
Denmark																
Total articles	8	24	11	12	22	19	23	26	39	28	36	61	70	66	72	117
with multiple institutions	2	15	6	6	15	8	14	16	19	24	25	45	57	53	58	103
with domestic institutions only	7	12	6	9	13	14	10	15	31	16	20	39	43	39	44	63
with international institutions	1	12	5	3	9	5	13	11	8	12	16	22	27	27	28	54
Finland																
Total articles	47	61	59	61	67	67	87	60	56	61	90	98	124	101	102	133
with multiple institutions	25	33	35	44	40	45	65	48	38	48	62	69	111	80	89	121
with domestic institutions only	38	54	51	49	54	52	66	45	44	41	71	67	82	62	69	73
with international institutions	9	7	8	12	13	15	21	15	12	20	19	31	42	39	33	60
France																
Total articles	62	50	51	60	42	44	58	51	74	75	88	124	111	104	124	150
with multiple institutions	33	22	20	34	19	28	27	36	38	57	64	104	79	83	96	122
with domestic institutions only	46	38	38	44	31	29	44	33	49	41	50	61	59	55	69	85
with international institutions	16	12	13	16	11	15	14	18	25	34	38	63	52	49	55	65
Germany																
Total articles	36	61	37	49	66	71	90	72	101	89	130	191	181	197	221	213
with multiple institutions	18	30	26	26	36	44	54	41	73	62	80	129	142	156	175	162
with domestic institutions only	31	41	19	28	43	37	55	45	50	47	74	105	78	92	91	108
with international institutions	5	20	18	21	23	34	35	27	51	42	56	86	103	105	130	105
Greece																
Total articles	6	9	6	4	12	15	12	11	24	27	27	46	38	25	41	43
with multiple institutions	3	5	4	4	9	11	7	6	14	20	18	34	28	17	27	35
with domestic institutions only	5	6	4	1	7	9	8	8	15	12	17	32	24	16	25	22
with international institutions	1	3	2	3	5	6	4	3	9	15	10	14	14	9	16	21
Hungary																
Total articles	5	1	1	-	2	2	4	6	3	5	28	10	11	8	13	23
with multiple institutions	4	1	1	-	2	2	3	5	1	4	17	8	10	5	12	22
with domestic institutions only	3	-	-	-	-	2	2	2	2	2	23	3	3	5	7	12
with international institutions	2	1	1	-	2	-	2	4	1	3	5	7	8	3	6	11

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	14	19	16	22	36	27	24	32	48	66	84	98	104	96	94	116
with multiple institutions	6	7	8	12	27	17	12	15	31	32	46	52	67	62	66	85
with domestic institutions only	9	13	9	13	15	15	16	21	28	43	53	65	60	61	59	69
with international institutions	5	6	7	9	21	12	8	11	20	23	31	33	44	35	35	47
Italy																
Total articles	24	42	24	37	36	38	41	50	61	73	98	166	125	157	163	163
with multiple institutions	19	30	18	23	28	27	30	34	46	57	70	128	104	128	126	138
with domestic institutions only	14	25	14	24	23	28	24	29	39	36	59	99	61	94	104	99
with international institutions	10	17	10	13	13	10	17	21	22	37	39	67	64	63	59	64
Netherlands																
Total articles	114	120	125	133	138	120	164	156	217	230	244	298	408	378	407	432
with multiple institutions	69	74	72	88	98	86	118	117	158	180	195	232	337	324	350	377
with domestic institutions only	91	94	100	102	103	80	113	113	154	150	150	203	238	241	253	240
with international institutions	23	26	25	31	35	40	51	43	63	80	94	95	170	137	154	192
Poland																
Total articles	4	1	-	1	3	4	2	7	5	11	27	12	17	15	20	38
with multiple institutions	3	1	-	1	1	2	2	5	2	8	18	8	8	13	16	29
with domestic institutions only	2	-	-	-	2	4	1	6	4	6	16	7	12	6	12	20
with international institutions	2	1	-	1	1	-	1	1	1	5	11	5	5	9	8	18
Portugal																
Total articles	1	3	3	2	3	4	2	4	8	6	11	20	12	25	36	36
with multiple institutions	1	2	3	2	2	3	-	3	5	6	9	17	11	22	29	28
with domestic institutions only	1	1	-	-	1	1	2	2	3	2	3	11	3	12	15	23
with international institutions	-	2	3	2	2	3	-	2	5	4	8	9	9	13	21	13
Spain																
Total articles	30	30	37	34	44	43	48	33	51	50	75	128	99	127	150	158
with multiple institutions	20	17	18	23	28	26	32	25	37	34	56	89	71	106	127	137
with domestic institutions only	21	21	27	22	34	29	26	22	27	37	43	84	56	61	78	93
with international institutions	9	9	10	12	10	14	22	11	24	13	32	44	43	66	72	65
Sweden																
Total articles	102	113	127	163	197	173	207	192	225	242	325	357	372	353	337	360
with multiple institutions	64	75	80	118	143	131	152	145	162	172	250	271	299	291	289	296
with domestic institutions only	86	92	103	132	160	138	165	156	177	202	248	255	264	231	213	235
with international institutions	16	21	24	31	37	35	42	36	48	40	77	102	108	122	124	125
United Kingdom																
Total articles	705	741	728	783	789	697	809	718	801	866	1,069	1,199	1,192	1,069	1,220	1,328
with multiple institutions	253	300	306	364	377	397	450	402	497	500	651	778	813	747	849	935
with domestic institutions only	658	663	659	688	682	585	651	569	606	665	820	851	808	721	815	877
with international institutions	47	78	69	95	107	112	158	149	195	201	249	348	384	348	405	451

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	30	25	36	32	39	47	69	50	63	69	77	180	152	151	178	218
with multiple institutions	12	11	18	24	28	23	39	34	51	53	58	139	123	128	144	176
with domestic institutions only	26	19	23	23	22	38	50	37	35	44	38	106	82	80	96	120
with international institutions	4	6	13	9	17	9	19	13	28	25	39	74	70	71	82	98
Russia																
Total articles	2	3	-	2	1	3	10	2	3	5	6	11	4	5	5	8
with multiple institutions	1	2	-	2	1	3	7	2	2	5	5	10	4	5	4	7
with domestic institutions only	2	2	-	1	-	1	4	-	1	-	2	2	-	-	1	1
with international institutions	-	1	-	1	1	2	6	2	2	5	4	9	4	5	4	7
Switzerland																
Total articles	18	18	13	30	30	27	38	30	62	68	67	100	88	106	121	126
with multiple institutions	10	13	9	20	18	19	28	22	50	56	58	83	71	94	105	111
with domestic institutions only	10	10	5	13	19	12	18	12	18	24	18	38	23	29	39	31
with international institutions	8	8	8	17	11	15	20	18	44	44	49	62	65	77	82	95
Iran																
Total articles	1	-	-	1	-	2	-	5	2	17	28	37	45	43	47	69
with multiple institutions	-	-	-	1	-	1	-	2	1	10	21	30	36	38	43	54
with domestic institutions only	1	-	-	1	-	1	-	3	1	12	19	25	33	23	31	51
with international institutions	-	-	-	-	-	1	-	2	1	5	9	12	12	20	16	18
Israel																
Total articles	50	50	44	50	64	57	73	64	68	74	89	76	116	109	108	98
with multiple institutions	25	32	16	28	35	28	40	40	41	56	67	50	70	75	82	74
with domestic institutions only	43	41	39	43	55	49	60	52	58	52	64	62	93	77	77	72
with international institutions	7	9	5	7	9	8	13	12	10	22	25	14	23	32	31	26
Saudi Arabia																
Total articles	-	2	5	4	1	1	1	3	2	4	2	8	5	11	5	4
with multiple institutions	-	1	-	1	-	1	1	3	1	2	2	6	5	6	3	3
with domestic institutions only	-	1	5	3	1	1	-	1	1	3	-	2	1	7	3	1
with international institutions	-	1	-	1	-	-	1	2	1	1	2	6	4	4	2	3
Turkey																
Total articles	5	5	3	13	12	13	32	43	54	63	96	99	115	132	105	126
with multiple institutions	2	1	1	6	6	4	15	22	27	38	44	60	72	94	63	92
with domestic institutions only	4	5	2	9	11	10	27	42	50	53	93	96	105	121	97	114
with international institutions	1	-	1	4	1	3	5	1	4	10	3	3	10	11	8	12
Egypt																
Total articles	1	1	-	1	1	1	1	2	1	1	4	5	12	7	13	19
with multiple institutions	1	-	-	1	-	1	1	2	1	1	4	5	11	6	11	12
with domestic institutions only	1	1	-	1	1	-	-	-	1	-	1	2	5	1	6	8
with international institutions	-	-	-	-	-	1	1	2	-	1	3	3	7	6	7	11

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	9	14	10	12	14	23	27	22	41	40	55	96	81	83	70	77
with multiple institutions	5	7	2	6	5	14	17	14	28	28	34	51	60	71	47	54
with domestic institutions only	6	9	9	9	11	14	17	11	22	22	30	59	33	28	32	40
with international institutions	3	5	1	3	3	9	10	11	19	18	25	37	48	55	38	37
China																
Total articles	38	39	61	59	71	85	89	96	104	103	156	185	196	197	212	259
with multiple institutions	16	16	24	29	25	47	53	62	76	82	116	145	155	152	174	224
with domestic institutions only	30	29	49	46	61	68	59	60	54	60	92	88	112	113	114	130
with international institutions	8	10	12	13	10	17	30	36	50	43	64	97	84	84	98	129
India																
Total articles	8	6	16	13	13	14	19	26	36	33	36	51	43	39	47	66
with multiple institutions	4	3	8	6	6	6	12	11	20	20	26	39	32	29	40	54
with domestic institutions only	5	5	9	11	10	11	9	19	27	20	18	28	28	20	16	27
with international institutions	3	1	7	2	3	3	10	7	9	13	18	23	15	19	31	39
Japan																
Total articles	28	30	52	32	29	58	69	57	72	71	69	143	95	86	104	117
with multiple institutions	16	14	22	24	17	36	50	40	54	44	44	104	69	73	82	98
with domestic institutions only	22	22	39	22	16	44	48	37	50	55	50	111	71	54	75	74
with international institutions	6	8	13	10	13	14	21	20	22	16	19	32	24	32	29	43
Singapore																
Total articles	2	4	4	5	6	7	9	10	10	6	14	30	31	37	43	55
with multiple institutions	-	2	2	1	3	2	6	7	6	5	10	23	23	34	33	46
with domestic institutions only	2	3	2	5	4	7	8	5	7	4	5	10	11	5	14	18
with international institutions	-	1	2	-	2	-	1	5	3	2	9	20	20	32	29	37
South Korea																
Total articles	9	10	10	12	21	22	50	32	49	49	72	178	109	120	110	161
with multiple institutions	7	7	6	7	16	19	31	26	35	38	59	131	84	97	88	131
with domestic institutions only	3	4	5	5	9	11	34	15	34	26	40	123	66	74	72	107
with international institutions	6	6	5	7	12	11	16	17	15	23	32	55	43	46	38	54
Taiwan																
Total articles	12	12	22	30	39	57	52	67	104	97	130	199	235	251	258	269
with multiple institutions	11	10	12	21	25	38	39	51	85	79	112	171	211	236	227	247
with domestic institutions only	6	6	16	18	21	40	36	47	70	72	81	121	153	166	193	200
with international institutions	6	6	6	12	18	17	16	20	34	25	49	78	82	85	65	69
Australia																
Total articles	265	343	283	313	294	249	279	248	570	487	568	803	695	687	692	819
with multiple institutions	144	165	140	166	153	131	174	167	347	284	376	545	518	541	537	665
with domestic institutions only	228	299	256	272	256	212	211	188	464	386	428	605	500	467	471	544
with international institutions	37	44	27	41	38	37	68	60	106	101	140	198	195	220	221	275

Appendix table 5-52

S&E articles in other life sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	36	41	27	41	50	28	32	39	68	64	77	99	114	114	121	138
with multiple institutions	14	13	15	15	21	11	18	24	40	36	42	69	86	79	86	108
with domestic institutions only	31	36	21	35	41	24	22	22	46	42	55	57	57	58	65	81
with international institutions	5	5	6	6	9	4	10	17	22	22	22	42	57	56	56	57

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	14,350	14,315	14,439	14,237	14,821	14,492	15,474	14,672	17,106	18,228	18,737	22,942	22,241	20,964	22,346	24,708
with multiple institutions	5,696	5,942	6,161	6,230	6,780	6,963	7,607	7,244	8,686	9,670	10,150	12,976	13,059	12,627	13,757	15,332
with domestic institutions only	13,156	12,978	13,084	12,881	13,212	12,795	13,490	12,733	14,820	15,474	15,766	19,101	18,240	17,019	17,851	19,623
with international institutions	1,194	1,337	1,355	1,356	1,609	1,697	1,984	1,939	2,286	2,754	2,971	3,841	4,001	3,945	4,495	5,085
Canada																
Total articles	1,076	1,146	1,059	1,045	1,171	1,135	1,179	1,130	1,287	1,453	1,536	1,719	1,915	1,737	1,829	2,038
with multiple institutions	447	553	519	510	637	645	678	669	782	927	992	1,179	1,267	1,170	1,234	1,415
with domestic institutions only	829	861	785	808	846	793	787	730	833	909	950	1,024	1,166	1,065	1,052	1,179
with international institutions	247	285	274	237	325	342	392	400	454	544	586	695	749	672	777	859
Mexico																
Total articles	28	55	56	66	56	50	77	65	74	81	77	116	92	79	78	77
with multiple institutions	18	29	25	31	28	33	47	30	38	47	49	71	70	54	60	49
with domestic institutions only	16	37	38	45	42	35	40	41	48	49	42	69	41	41	34	39
with international institutions	12	18	18	21	14	15	37	24	26	32	35	47	51	38	44	38
United States																
Total articles	8,500	8,116	8,211	7,892	8,270	8,168	8,472	7,950	9,111	9,565	9,453	11,209	11,218	10,582	10,991	12,283
with multiple institutions	3,791	3,784	3,985	3,871	4,199	4,234	4,633	4,367	5,044	5,595	5,627	6,973	7,149	6,820	7,246	8,080
with domestic institutions only	7,751	7,332	7,387	7,088	7,327	7,209	7,324	6,849	7,870	8,072	7,883	9,210	9,144	8,507	8,683	9,634
with international institutions	749	784	824	804	943	959	1,148	1,101	1,241	1,493	1,570	1,999	2,074	2,075	2,308	2,649
Argentina																
Total articles	19	19	33	14	20	20	20	21	27	33	24	62	37	45	45	56
with multiple institutions	9	7	17	8	7	13	12	14	11	23	16	29	23	28	41	39
with domestic institutions only	11	15	18	7	15	10	11	9	20	12	14	42	22	22	17	26
with international institutions	8	4	15	7	5	10	9	12	7	21	10	20	15	23	28	30
Brazil																
Total articles	38	55	54	60	52	65	65	74	81	97	96	286	121	128	133	178
with multiple institutions	19	35	28	41	34	42	38	49	51	65	73	162	89	96	106	137
with domestic institutions only	23	34	31	30	26	42	38	43	54	58	59	223	75	71	78	104
with international institutions	15	21	23	30	26	23	27	31	27	39	37	63	46	57	55	74
Chile																
Total articles	11	7	8	6	5	6	19	14	17	32	25	44	41	28	43	48
with multiple institutions	6	2	5	5	2	3	10	9	11	18	21	26	33	21	37	37
with domestic institutions only	8	6	6	2	3	4	10	6	9	18	7	23	16	14	15	21
with international institutions	3	1	2	4	2	2	9	8	8	14	18	21	25	14	28	27
Austria																
Total articles	67	58	44	45	63	75	80	87	102	88	89	160	149	168	206	210
with multiple institutions	26	23	20	23	28	42	42	54	69	53	68	115	98	122	152	156
with domestic institutions only	51	40	31	30	44	49	50	45	45	44	31	74	66	68	74	80
with international institutions	16	18	13	15	19	26	30	42	57	44	58	86	83	100	132	130

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	113	124	125	117	150	156	196	211	264	313	331	411	433	438	460	535
with multiple institutions	59	64	59	68	70	92	114	123	167	183	199	268	290	314	338	369
with domestic institutions only	74	72	78	71	91	95	109	116	132	182	196	219	214	205	192	256
with international institutions	39	52	47	46	59	61	87	95	132	131	135	192	219	233	268	279
Czech Republic																
Total articles	48	53	41	49	49	50	43	47	49	65	85	70	71	80	87	72
with multiple institutions	24	26	17	19	24	21	24	19	18	31	44	40	38	46	55	43
with domestic institutions only	37	40	32	37	33	41	28	33	43	56	68	55	53	61	58	47
with international institutions	11	13	9	12	16	9	15	14	6	9	17	15	18	19	29	25
Denmark																
Total articles	26	44	58	55	58	74	87	75	85	80	119	116	132	112	143	187
with multiple institutions	16	17	28	24	28	39	48	41	51	52	75	82	88	75	108	137
with domestic institutions only	13	36	38	40	40	50	62	52	55	46	59	58	60	53	64	91
with international institutions	13	8	20	15	18	24	25	23	30	34	60	58	72	59	79	96
Finland																
Total articles	110	111	104	94	110	114	133	139	138	144	165	192	201	176	211	203
with multiple institutions	54	61	49	41	65	79	94	85	87	110	111	135	153	132	161	162
with domestic institutions only	84	80	78	71	76	59	78	100	88	78	95	113	108	101	112	101
with international institutions	26	31	26	23	34	55	55	39	50	66	70	79	93	75	99	102
France																
Total articles	337	352	375	324	341	352	372	365	450	464	504	741	602	557	679	687
with multiple institutions	173	204	194	192	207	228	234	238	306	321	350	518	459	434	562	569
with domestic institutions only	252	249	273	218	239	231	246	231	275	272	297	458	315	294	322	342
with international institutions	85	103	102	106	102	121	126	134	175	192	207	283	287	263	357	345
Germany																
Total articles	784	863	835	869	1,010	941	1,021	999	1,166	1,358	1,362	1,723	1,707	1,655	1,845	1,997
with multiple institutions	299	343	307	391	462	464	467	516	613	738	754	1,008	1,104	1,128	1,302	1,407
with domestic institutions only	633	677	669	673	744	680	757	706	823	915	906	1,150	1,031	994	1,067	1,164
with international institutions	151	186	166	196	266	261	264	293	343	443	456	573	676	661	778	833
Greece																
Total articles	21	14	22	17	20	24	39	39	52	76	50	77	81	85	93	100
with multiple institutions	12	10	12	9	11	15	25	18	35	44	26	48	44	65	57	79
with domestic institutions only	12	5	13	13	13	15	23	24	27	40	31	48	56	45	60	50
with international institutions	9	9	9	4	7	9	16	15	25	36	19	29	25	40	33	50
Hungary																
Total articles	21	16	19	12	28	16	33	32	33	33	35	55	55	46	54	69
with multiple institutions	12	6	15	5	18	13	26	28	25	21	30	37	45	42	43	57
with domestic institutions only	11	10	7	9	14	10	12	14	19	16	12	30	26	13	27	28
with international institutions	10	6	12	3	14	6	21	18	14	17	23	25	29	33	27	41

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	36	47	25	52	39	51	33	54	60	47	60	94	103	103	102	130
with multiple institutions	21	15	10	27	26	29	21	37	35	37	38	75	78	76	73	93
with domestic institutions only	17	38	17	34	19	30	17	25	37	15	31	39	43	41	45	64
with international institutions	19	9	8	18	20	21	16	29	23	32	29	55	60	62	57	66
Italy																
Total articles	186	193	175	170	205	208	280	252	276	357	393	538	557	510	573	680
with multiple institutions	127	116	109	104	137	142	202	170	195	248	272	382	390	414	438	520
with domestic institutions only	109	122	104	109	126	126	154	149	160	197	218	291	302	243	322	358
with international institutions	77	71	71	61	79	82	126	103	116	160	175	247	255	267	251	322
Netherlands																
Total articles	479	503	510	496	552	544	672	630	752	850	923	1,225	1,197	1,227	1,299	1,366
with multiple institutions	229	267	274	275	317	342	420	377	492	563	615	832	862	897	947	1,052
with domestic institutions only	357	366	366	354	381	353	430	419	496	550	592	779	702	686	718	704
with international institutions	122	137	144	142	171	191	242	211	256	300	331	446	495	541	581	662
Poland																
Total articles	21	22	26	25	21	29	38	37	44	35	61	63	55	55	104	131
with multiple institutions	12	11	12	17	9	18	22	27	34	21	40	38	38	34	66	92
with domestic institutions only	11	13	18	10	14	16	19	17	16	17	31	34	23	33	58	62
with international institutions	10	9	8	15	7	13	19	20	28	18	30	29	32	22	46	69
Portugal																
Total articles	9	16	21	11	27	22	30	25	41	55	57	101	96	99	136	172
with multiple institutions	2	8	13	7	17	13	21	16	22	38	41	75	75	82	107	138
with domestic institutions only	8	8	9	5	11	10	14	13	22	29	22	49	41	37	49	73
with international institutions	1	8	12	6	16	12	16	12	19	26	35	52	55	62	87	99
Spain																
Total articles	167	149	158	178	182	184	241	233	283	442	461	702	480	464	535	602
with multiple institutions	72	68	65	91	99	95	154	137	173	253	281	394	350	322	386	463
with domestic institutions only	124	110	114	118	118	128	146	157	182	295	271	478	268	263	306	307
with international institutions	43	39	44	60	64	56	95	76	101	147	190	224	212	201	229	295
Sweden																
Total articles	204	207	195	239	207	227	267	223	267	286	315	348	318	300	334	355
with multiple institutions	107	104	120	127	116	140	171	134	165	201	198	257	224	217	246	250
with domestic institutions only	150	158	141	181	146	154	185	149	178	182	215	197	183	162	174	187
with international institutions	54	49	54	58	61	73	82	74	89	104	100	151	135	138	160	168
United Kingdom																
Total articles	1,384	1,526	1,606	1,647	1,643	1,574	1,761	1,735	2,116	2,252	2,415	2,814	2,788	2,532	2,779	2,978
with multiple institutions	634	748	763	816	879	882	983	997	1,242	1,396	1,549	1,862	1,837	1,746	1,920	2,062
with domestic institutions only	1,099	1,155	1,277	1,293	1,226	1,128	1,250	1,187	1,436	1,413	1,508	1,641	1,671	1,450	1,593	1,649
with international institutions	285	371	329	354	417	446	511	548	680	839	907	1,173	1,117	1,082	1,186	1,329

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	104	96	99	99	119	138	147	120	140	147	174	241	233	240	276	271
with multiple institutions	48	53	47	50	63	89	88	79	86	96	133	166	167	177	213	220
with domestic institutions only	79	63	72	71	86	91	85	68	88	87	92	129	125	126	145	128
with international institutions	25	33	27	28	33	47	62	52	52	60	82	112	108	114	131	143
Russia																
Total articles	142	127	135	173	106	140	134	165	90	69	90	83	141	129	139	136
with multiple institutions	31	29	33	34	38	50	38	40	25	26	30	34	28	26	38	49
with domestic institutions only	125	114	122	157	86	118	112	145	74	53	74	67	125	112	118	96
with international institutions	17	13	13	16	20	22	22	20	16	16	16	16	16	17	21	40
Switzerland																
Total articles	108	134	102	139	139	97	164	165	216	272	300	419	427	391	422	499
with multiple institutions	46	65	53	58	69	47	112	101	133	188	205	302	296	283	314	393
with domestic institutions only	75	88	58	93	92	58	70	85	105	113	127	184	179	168	157	183
with international institutions	33	46	44	46	47	39	94	80	111	159	173	235	248	223	265	316
Iran																
Total articles	4	2	6	11	3	16	18	18	25	28	31	43	33	38	42	52
with multiple institutions	2	2	5	6	2	8	11	12	18	24	17	30	22	35	32	40
with domestic institutions only	3	-	2	5	2	10	8	13	13	17	22	28	22	23	22	24
with international institutions	1	2	4	6	1	6	10	5	12	11	9	15	11	15	20	28
Israel																
Total articles	200	222	212	203	252	236	259	206	252	291	300	379	381	345	417	477
with multiple institutions	88	98	111	106	118	124	128	102	157	174	190	231	259	232	271	327
with domestic institutions only	149	164	144	136	184	170	182	137	172	193	210	264	237	201	242	284
with international institutions	51	58	68	67	68	66	77	69	80	98	90	115	144	144	175	193
Saudi Arabia																
Total articles	2	1	5	-	1	4	5	2	7	5	2	3	5	13	7	11
with multiple institutions	-	-	2	-	-	-	3	-	3	4	-	2	5	7	6	11
with domestic institutions only	2	1	3	-	1	4	2	2	4	1	2	1	-	6	1	0
with international institutions	-	-	2	-	-	-	3	-	3	4	-	2	5	7	6	11
Turkey																
Total articles	25	21	26	35	60	55	57	68	99	98	114	158	169	143	147	160
with multiple institutions	3	8	16	15	35	30	23	32	48	44	56	82	89	80	82	105
with domestic institutions only	23	16	16	23	31	34	46	47	70	79	86	119	125	106	108	102
with international institutions	2	5	10	12	29	21	11	21	29	19	28	39	44	37	39	58
Egypt																
Total articles	1	5	4	1	9	1	1	-	2	6	6	3	8	7	12	21
with multiple institutions	1	5	2	1	9	1	1	-	-	6	4	3	8	5	10	20
with domestic institutions only	-	-	2	-	5	-	-	-	2	-	2	-	1	2	2	2
with international institutions	1	5	2	1	4	1	1	-	-	6	4	3	7	5	10	19

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	97	95	101	86	72	83	87	65	72	163	118	187	97	112	113	151
with multiple institutions	33	42	32	37	32	41	46	41	43	82	58	93	55	70	72	92
with domestic institutions only	82	72	88	63	54	57	57	34	37	116	78	121	55	56	60	79
with international institutions	15	23	13	23	18	26	30	31	35	47	40	66	42	56	53	72
China																
Total articles	93	127	114	138	128	153	166	196	181	198	246	332	422	479	540	654
with multiple institutions	49	71	64	86	70	107	111	119	129	135	161	243	330	389	441	529
with domestic institutions only	55	74	63	71	75	66	81	110	94	100	124	163	205	214	232	297
with international institutions	38	53	51	67	53	87	85	86	87	98	122	169	217	265	308	357
India																
Total articles	23	32	19	35	20	23	30	27	31	37	45	37	51	58	61	66
with multiple institutions	11	15	14	23	8	12	16	16	14	27	27	20	32	36	45	49
with domestic institutions only	16	23	9	21	14	15	22	20	20	25	31	25	29	34	29	32
with international institutions	7	9	10	14	6	8	8	7	11	12	14	12	22	24	32	34
Japan																
Total articles	317	326	314	300	336	294	300	281	453	355	411	425	445	394	412	483
with multiple institutions	142	145	142	145	163	165	155	150	241	200	223	275	297	260	282	342
with domestic institutions only	263	260	244	244	253	224	225	223	361	259	306	299	329	287	292	315
with international institutions	54	66	70	56	83	70	75	58	92	96	105	126	116	107	120	168
Singapore																
Total articles	10	16	19	23	29	18	34	25	24	33	64	80	99	102	124	127
with multiple institutions	4	5	10	8	15	7	18	13	15	19	44	56	72	77	101	96
with domestic institutions only	7	12	9	16	16	12	20	14	13	21	25	36	33	34	34	38
with international institutions	3	4	10	7	13	6	14	11	11	12	39	44	66	68	90	89
South Korea																
Total articles	22	15	43	19	44	43	70	57	79	88	104	111	144	152	201	235
with multiple institutions	17	11	32	13	29	30	55	36	58	65	85	86	112	119	155	185
with domestic institutions only	6	5	17	11	23	21	26	32	38	40	42	53	65	64	100	112
with international institutions	16	10	26	8	21	22	44	25	41	48	62	58	79	88	101	123
Taiwan																
Total articles	36	32	45	37	50	41	75	79	95	113	175	237	246	253	280	338
with multiple institutions	19	17	27	17	28	21	36	45	48	56	102	152	157	172	185	247
with domestic institutions only	22	20	28	29	26	25	59	57	74	91	140	187	185	190	213	223
with international institutions	14	12	17	8	24	16	16	22	21	22	35	50	61	63	67	115
Australia																
Total articles	463	514	569	578	626	638	695	622	809	831	896	1,171	1,103	1,127	1,246	1,450
with multiple institutions	182	190	257	264	305	319	369	342	438	466	530	693	712	731	875	1,012
with domestic institutions only	375	411	447	445	466	449	488	420	560	546	588	759	674	675	712	838
with international institutions	88	103	122	133	160	189	207	202	249	285	308	412	429	452	534	612

Appendix table 5-53

S&E articles in psychology, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	140	132	171	154	163	146	181	186	189	228	227	261	232	232	247	268
with multiple institutions	65	66	67	68	81	81	94	94	101	115	136	170	140	142	162	181
with domestic institutions only	91	80	123	103	101	85	120	105	107	140	120	129	110	120	108	127
with international institutions	49	52	48	51	62	61	61	81	82	88	107	132	122	112	139	141

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	20,069	19,895	20,298	21,014	21,389	20,889	23,028	22,078	24,509	25,986	27,513	35,518	31,421	32,432	31,414	38,877
with multiple institutions	6,077	5,990	6,074	6,661	7,171	7,184	8,403	8,071	9,024	9,920	10,986	14,741	13,920	14,924	14,911	18,749
with domestic institutions only	18,317	18,090	18,370	18,993	19,046	18,503	20,195	19,360	21,457	22,471	23,470	30,042	25,939	26,628	25,524	31,307
with international institutions	1,752	1,805	1,928	2,021	2,343	2,386	2,833	2,718	3,052	3,515	4,043	5,476	5,482	5,804	5,890	7,570
Canada																
Total articles	1,293	1,213	1,240	1,147	1,338	1,271	1,479	1,403	1,503	1,560	1,689	2,050	1,939	2,069	1,977	2,246
with multiple institutions	529	441	488	493	564	576	668	617	680	724	853	1,015	985	1,099	1,055	1,305
with domestic institutions only	1,018	947	967	881	1,014	931	1,094	1,036	1,095	1,131	1,152	1,415	1,319	1,381	1,306	1,401
with international institutions	275	266	273	266	324	340	385	367	408	429	537	635	620	688	671	845
Mexico																
Total articles	79	50	60	59	77	66	103	81	93	117	117	268	144	139	126	178
with multiple institutions	29	27	25	28	40	35	50	46	41	59	59	117	93	99	90	123
with domestic institutions only	57	24	40	34	44	38	67	44	62	65	72	183	73	64	60	95
with international institutions	22	26	20	25	33	28	36	37	31	52	45	85	71	75	66	83
United States																
Total articles	10,473	10,268	10,323	10,453	10,640	10,446	11,301	10,491	11,592	11,578	12,032	14,293	13,499	13,376	13,204	15,456
with multiple institutions	3,858	3,707	3,646	3,902	4,132	4,143	4,730	4,420	4,890	5,100	5,500	6,937	6,747	6,820	6,932	8,301
with domestic institutions only	9,379	9,221	9,196	9,326	9,342	9,097	9,728	9,043	9,990	9,837	10,004	11,659	10,838	10,770	10,487	11,982
with international institutions	1,094	1,047	1,127	1,127	1,298	1,349	1,573	1,448	1,602	1,741	2,028	2,634	2,661	2,606	2,717	3,474
Argentina																
Total articles	44	52	30	37	59	46	56	50	52	64	52	151	90	63	89	92
with multiple institutions	19	27	12	18	31	30	39	31	27	31	25	85	57	47	61	66
with domestic institutions only	34	35	22	28	36	21	32	27	32	41	34	104	57	28	43	53
with international institutions	10	17	8	9	23	25	24	23	20	23	18	47	33	35	46	39
Brazil																
Total articles	74	84	93	102	139	95	109	123	152	176	153	319	235	256	244	338
with multiple institutions	41	37	49	45	62	53	56	60	83	105	92	171	147	162	155	222
with domestic institutions only	43	54	53	72	100	55	73	83	98	109	90	224	136	165	142	203
with international institutions	31	30	40	30	39	40	36	40	54	67	63	95	99	91	102	135
Chile																
Total articles	25	22	18	41	28	29	41	35	56	71	71	179	108	109	140	179
with multiple institutions	10	14	11	19	10	16	20	19	36	38	43	97	70	71	103	129
with domestic institutions only	15	10	10	25	20	15	26	17	28	45	36	114	58	49	71	90
with international institutions	10	12	8	16	8	14	15	18	28	26	35	65	50	60	69	89
Austria																
Total articles	90	124	119	129	128	103	150	165	158	179	210	296	272	294	273	368
with multiple institutions	30	54	41	59	54	49	80	85	85	93	128	164	162	188	187	247
with domestic institutions only	68	83	86	87	86	61	90	99	88	106	111	171	141	138	127	164
with international institutions	22	41	33	42	42	42	60	66	70	73	99	125	131	156	146	204

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	157	184	186	215	217	197	244	289	306	286	357	457	433	504	479	618
with multiple institutions	76	101	118	124	106	111	140	163	183	169	234	290	295	345	318	421
with domestic institutions only	97	94	85	113	127	100	125	148	160	156	184	227	197	237	226	283
with international institutions	60	90	101	102	90	97	119	141	146	130	173	230	236	267	253	335
Czech Republic																
Total articles	105	82	91	87	94	99	77	145	119	123	153	303	178	170	189	215
with multiple institutions	25	13	22	19	32	23	28	48	33	41	46	83	74	77	102	97
with domestic institutions only	89	72	74	73	74	87	59	119	103	101	133	260	143	125	141	163
with international institutions	16	10	17	14	20	12	18	26	16	22	20	43	35	45	48	52
Denmark																
Total articles	117	135	153	152	210	182	180	210	236	252	280	389	371	395	406	515
with multiple institutions	54	49	62	55	92	79	79	95	106	137	131	200	196	213	210	278
with domestic institutions only	80	100	107	116	137	128	118	142	159	149	182	231	214	224	238	291
with international institutions	37	35	46	36	73	54	62	68	77	103	98	158	157	171	168	224
Finland																
Total articles	93	110	108	110	124	144	167	146	158	173	174	271	264	278	230	303
with multiple institutions	32	54	39	52	54	63	65	66	78	84	89	137	128	151	124	171
with domestic institutions only	75	79	88	72	91	110	123	112	105	114	121	193	182	182	152	206
with international institutions	18	31	20	38	33	34	44	34	53	59	53	78	82	96	78	97
France																
Total articles	479	609	571	693	534	630	716	689	774	821	900	1,223	1,109	1,074	1,157	1,397
with multiple institutions	228	271	259	332	274	304	361	375	410	449	509	755	719	693	784	957
with domestic institutions only	330	429	401	500	356	445	482	451	525	553	562	716	641	597	616	744
with international institutions	149	180	170	193	178	185	234	238	249	268	338	507	468	477	541	653
Germany																
Total articles	865	810	864	945	961	993	1,066	1,102	1,242	1,453	1,538	2,041	1,969	1,902	1,974	2,585
with multiple institutions	205	220	247	280	325	337	405	447	567	651	766	1,060	1,079	1,111	1,209	1,586
with domestic institutions only	735	678	694	760	747	762	787	801	841	996	988	1,279	1,200	1,103	1,119	1,473
with international institutions	130	132	170	185	214	231	279	301	401	457	550	762	769	799	855	1,112
Greece																
Total articles	81	89	61	91	87	94	142	150	146	162	154	212	194	202	209	231
with multiple institutions	33	31	35	39	47	48	68	83	62	77	80	111	114	110	114	141
with domestic institutions only	60	69	34	69	58	63	101	101	112	111	102	131	133	127	132	139
with international institutions	21	20	27	22	29	31	41	49	34	51	52	81	61	75	77	92
Hungary																
Total articles	36	42	34	45	46	52	53	48	50	61	60	112	69	69	59	114
with multiple institutions	13	17	20	24	19	31	25	24	25	32	38	54	46	44	37	74
with domestic institutions only	26	28	18	25	32	27	31	27	27	32	24	80	29	36	31	58
with international institutions	10	14	16	20	14	25	22	21	23	29	36	32	40	33	28	56

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	56	79	68	100	88	89	109	91	119	133	179	231	212	237	234	284
with multiple institutions	13	26	24	35	43	32	53	39	57	70	96	111	119	141	130	157
with domestic institutions only	46	58	45	69	53	62	71	62	75	73	103	141	125	131	136	172
with international institutions	10	21	23	31	35	27	38	29	44	60	76	90	87	106	98	112
Italy																
Total articles	242	237	249	313	362	342	374	404	404	520	611	926	823	817	879	1,134
with multiple institutions	127	118	127	161	191	194	216	227	211	302	372	584	529	525	569	801
with domestic institutions only	164	157	162	197	228	213	218	243	244	294	352	538	471	472	480	594
with international institutions	78	80	87	116	134	129	156	161	160	226	259	388	352	345	399	540
Netherlands																
Total articles	552	564	550	577	623	635	696	688	801	863	1,027	1,194	1,256	1,367	1,275	1,631
with multiple institutions	260	253	254	278	301	315	394	386	450	490	585	749	791	849	812	1,096
with domestic institutions only	411	412	406	412	444	433	471	464	521	564	650	701	712	787	688	867
with international institutions	141	152	144	165	179	202	225	224	280	299	377	493	544	580	587	764
Poland																
Total articles	45	38	44	49	41	55	58	59	65	96	95	167	103	103	117	166
with multiple institutions	23	20	24	24	23	34	26	26	27	35	46	64	48	57	69	105
with domestic institutions only	24	23	24	29	18	31	36	37	44	69	60	120	67	60	74	96
with international institutions	21	15	20	20	23	24	22	22	21	27	35	47	36	43	43	70
Portugal																
Total articles	21	26	39	41	40	52	50	73	80	122	120	183	182	205	233	288
with multiple institutions	12	12	18	25	22	33	31	43	47	73	75	106	128	130	167	208
with domestic institutions only	12	16	23	21	21	25	24	41	49	74	69	116	87	122	131	161
with international institutions	9	10	16	20	19	27	26	32	31	48	51	67	95	83	102	127
Spain																
Total articles	212	224	239	270	330	335	406	400	465	671	752	1,236	871	929	978	1,292
with multiple institutions	110	107	126	135	185	182	223	208	252	354	391	632	537	595	645	866
with domestic institutions only	140	153	156	186	222	239	258	272	305	468	527	857	536	579	583	785
with international institutions	72	71	83	84	108	96	148	128	160	203	225	379	335	350	395	507
Sweden																
Total articles	246	257	304	281	285	314	348	322	423	421	436	661	629	665	651	844
with multiple institutions	93	94	111	109	131	143	154	137	191	214	220	344	337	347	400	493
with domestic institutions only	180	204	236	206	198	227	251	246	304	289	283	445	401	425	384	530
with international institutions	66	53	68	75	87	87	97	76	119	132	153	216	228	240	267	314
United Kingdom																
Total articles	2,917	3,044	3,079	3,505	3,331	3,146	3,656	3,495	3,924	4,273	4,628	5,079	4,883	5,158	4,949	6,376
with multiple institutions	895	1,012	1,024	1,169	1,300	1,227	1,559	1,452	1,615	1,741	2,000	2,384	2,390	2,572	2,561	3,178
with domestic institutions only	2,464	2,523	2,542	2,889	2,593	2,424	2,744	2,628	2,996	3,218	3,391	3,580	3,283	3,489	3,201	4,302
with international institutions	453	521	537	616	738	722	912	867	928	1,055	1,237	1,499	1,600	1,669	1,748	2,074

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	176	176	173	183	184	199	233	227	259	291	333	457	432	467	475	582
with multiple institutions	59	69	60	71	80	87	110	106	111	133	171	223	225	279	288	314
with domestic institutions only	141	135	134	144	135	142	165	163	194	209	226	323	284	282	282	377
with international institutions	35	41	39	39	49	57	68	64	65	82	107	134	148	185	193	205
Russia																
Total articles	265	233	333	262	227	256	271	227	200	208	207	168	159	235	261	280
with multiple institutions	49	45	66	58	39	60	64	42	47	50	46	54	35	60	79	94
with domestic institutions only	234	203	293	227	199	219	230	194	161	167	170	126	126	186	213	200
with international institutions	31	30	40	35	28	37	41	33	39	41	37	42	33	49	48	80
Switzerland																
Total articles	148	153	143	183	215	197	290	242	287	358	376	523	502	556	553	698
with multiple institutions	60	55	70	83	92	91	152	134	163	184	214	310	292	372	376	431
with domestic institutions only	95	109	87	115	145	129	176	136	155	215	191	273	279	253	246	356
with international institutions	53	44	56	68	70	68	114	106	132	143	185	250	223	303	307	342
Iran																
Total articles	2	6	1	7	6	9	15	6	14	24	40	44	56	68	55	71
with multiple institutions	1	4	-	4	3	6	5	2	7	13	24	24	32	35	48	43
with domestic institutions only	1	2	1	3	3	4	10	5	9	13	25	30	41	50	23	46
with international institutions	1	4	-	4	3	5	5	1	5	11	15	14	15	18	32	25
Israel																
Total articles	326	325	304	292	310	308	344	339	307	357	329	492	411	423	379	421
with multiple institutions	142	133	141	122	154	154	173	177	154	205	183	266	240	247	234	256
with domestic institutions only	228	231	202	200	198	201	230	223	205	223	201	324	265	273	237	263
with international institutions	98	94	102	92	112	107	114	116	102	134	128	168	146	150	142	158
Saudi Arabia																
Total articles	6	12	10	8	4	7	8	10	7	6	3	10	11	11	13	23
with multiple institutions	1	-	2	3	-	2	5	4	1	1	1	6	4	6	9	16
with domestic institutions only	5	12	8	5	4	5	3	6	6	5	2	7	7	6	6	8
with international institutions	1	-	2	3	-	2	5	4	1	1	1	3	4	5	7	15
Turkey																
Total articles	54	62	63	69	90	103	124	126	175	207	240	437	296	312	273	385
with multiple institutions	16	18	28	18	31	45	59	45	77	89	115	170	136	149	128	212
with domestic institutions only	41	48	39	55	69	72	81	102	133	158	174	356	222	242	209	270
with international institutions	13	14	24	14	21	31	43	24	42	49	66	81	74	70	64	115
Egypt																
Total articles	9	21	10	12	12	13	11	14	11	10	21	24	32	37	29	49
with multiple institutions	2	10	5	8	4	5	5	7	3	4	9	19	17	25	20	29
with domestic institutions only	7	14	5	6	8	9	6	9	8	6	14	7	18	15	12	24
with international institutions	2	7	5	6	4	4	5	5	3	4	7	17	14	22	17	25

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	149	119	116	119	155	185	174	193	228	292	255	434	280	332	290	426
with multiple institutions	53	35	44	49	63	70	81	84	87	114	103	200	144	185	162	256
with domestic institutions only	119	92	82	77	103	135	112	123	163	205	194	292	168	201	163	216
with international institutions	30	27	34	42	52	50	62	70	65	87	61	142	112	131	127	210
China																
Total articles	269	207	243	250	315	302	310	369	372	497	628	795	813	968	1,018	1,375
with multiple institutions	114	103	123	122	170	171	178	215	219	310	413	508	571	697	724	993
with domestic institutions only	175	124	148	160	180	175	181	202	205	265	313	434	386	472	506	654
with international institutions	94	83	95	90	135	127	129	167	167	232	315	361	427	496	512	721
India																
Total articles	177	139	167	171	189	179	170	192	185	192	258	344	294	309	251	346
with multiple institutions	41	50	37	50	58	56	70	69	65	90	111	146	152	160	135	208
with domestic institutions only	149	103	140	135	153	136	116	151	150	130	186	247	179	205	152	196
with international institutions	28	36	27	36	36	43	54	41	35	62	72	97	115	104	99	150
Japan																
Total articles	283	331	340	349	363	350	378	354	392	465	512	665	580	586	568	714
with multiple institutions	105	142	136	124	157	160	151	173	178	230	262	355	300	333	311	432
with domestic institutions only	220	237	271	290	271	260	292	256	291	339	372	503	411	405	383	474
with international institutions	63	94	69	59	92	90	86	98	101	126	140	162	169	181	185	240
Singapore																
Total articles	60	62	77	87	104	85	140	120	131	189	158	194	221	205	175	305
with multiple institutions	16	20	30	27	26	36	47	50	47	78	68	95	127	118	101	188
with domestic institutions only	47	45	53	63	82	50	100	77	89	124	100	112	107	101	80	145
with international institutions	13	17	24	24	22	35	40	43	42	65	58	82	114	104	95	160
South Korea																
Total articles	73	71	113	93	144	131	155	163	181	216	253	393	353	391	344	553
with multiple institutions	36	42	47	51	81	59	76	81	86	126	149	223	217	253	205	343
with domestic institutions only	41	33	77	55	92	94	97	107	120	133	138	237	194	192	191	310
with international institutions	32	38	36	38	52	37	58	56	61	83	115	156	159	199	153	243
Taiwan																
Total articles	76	78	90	101	118	136	128	130	200	211	268	390	366	387	461	549
with multiple institutions	31	43	51	49	54	79	59	67	119	116	155	254	223	254	309	370
with domestic institutions only	53	49	54	72	89	94	95	100	149	159	215	292	268	284	338	401
with international institutions	23	29	36	29	29	42	33	30	51	52	53	98	98	103	123	148
Australia																
Total articles	823	817	892	810	864	814	852	858	953	1,079	1,166	1,788	1,535	1,652	1,453	2,055
with multiple institutions	260	228	273	281	314	332	361	346	387	452	530	767	823	865	817	1,143
with domestic institutions only	685	692	733	635	677	590	619	653	728	786	847	1,319	1,002	1,074	923	1,324
with international institutions	138	125	159	175	187	224	233	205	225	293	319	469	533	578	530	731

Appendix table 5-54

S&E articles in social sciences, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	141	140	160	157	167	160	199	155	211	249	283	366	312	332	326	387
with multiple institutions	46	39	57	67	69	67	96	67	104	142	133	177	175	185	196	200
with domestic institutions only	106	109	117	108	114	104	130	103	132	135	181	236	172	182	164	231
with international institutions	35	31	43	49	53	56	69	52	79	114	102	130	140	150	162	156

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland	Portugal
Canada																				
1997	na	0.63	1.19	0.41	0.61	0.49	0.34	0.38	0.40	0.51	0.46	0.58	0.38	0.42	0.55	0.44	0.43	0.50	0.45	0.29
2012	na	0.82	1.14	1.12	0.90	1.47	0.80	0.72	0.79	0.93	0.85	0.87	0.66	1.00	0.96	0.83	0.71	0.91	0.89	0.62
Mexico																				
1997	0.63	na	1.01	2.50	2.00	1.71	0.25	0.35	0.67	0.21	0.14	0.72	0.30	0.31	0.35	0.20	0.40	0.35	0.47	0.17
2012	0.82	na	1.08	3.88	2.94	3.50	1.44	1.12	3.57	0.81	1.68	1.11	0.75	2.69	3.45	1.31	1.09	0.82	2.07	2.23
United States																				
1997	1.19	1.01	na	0.78	0.83	0.73	0.60	0.51	0.48	0.66	0.71	0.57	0.67	0.68	0.70	0.52	0.72	0.67	0.51	0.46
2012	1.14	1.08	na	0.89	0.96	1.05	0.67	0.60	0.68	0.75	0.70	0.66	0.72	0.88	0.79	0.70	0.79	0.78	0.75	0.58
Argentina																				
1997	0.41	2.50	0.78	na	4.94	6.52	0.42	0.45	0.50	0.59	0.63	0.73	0.48	0.30	0.48	0.12	0.76	0.49	0.22	0.21
2012	1.12	3.88	0.89	na	5.81	9.20	2.00	0.66	3.64	1.87	0.45	1.21	0.95	3.05	4.23	1.00	1.48	1.20	2.32	2.81
Brazil																				
1997	0.61	2.00	0.83	4.94	na	4.42	0.58	0.65	0.94	0.65	0.68	0.90	0.53	0.75	0.21	0.26	0.85	0.39	0.60	2.10
2012	0.90	2.94	0.96	5.81	na	3.76	1.50	0.95	2.83	1.19	1.04	1.23	0.84	2.30	3.03	1.28	1.19	1.03	2.20	3.86
Chile																				
1997	0.49	1.71	0.73	6.52	4.42	na	0.37	0.80	0.30	0.50	0.68	0.85	0.73	0.48	0.19	0.19	0.53	0.31	0.56	0.51
2012	1.47	3.50	1.05	9.20	3.76	na	2.27	1.04	3.22	2.59	1.08	1.63	1.31	3.69	4.10	0.95	1.60	1.51	3.29	3.56
Austria																				
1997	0.34	0.25	0.60	0.42	0.58	0.37	na	0.94	2.51	1.01	1.25	0.61	1.73	1.85	2.05	1.00	1.00	0.95	0.97	1.40
2012	0.80	1.44	0.67	2.00	1.50	2.27	na	1.71	4.08	2.13	2.02	1.23	2.35	3.58	4.97	1.29	1.73	1.53	2.97	2.28
Belgium																				
1997	0.38	0.35	0.51	0.45	0.65	0.80	0.94	na	1.59	0.91	0.81	1.52	0.77	1.69	0.99	1.40	0.93	2.53	1.14	2.14
2012	0.72	1.12	0.60	0.66	0.95	1.04	1.71	na	1.71	1.46	1.43	1.84	1.15	2.17	2.35	1.03	1.53	2.86	1.87	1.78
Czech Republic																				
1997	0.40	0.67	0.48	0.50	0.94	0.30	2.51	1.59	na	1.05	1.23	1.07	1.30	2.04	1.26	0.33	1.00	0.97	1.76	2.14
2012	0.79	3.57	0.68	3.64	2.83	3.22	4.08	1.71	na	2.29	2.61	1.67	1.63	5.46	7.26	1.90	1.86	1.45	5.97	3.84
Denmark																				
1997	0.51	0.21	0.66	0.59	0.65	0.50	1.01	0.91	1.05	na	1.98	0.67	0.88	2.01	0.53	1.06	0.93	1.25	0.94	1.85
2012	0.93	0.81	0.75	1.87	1.19	2.59	2.13	1.46	2.29	na	2.98	1.19	1.30	2.89	3.10	1.49	1.51	2.04	2.21	2.13
Finland																				
1997	0.46	0.14	0.71	0.63	0.68	0.68	1.25	0.81	1.23	1.98	na	0.65	0.80	1.42	2.77	1.05	0.88	1.32	1.34	1.69
2012	0.85	1.68	0.70	0.45	1.04	1.08	2.02	1.43	2.61	2.98	na	1.08	1.29	3.74	3.56	1.60	1.59	1.64	2.73	2.10
France																				
1997	0.58	0.72	0.57	0.73	0.90	0.85	0.61	1.52	1.07	0.67	0.65	na	0.75	1.30	0.83	0.66	1.14	0.78	1.06	1.35
2012	0.87	1.11	0.66	1.21	1.23	1.63	1.23	1.84	1.67	1.19	1.08	na	1.06	1.75	1.67	1.10	1.58	1.19	1.67	1.47
Germany																				
1997	0.38	0.30	0.67	0.48	0.53	0.73	1.73	0.77	1.30	0.88	0.80	0.75	na	1.21	1.23	0.69	0.78	0.96	1.21	0.77
2012	0.66	0.75	0.72	0.95	0.84	1.31	2.35	1.15	1.63	1.30	1.29	1.06	na	1.62	1.77	1.16	1.21	1.44	1.69	1.01
Greece																				
1997	0.42	0.31	0.68	0.30	0.75	0.48	1.85	1.69	2.04	2.01	1.42	1.30	1.21	na	1.13	1.97	1.46	1.02	1.01	4.13
2012	1.00	2.69	0.88	3.05	2.30	3.69	3.58	2.17	5.46	2.89	3.74	1.75	1.62	na	6.70	1.45	2.60	2.02	4.29	3.73

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland	Portugal
Hungary																				
1997	0.55	0.35	0.70	0.48	0.21	0.19	2.05	0.99	1.26	0.53	2.77	0.83	1.23	1.13	na	0.95	1.13	1.02	1.24	0.34
2012	0.96	3.45	0.79	4.23	3.03	4.10	4.97	2.35	7.26	3.10	3.56	1.67	1.77	6.70	na	0.90	2.23	1.83	5.43	4.73
Ireland																				
1997	0.44	0.20	0.52	0.12	0.26	0.19	1.00	1.40	0.33	1.06	1.05	0.66	0.69	1.97	0.95	na	0.79	1.55	0.33	1.79
2012	0.83	1.31	0.70	1.00	1.28	0.95	1.29	1.03	1.90	1.49	1.60	1.10	1.16	1.45	0.90	na	1.23	1.69	2.29	1.00
Italy																				
1997	0.43	0.40	0.72	0.76	0.85	0.53	1.00	0.93	1.00	0.93	0.88	1.14	0.78	1.46	1.13	0.79	na	0.97	1.02	1.42
2012	0.71	1.09	0.79	1.48	1.19	1.60	1.73	1.53	1.86	1.51	1.59	1.58	1.21	2.60	2.23	1.23	na	1.48	1.94	1.71
Netherlands																				
1997	0.50	0.35	0.67	0.49	0.39	0.31	0.95	2.53	0.97	1.25	1.32	0.78	0.96	1.02	1.02	1.55	0.97	na	0.80	1.73
2012	0.91	0.82	0.78	1.20	1.03	1.51	1.53	2.86	1.45	2.04	1.64	1.19	1.44	2.02	1.83	1.69	1.48	na	1.67	1.55
Poland																				
1997	0.45	0.47	0.51	0.22	0.60	0.56	0.97	1.14	1.76	0.94	1.34	1.06	1.21	1.01	1.24	0.33	1.02	0.80	na	1.27
2012	0.89	2.07	0.75	2.32	2.20	3.29	2.97	1.87	5.97	2.21	2.73	1.67	1.69	4.29	5.43	2.29	1.94	1.67	na	3.23
Portugal																				
1997	0.29	0.17	0.46	0.21	2.10	0.51	1.40	2.14	2.14	1.85	1.69	1.35	0.77	4.13	0.34	1.79	1.42	1.73	1.27	na
2012	0.62	2.23	0.58	2.81	3.86	3.56	2.28	1.78	3.84	2.13	2.10	1.47	1.01	3.73	4.73	1.00	1.71	1.55	3.23	na
Spain																				
1997	0.32	1.73	0.59	2.91	1.11	2.24	0.91	1.09	0.76	1.06	1.04	1.30	0.71	1.49	0.77	0.88	1.32	1.04	0.86	3.31
2012	0.64	2.90	0.68	3.05	1.63	2.81	1.47	1.38	1.84	1.49	1.57	1.44	1.09	2.51	2.21	1.43	1.90	1.33	1.87	3.45
Sweden																				
1997	0.42	0.27	0.65	0.51	0.49	0.73	0.69	1.07	1.09	2.74	3.34	0.61	0.74	1.08	0.75	0.74	0.77	0.95	1.27	1.51
2012	0.79	0.96	0.71	1.63	1.06	1.62	1.84	1.26	2.22	3.88	4.12	1.09	1.20	2.45	2.76	1.69	1.30	1.70	1.85	1.52
United Kingdom																				
1997	0.60	0.44	0.68	0.47	0.67	0.45	0.61	0.83	0.73	0.98	0.78	0.71	0.70	1.41	0.75	2.33	0.87	1.04	0.58	1.52
2012	0.85	0.79	0.77	0.73	0.89	1.16	1.10	1.17	1.18	1.40	1.28	1.01	0.98	1.66	1.38	2.17	1.22	1.45	1.20	1.20
Norway																				
1997	0.39	0.23	0.59	0.06	0.84	0.18	1.17	0.97	1.38	3.81	3.73	0.63	0.75	2.31	0.72	1.52	0.74	1.47	1.14	2.53
2012	1.16	0.88	0.72	2.20	1.37	2.85	2.07	1.07	2.74	4.96	3.10	1.18	1.08	3.28	3.35	1.47	1.36	1.97	2.47	2.30
Russia																				
1997	0.36	0.79	0.53	0.31	0.69	0.20	0.71	0.72	1.27	0.83	1.37	0.86	1.21	0.60	0.72	0.33	0.83	0.71	1.40	0.77
2012	0.74	2.12	0.70	1.76	1.84	2.09	1.95	1.03	3.88	1.27	2.96	1.45	1.68	2.97	3.67	1.67	1.43	1.15	3.70	1.98
Switzerland																				
1997	0.55	0.24	0.72	0.59	0.56	0.32	1.60	1.01	1.10	0.98	1.05	1.18	1.38	1.48	1.30	0.69	1.46	1.09	0.85	1.09
2012	0.78	0.95	0.78	1.40	1.22	1.41	2.28	1.49	2.10	1.51	1.60	1.49	1.76	2.28	2.39	1.11	1.65	1.45	1.97	1.37
Iran																				
1997	1.16	0.00	0.55	0.00	0.58	0.00	0.56	0.91	0.46	0.00	0.00	0.19	0.33	1.10	0.44	0.00	0.31	0.11	0.00	0.00
2012	1.15	2.06	0.59	0.43	1.20	0.38	1.68	1.38	2.25	0.67	1.76	0.69	0.63	2.09	2.64	0.32	1.09	0.61	1.62	1.94
Israel																				
1997	0.64	0.55	1.25	0.32	0.43	0.46	0.36	0.41	0.56	0.45	0.53	0.63	0.79	0.37	1.29	0.42	0.68	0.55	0.43	0.36
2012	1.11	0.86	1.29	2.52	1.36	3.14	1.71	0.78	2.40	1.76	0.79	0.99	1.17	2.62	3.11	0.51	1.28	1.33	2.01	1.82

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland	Portugal
Saudi Arabia																				
1997	0.92	0.00	0.79	0.81	0.35	0.00	0.51	0.99	0.55	0.14	0.56	0.32	0.27	0.67	0.80	0.00	0.19	0.20	0.56	0.46
2012	0.72	0.55	0.56	0.15	0.33	0.19	0.31	0.32	0.57	0.27	0.49	0.40	0.53	0.94	0.39	0.34	0.46	0.43	0.48	0.41
Turkey																				
1997	0.36	0.38	0.75	0.92	0.33	0.25	0.38	0.54	0.31	0.41	0.70	0.48	0.52	0.62	1.00	0.00	0.60	0.60	0.53	0.17
2012	0.95	3.13	0.94	3.89	2.63	3.87	3.38	1.54	5.11	2.24	2.32	1.17	1.19	5.92	6.86	0.79	1.78	1.57	3.94	3.76
Egypt																				
1997	0.44	0.48	0.85	0.39	0.00	0.62	0.48	0.52	0.52	0.00	0.89	0.19	0.65	0.00	0.63	0.25	0.66	0.60	0.40	0.22
2012	0.54	2.81	0.53	0.32	1.47	0.23	1.66	1.15	2.64	0.28	2.06	0.56	0.96	2.85	3.26	0.39	0.85	0.23	1.83	2.02
South Africa																				
1997	0.67	0.26	0.72	1.07	0.69	1.03	1.11	0.93	0.51	0.40	0.44	0.45	0.74	0.52	0.35	1.12	0.46	0.54	0.59	0.61
2012	1.16	1.49	0.91	3.61	2.05	4.47	2.04	1.22	3.23	2.34	0.96	1.21	0.96	2.90	4.13	0.98	1.08	1.62	2.70	2.23
China																				
1997	0.80	0.16	0.79	0.22	0.28	0.24	0.42	0.28	0.18	0.54	0.60	0.39	0.57	0.65	0.55	0.16	0.48	0.53	0.15	0.28
2012	0.74	0.56	1.10	0.51	0.51	0.52	0.49	0.36	0.75	0.57	0.46	0.41	0.48	0.62	0.83	0.53	0.32	0.43	0.60	0.54
India																				
1997	0.63	1.01	0.90	0.78	0.86	0.45	0.28	0.45	0.30	0.45	0.84	0.67	0.80	0.27	1.09	0.07	0.67	0.69	0.31	0.19
2012	0.64	1.84	0.79	0.78	1.25	0.53	0.89	0.71	1.99	0.49	1.00	0.81	0.76	1.28	1.77	0.80	0.73	0.57	1.64	1.28
Japan																				
1997	0.61	0.12	1.00	0.31	0.42	0.18	0.29	0.34	0.54	0.38	0.47	0.38	0.54	0.30	0.78	0.32	0.41	0.44	0.52	0.21
2012	0.67	0.62	0.86	0.89	0.60	1.16	0.84	0.49	1.28	0.73	0.76	0.69	0.72	1.07	1.34	0.51	0.69	0.56	1.09	0.66
Singapore																				
1997	0.53	0.15	0.72	0.18	0.08	0.87	0.30	0.15	0.00	0.18	0.42	0.09	0.12	0.15	0.12	0.95	0.11	0.06	0.00	0.21
2012	0.45	0.21	0.74	0.10	0.33	0.13	0.42	0.30	0.41	0.42	0.36	0.36	0.31	0.55	0.17	0.50	0.30	0.44	0.40	0.23
South Korea																				
1997	0.37	0.46	1.38	0.61	0.31	0.24	0.50	0.22	0.03	0.43	0.74	0.36	0.35	0.83	0.92	0.60	0.54	0.39	0.38	0.06
2012	0.54	1.15	1.25	0.39	0.71	0.43	0.61	0.43	1.32	0.34	0.98	0.44	0.49	1.12	1.32	0.50	0.51	0.37	0.98	0.61
Taiwan																				
1997	0.63	0.07	1.53	0.16	0.28	0.00	0.00	0.07	0.05	0.00	0.22	0.20	0.21	0.07	0.21	0.00	0.34	0.13	0.08	0.19
2012	0.88	1.91	1.22	2.25	1.58	3.27	1.84	0.67	3.20	1.30	2.00	0.73	0.68	3.52	3.69	0.64	0.94	0.70	2.36	2.28
Australia																				
1997	0.80	0.20	0.81	0.27	0.34	0.28	0.45	0.36	0.27	0.61	0.45	0.40	0.50	0.17	0.22	0.65	0.41	0.57	0.31	0.17
2012	1.00	0.79	0.76	1.12	0.92	1.35	1.10	0.75	1.14	1.18	0.89	0.71	0.72	1.01	1.21	0.97	0.72	0.99	1.03	0.94
New Zealand																				
1997	1.01	0.21	0.81	0.42	0.37	0.14	0.56	0.37	0.40	0.83	0.55	0.32	0.36	0.21	0.39	0.44	0.31	0.41	0.18	0.29
2012	0.85	1.96	0.79	0.60	1.15	0.78	1.44	1.36	1.88	0.99	1.76	0.66	0.70	1.82	2.48	1.06	0.90	0.81	1.45	1.40

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Canada																				
1997	0.32	0.42	0.60	0.39	0.36	0.55	1.16	0.64	0.92	0.36	0.44	0.67	0.80	0.63	0.61	0.53	0.37	0.63	0.80	1.01
2012	0.64	0.79	0.85	1.16	0.74	0.78	1.15	1.11	0.72	0.95	0.54	1.16	0.74	0.64	0.67	0.45	0.54	0.88	1.00	0.85
Mexico																				
1997	1.73	0.27	0.44	0.23	0.79	0.24	0.00	0.55	0.00	0.38	0.48	0.26	0.16	1.01	0.12	0.15	0.46	0.07	0.20	0.21
2012	2.90	0.96	0.79	0.88	2.12	0.95	2.06	0.86	0.55	3.13	2.81	1.49	0.56	1.84	0.62	0.21	1.15	1.91	0.79	1.96
United States																				
1997	0.59	0.65	0.68	0.59	0.53	0.72	0.55	1.25	0.79	0.75	0.85	0.72	0.79	0.90	1.00	0.72	1.38	1.53	0.81	0.81
2012	0.68	0.71	0.77	0.72	0.70	0.78	0.59	1.29	0.56	0.94	0.53	0.91	1.10	0.79	0.86	0.74	1.25	1.22	0.76	0.79
Argentina																				
1997	2.91	0.51	0.47	0.06	0.31	0.59	0.00	0.32	0.81	0.92	0.39	1.07	0.22	0.78	0.31	0.18	0.61	0.16	0.27	0.42
2012	3.05	1.63	0.73	2.20	1.76	1.40	0.43	2.52	0.15	3.89	0.32	3.61	0.51	0.78	0.89	0.10	0.39	2.25	1.12	0.60
Brazil																				
1997	1.11	0.49	0.67	0.84	0.69	0.56	0.58	0.43	0.35	0.33	0.00	0.69	0.28	0.86	0.42	0.08	0.31	0.28	0.34	0.37
2012	1.63	1.06	0.89	1.37	1.84	1.22	1.20	1.36	0.33	2.63	1.47	2.05	0.51	1.25	0.60	0.33	0.71	1.58	0.92	1.15
Chile																				
1997	2.24	0.73	0.45	0.18	0.20	0.32	0.00	0.46	0.00	0.25	0.62	1.03	0.24	0.45	0.18	0.87	0.24	0.00	0.28	0.14
2012	2.81	1.62	1.16	2.85	2.09	1.41	0.38	3.14	0.19	3.87	0.23	4.47	0.52	0.53	1.16	0.13	0.43	3.27	1.35	0.78
Austria																				
1997	0.91	0.69	0.61	1.17	0.71	1.60	0.56	0.36	0.51	0.38	0.48	1.11	0.42	0.28	0.29	0.30	0.50	0.00	0.45	0.56
2012	1.47	1.84	1.10	2.07	1.95	2.28	1.68	1.71	0.31	3.38	1.66	2.04	0.49	0.89	0.84	0.42	0.61	1.84	1.10	1.44
Belgium																				
1997	1.09	1.07	0.83	0.97	0.72	1.01	0.91	0.41	0.99	0.54	0.52	0.93	0.28	0.45	0.34	0.15	0.22	0.07	0.36	0.37
2012	1.38	1.26	1.17	1.07	1.03	1.49	1.38	0.78	0.32	1.54	1.15	1.22	0.36	0.71	0.49	0.30	0.43	0.67	0.75	1.36
Czech Republic																				
1997	0.76	1.09	0.73	1.38	1.27	1.10	0.46	0.56	0.55	0.31	0.52	0.51	0.18	0.30	0.54	0.00	0.03	0.05	0.27	0.40
2012	1.84	2.22	1.18	2.74	3.88	2.10	2.25	2.40	0.57	5.11	2.64	3.23	0.75	1.99	1.28	0.41	1.32	3.20	1.14	1.88
Denmark																				
1997	1.06	2.74	0.98	3.81	0.83	0.98	0.00	0.45	0.14	0.41	0.00	0.40	0.54	0.45	0.38	0.18	0.43	0.00	0.61	0.83
2012	1.49	3.88	1.40	4.96	1.27	1.51	0.67	1.76	0.27	2.24	0.28	2.34	0.57	0.49	0.73	0.42	0.34	1.30	1.18	0.99
Finland																				
1997	1.04	3.34	0.78	3.73	1.37	1.05	0.00	0.53	0.56	0.70	0.89	0.44	0.60	0.84	0.47	0.42	0.74	0.22	0.45	0.55
2012	1.57	4.12	1.28	3.10	2.96	1.60	1.76	0.79	0.49	2.32	2.06	0.96	0.46	1.00	0.76	0.36	0.98	2.00	0.89	1.76
France																				
1997	1.30	0.61	0.71	0.63	0.86	1.18	0.19	0.63	0.32	0.48	0.19	0.45	0.39	0.67	0.38	0.09	0.36	0.20	0.40	0.32
2012	1.44	1.09	1.01	1.18	1.45	1.49	0.69	0.99	0.40	1.17	0.56	1.21	0.41	0.81	0.69	0.36	0.44	0.73	0.71	0.66
Germany																				
1997	0.71	0.74	0.70	0.75	1.21	1.38	0.33	0.79	0.27	0.52	0.65	0.74	0.57	0.80	0.54	0.12	0.35	0.21	0.50	0.36
2012	1.09	1.20	0.98	1.08	1.68	1.76	0.63	1.17	0.53	1.19	0.96	0.96	0.48	0.76	0.72	0.31	0.49	0.68	0.72	0.70
Greece																				
1997	1.49	1.08	1.41	2.31	0.60	1.48	1.10	0.37	0.67	0.62	0.00	0.52	0.65	0.27	0.30	0.15	0.83	0.07	0.17	0.21
2012	2.51	2.45	1.66	3.28	2.97	2.28	2.09	2.62	0.94	5.92	2.85	2.90	0.62	1.28	1.07	0.55	1.12	3.52	1.01	1.82

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Hungary																				
1997	0.77	0.75	0.75	0.72	0.72	1.30	0.44	1.29	0.80	1.00	0.63	0.35	0.55	1.09	0.78	0.12	0.92	0.21	0.22	0.39
2012	2.21	2.76	1.38	3.35	3.67	2.39	2.64	3.11	0.39	6.86	3.26	4.13	0.83	1.77	1.34	0.17	1.32	3.69	1.21	2.48
Ireland																				
1997	0.88	0.74	2.33	1.52	0.33	0.69	0.00	0.42	0.00	0.00	0.25	1.12	0.16	0.07	0.32	0.95	0.60	0.00	0.65	0.44
2012	1.43	1.69	2.17	1.47	1.67	1.11	0.32	0.51	0.34	0.79	0.39	0.98	0.53	0.80	0.51	0.50	0.50	0.64	0.97	1.06
Italy																				
1997	1.32	0.77	0.87	0.74	0.83	1.46	0.31	0.68	0.19	0.60	0.66	0.46	0.48	0.67	0.41	0.11	0.54	0.34	0.41	0.31
2012	1.90	1.30	1.22	1.36	1.43	1.65	1.09	1.28	0.46	1.78	0.85	1.08	0.32	0.73	0.69	0.30	0.51	0.94	0.72	0.90
Netherlands																				
1997	1.04	0.95	1.04	1.47	0.71	1.09	0.11	0.55	0.20	0.60	0.60	0.54	0.53	0.69	0.44	0.06	0.39	0.13	0.57	0.41
2012	1.33	1.70	1.45	1.97	1.15	1.45	0.61	1.33	0.43	1.57	0.23	1.62	0.43	0.57	0.56	0.44	0.37	0.70	0.99	0.81
Poland																				
1997	0.86	1.27	0.58	1.14	1.40	0.85	0.00	0.43	0.56	0.53	0.40	0.59	0.15	0.31	0.52	0.00	0.38	0.08	0.31	0.18
2012	1.87	1.85	1.20	2.47	3.70	1.97	1.62	2.01	0.48	3.94	1.83	2.70	0.60	1.64	1.09	0.40	0.98	2.36	1.03	1.45
Portugal																				
1997	3.31	1.51	1.52	2.53	0.77	1.09	0.00	0.36	0.46	0.17	0.22	0.61	0.28	0.19	0.21	0.21	0.06	0.19	0.17	0.29
2012	3.45	1.52	1.20	2.30	1.98	1.37	1.94	1.82	0.41	3.76	2.02	2.23	0.54	1.28	0.66	0.23	0.61	2.28	0.94	1.40
Spain																				
1997	na	0.57	0.92	0.89	0.68	0.86	0.00	0.50	0.47	0.70	0.33	0.43	0.42	0.56	0.23	0.10	0.67	0.14	0.26	0.36
2012	na	1.28	1.16	1.38	1.41	1.19	0.92	1.14	0.41	1.59	0.71	1.09	0.30	0.76	0.56	0.27	0.49	0.96	0.66	0.71
Sweden																				
1997	0.57	na	0.74	4.38	0.83	0.81	0.13	0.26	0.96	0.48	0.08	0.29	0.48	0.40	0.50	0.50	0.19	0.13	0.68	0.53
2012	1.28	na	1.23	4.61	1.46	1.31	0.79	1.31	0.25	1.65	0.45	2.03	0.56	0.65	0.73	0.46	0.48	0.87	0.93	0.64
United Kingdom																				
1997	0.92	0.74	na	0.98	0.50	0.79	1.31	0.51	1.01	1.17	0.41	1.30	0.60	0.67	0.52	0.78	0.30	0.27	1.04	1.01
2012	1.16	1.23	na	1.36	0.88	1.12	0.66	0.91	0.58	1.07	0.74	1.49	0.56	0.68	0.62	0.67	0.47	0.71	1.24	1.30
Norway																				
1997	0.89	4.38	0.98	na	1.01	0.93	0.40	0.46	0.00	0.37	0.47	0.58	0.30	0.17	0.30	0.22	0.15	0.05	0.54	0.41
2012	1.38	4.61	1.36	na	1.97	1.36	0.35	2.03	0.20	2.59	0.31	3.23	0.48	0.64	0.78	0.34	0.24	1.59	1.06	0.73
Russia																				
1997	0.68	0.83	0.50	1.01	na	0.74	0.10	0.77	0.12	0.65	0.18	0.33	0.35	0.61	0.66	0.03	0.92	0.22	0.22	0.14
2012	1.41	1.46	0.88	1.97	na	1.52	1.15	1.94	0.23	2.80	1.20	1.76	0.70	1.44	1.18	0.26	1.35	2.50	0.72	0.92
Switzerland																				
1997	0.86	0.81	0.79	0.93	0.74	na	0.36	0.81	0.36	0.71	0.38	0.61	0.40	0.66	0.55	0.16	0.52	0.45	0.44	0.41
2012	1.19	1.31	1.12	1.36	1.52	na	1.01	1.30	0.34	1.75	0.94	1.50	0.39	0.77	0.77	0.46	0.65	1.26	0.85	1.04
Iran																				
1997	0.00	0.13	1.31	0.40	0.10	0.36	na	0.00	2.97	1.11	0.00	0.00	0.90	2.84	0.82	0.00	0.00	1.18	1.81	0.62
2012	0.92	0.79	0.66	0.35	1.15	1.01	na	0.26	0.84	4.51	3.27	1.54	0.42	1.58	0.45	0.48	1.14	1.50	1.23	2.80
Israel																				
1997	0.50	0.26	0.51	0.46	0.77	0.81	0.00	na	0.42	1.11	0.27	0.93	0.25	0.31	0.45	0.38	0.33	0.11	0.58	0.32
2012	1.14	1.31	0.91	2.03	1.94	1.30	0.26	na	0.20	3.23	0.41	2.27	0.48	0.99	0.88	0.65	0.42	1.63	0.96	0.65

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Saudi Arabia																				
1997	0.47	0.96	1.01	0.00	0.12	0.36	2.97	0.42	na	5.38	15.40	0.94	0.22	0.98	0.76	0.00	0.67	0.36	0.34	0.37
2012	0.41	0.25	0.58	0.20	0.23	0.34	0.84	0.20	na	2.81	21.75	0.66	0.67	2.30	0.38	0.99	0.89	0.54	0.49	0.44
Turkey																				
1997	0.70	0.48	1.17	0.37	0.65	0.71	1.11	1.11	5.38	na	0.00	0.35	0.37	0.00	0.55	0.00	0.42	0.13	0.25	0.42
2012	1.59	1.65	1.07	2.59	2.80	1.75	4.51	3.23	2.81	na	4.83	3.58	0.73	1.87	1.07	0.60	1.14	3.28	1.10	2.22
Egypt																				
1997	0.33	0.08	0.41	0.47	0.18	0.38	0.00	0.27	15.40	0.00	na	0.67	0.36	0.93	0.85	1.14	0.64	0.34	0.08	0.00
2012	0.71	0.45	0.74	0.31	1.20	0.94	3.27	0.41	21.75	4.83	na	0.71	0.44	1.46	1.10	0.16	1.57	2.00	0.47	2.70
South Africa																				
1997	0.43	0.29	1.30	0.58	0.33	0.61	0.00	0.93	0.94	0.35	0.67	na	0.32	0.77	0.29	0.63	0.12	0.09	1.80	1.18
2012	1.09	2.03	1.49	3.23	1.76	1.50	1.54	2.27	0.66	3.58	0.71	na	0.56	1.31	0.89	0.20	0.38	2.02	1.85	1.40
China																				
1997	0.42	0.48	0.60	0.30	0.35	0.40	0.90	0.25	0.22	0.37	0.36	0.32	na	0.89	1.61	4.82	1.83	1.94	0.92	0.64
2012	0.30	0.56	0.56	0.48	0.70	0.39	0.42	0.48	0.67	0.73	0.44	0.56	na	0.49	1.23	2.22	0.99	1.80	1.11	0.59
India																				
1997	0.56	0.40	0.67	0.17	0.61	0.66	2.84	0.31	0.98	0.00	0.93	0.77	0.89	na	0.78	1.31	1.55	0.83	0.52	0.41
2012	0.76	0.65	0.68	0.64	1.44	0.77	1.58	0.99	2.30	1.87	1.46	1.31	0.49	na	1.06	1.30	2.42	2.01	0.79	1.12
Japan																				
1997	0.23	0.50	0.52	0.30	0.66	0.55	0.82	0.45	0.76	0.55	0.85	0.29	1.61	0.78	na	0.64	2.20	1.03	0.74	0.60
2012	0.56	0.73	0.62	0.78	1.18	0.77	0.45	0.88	0.38	1.07	1.10	0.89	1.23	1.06	na	0.77	1.93	2.14	0.79	0.54
Singapore																				
1997	0.10	0.50	0.78	0.22	0.03	0.16	0.00	0.38	0.00	0.00	1.14	0.63	4.82	1.31	0.64	na	0.40	3.19	2.22	1.67
2012	0.27	0.46	0.67	0.34	0.26	0.46	0.48	0.65	0.99	0.60	0.16	0.20	2.22	1.30	0.77	na	1.08	1.48	1.48	1.06
South Korea																				
1997	0.67	0.19	0.30	0.15	0.92	0.52	0.00	0.33	0.67	0.42	0.64	0.12	1.83	1.55	2.20	0.40	na	0.89	0.39	0.60
2012	0.49	0.48	0.47	0.24	1.35	0.65	1.14	0.42	0.89	1.14	1.57	0.38	0.99	2.42	1.93	1.08	na	1.76	0.54	0.90
Taiwan																				
1997	0.14	0.13	0.27	0.05	0.22	0.45	1.18	0.11	0.36	0.13	0.34	0.09	1.94	0.83	1.03	3.19	0.89	na	0.47	0.37
2012	0.96	0.87	0.71	1.59	2.50	1.26	1.50	1.63	0.54	3.28	2.00	2.02	1.80	2.01	2.14	1.48	1.76	na	1.14	1.60

Appendix table 5-55

Indexes of internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Australia																				
1997	0.26	0.68	1.04	0.54	0.22	0.44	1.81	0.58	0.34	0.25	0.08	1.80	0.92	0.52	0.74	2.22	0.39	0.47	na	4.33
2012	0.66	0.93	1.24	1.06	0.72	0.85	1.23	0.96	0.49	1.10	0.47	1.85	1.11	0.79	0.79	1.48	0.54	1.14	na	3.65
New Zealand																				
1997	0.36	0.53	1.01	0.41	0.14	0.41	0.62	0.32	0.37	0.42	0.00	1.18	0.64	0.41	0.60	1.67	0.60	0.37	4.33	na
2012	0.71	0.64	1.30	0.73	0.92	1.04	2.80	0.65	0.44	2.22	2.70	1.40	0.59	1.12	0.54	1.06	0.90	1.60	3.65	na

na = not applicable.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland
World																				
1997	90,867	9,235	1,206	40,419	993	2,295	618	2,393	3,672	1,467	2,936	2,162	14,067	17,963	1,214	1,519	758	8,523	6,105	2,883
2012	211,841	21,286	3,315	91,183	2,783	7,059	2,573	6,323	8,876	3,790	6,455	4,717	28,150	39,161	3,617	2,648	3,033	19,697	15,187	5,524
Canada																				
1997	9,235	na	77	4,898	41	143	31	83	143	59	151	102	829	688	52	85	34	374	311	131
2012	21,286	na	272	10,401	314	641	380	506	639	302	601	401	2,452	2,578	362	255	254	1,414	1,396	496
Mexico																				
1997	1,206	77	na	542	33	61	14	8	17	13	8	4	134	72	5	7	2	45	28	18
2012	3,315	272	na	1,536	169	325	141	142	156	212	82	124	489	457	152	143	62	336	196	179
United States																				
1997	40,419	4,898	542	na	345	849	201	642	830	315	861	678	3,593	5,374	369	470	174	2,747	1,811	657
2012	91,183	10,401	1,536	na	1,062	2,926	1,160	1,828	2,310	1,112	2,084	1,412	8,029	12,129	1,364	898	913	6,702	5,125	1,779
Argentina																				
1997	993	41	33	345	na	124	44	11	18	8	19	15	112	94	4	8	1	71	33	7
2012	2,783	314	169	1,062	na	539	311	166	77	181	159	28	448	490	145	147	40	384	239	168
Brazil																				
1997	2,295	143	61	849	124	na	69	35	60	35	48	37	319	241	23	8	5	183	60	44
2012	7,059	641	325	2,926	539	na	322	316	281	357	257	164	1,150	1,094	277	267	129	779	521	405
Chile																				
1997	618	31	14	201	44	69	na	6	20	3	10	10	81	89	4	2	1	31	13	11
2012	2,573	380	141	1,160	311	322	na	174	112	148	203	62	556	622	162	132	35	382	279	221
Austria																				
1997	2,393	83	8	642	11	35	6	na	91	97	78	71	226	819	59	82	20	225	153	74
2012	6,323	506	142	1,828	166	316	174	na	452	462	410	285	1,032	2,747	387	393	117	1,016	694	490
Belgium																				
1997	3,672	143	17	830	18	60	20	91	na	94	108	71	866	558	83	61	43	319	625	133
2012	8,876	639	156	2,310	77	281	112	452	na	271	396	282	2,169	1,892	329	261	131	1,260	1,822	432
Czech Republic																				
1997	1,467	59	13	315	8	35	3	97	94	na	50	43	243	377	40	31	4	138	96	82
2012	3,790	302	212	1,112	181	357	148	462	271	na	264	220	839	1,145	353	344	103	655	393	590
Denmark																				
1997	2,936	151	8	861	19	48	10	78	108	50	na	138	303	508	79	26	26	256	246	88
2012	6,455	601	82	2,084	159	257	203	410	396	264	na	428	1,017	1,547	319	250	138	904	942	372
Finland																				
1997	2,162	102	4	678	15	37	10	71	71	43	138	na	216	342	41	100	19	179	192	92
2012	4,717	401	124	1,412	28	164	62	285	282	220	428	na	676	1,124	301	210	108	698	554	336
France																				
1997	14,067	829	134	3,593	112	319	81	226	866	243	303	216	na	2,073	244	196	77	1,508	734	472
2012	28,150	2,452	489	8,029	448	1,150	556	1,032	2,169	839	1,017	676	na	5,513	840	586	445	4,146	2,395	1,224
Germany																				
1997	17,963	688	72	5,374	94	241	89	819	558	377	508	342	2,073	na	290	370	104	1,319	1,161	687
2012	39,161	2,578	457	12,129	490	1,094	622	2,747	1,892	1,145	1,547	1,124	5,513	na	1,086	864	649	4,419	4,037	1,726

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland
Greece																				
1997	1,214	52	5	369	4	23	4	59	83	40	79	41	244	290	na	23	20	166	83	39
2012	3,617	362	152	1,364	145	277	162	387	329	353	319	301	840	1,086	na	303	75	873	524	405
Hungary																				
1997	1,519	85	7	470	8	8	2	82	61	31	26	100	196	370	23	na	12	161	104	60
2012	2,648	255	143	898	147	267	132	393	261	344	250	210	586	864	303	na	34	548	348	375
Ireland																				
1997	758	34	2	174	1	5	1	20	43	4	26	19	77	104	20	12	na	56	79	8
2012	3,033	254	62	913	40	129	35	117	131	103	138	108	445	649	75	34	na	347	368	181
Italy																				
1997	8,523	374	45	2,747	71	183	31	225	319	138	256	179	1,508	1,319	166	161	56	na	557	275
2012	19,697	1,414	336	6,702	384	779	382	1,016	1,260	655	904	698	4,146	4,419	873	548	347	na	2,083	997
Netherlands																				
1997	6,105	311	28	1,811	33	60	13	153	625	96	246	192	734	1,161	83	104	79	557	na	154
2012	15,187	1,396	196	5,125	239	521	279	694	1,822	393	942	554	2,395	4,037	524	348	368	2,083	na	661
Poland																				
1997	2,883	131	18	657	7	44	11	74	133	82	88	92	472	687	39	60	8	275	154	na
2012	5,524	496	179	1,779	168	405	221	490	432	590	372	336	1,224	1,726	405	375	181	997	661	na
Portugal																				
1997	869	26	2	178	2	46	3	32	75	30	52	35	181	132	48	5	13	116	101	35
2012	4,554	283	159	1,142	168	586	197	310	339	313	295	213	892	850	290	269	65	724	506	383
Spain																				
1997	5,188	167	119	1,357	165	146	79	125	228	64	178	128	1,042	733	103	67	38	642	364	141
2012	18,045	1,154	819	5,319	722	981	615	791	1,047	593	822	629	3,450	3,641	773	498	369	3,182	1,727	880
Sweden																				
1997	5,055	214	18	1,470	28	62	25	92	219	89	447	402	478	744	73	63	31	364	324	204
2012	10,159	808	153	3,103	218	360	200	558	536	403	1,200	931	1,467	2,259	425	350	246	1,228	1,241	491
United Kingdom																				
1997	16,819	1,031	99	5,050	86	285	52	269	565	199	530	311	1,853	2,322	316	212	327	1,365	1,170	308
2012	39,227	3,363	487	13,005	377	1,164	552	1,288	1,925	829	1,676	1,120	5,250	7,141	1,115	677	1,218	4,459	4,065	1,230
Norway																				
1997	1,655	65	5	432	1	35	2	51	65	37	204	147	161	247	51	20	21	115	164	60
2012	4,799	558	66	1,479	139	219	166	297	215	235	725	331	754	959	269	201	101	608	677	309
Russia																				
1997	6,499	239	68	1,518	22	113	9	122	188	133	175	212	861	1,559	52	78	18	503	308	288
2012	7,413	549	246	2,218	171	455	188	431	321	514	286	488	1,433	2,309	376	340	177	988	612	715
Switzerland																				
1997	5,581	314	18	1,778	36	79	12	235	227	99	177	140	1,017	1,521	110	121	32	764	407	151
2012	13,031	1,015	193	4,356	239	530	223	887	811	489	600	464	2,586	4,238	508	389	207	2,003	1,358	669
Iran																				
1997	136	16	0	33	0	2	0	2	5	1	0	0	4	9	2	1	0	4	1	0
2012	2,634	305	85	672	15	105	12	132	152	106	54	103	241	306	94	87	12	266	115	111

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Nether-lands	Poland
Israel																				
1997	2,869	186	21	1,596	10	31	9	27	48	26	42	36	279	448	14	62	10	183	106	39
2012	4,558	508	61	2,535	151	206	174	233	149	196	244	80	600	990	204	177	33	541	436	239
Saudi Arabia																				
1997	225	21	0	79	2	2	0	3	9	2	1	3	11	12	2	3	0	4	3	4
2012	3,048	219	26	734	6	34	7	28	41	31	25	33	164	300	49	15	15	129	94	38
Turkey																				
1997	600	22	3	201	6	5	1	6	13	3	8	10	45	62	5	10	0	34	24	10
2012	2,997	287	147	1,209	153	263	141	302	193	274	205	155	467	657	303	257	34	495	337	308
Egypt																				
1997	472	21	3	179	2	0	2	6	10	4	0	10	14	61	0	5	1	29	19	6
2012	2,138	117	94	489	9	105	6	106	103	101	18	98	158	380	104	87	12	168	36	102
South Africa																				
1997	856	58	3	274	10	15	6	25	32	7	11	9	60	126	6	5	8	37	31	16
2012	3,352	392	78	1,318	159	229	182	204	171	194	239	72	541	596	166	173	47	337	389	236
China																				
1997	3,699	299	8	1,300	9	26	6	41	42	11	64	53	225	417	32	34	5	166	131	18
2012	31,081	2,324	270	14,759	207	524	195	458	463	419	542	316	1,713	2,753	330	323	238	925	968	487
India																				
1997	1,649	106	22	662	14	36	5	12	30	8	24	33	171	260	6	30	1	104	76	16
2012	7,332	474	211	2,504	75	305	47	195	218	261	110	163	791	1,029	160	162	84	501	300	313
Japan																				
1997	9,011	559	14	4,002	31	95	11	70	124	78	110	100	537	954	36	118	24	344	265	149
2012	16,591	1,124	162	6,157	194	334	233	415	342	380	369	282	1,515	2,196	302	277	121	1,066	664	473
Singapore																				
1997	505	27	1	161	1	1	3	4	3	0	3	5	7	12	1	1	4	5	2	0
2012	4,359	197	14	1,382	6	48	7	54	54	32	56	35	207	253	41	9	31	120	137	45
South Korea																				
1997	1,813	68	11	1,115	12	14	3	24	16	1	25	32	102	125	20	28	9	92	48	22
2012	10,079	550	181	5,437	52	240	53	184	183	238	103	220	592	918	193	166	72	479	270	257
Taiwan																				
1997	1,128	72	1	768	2	8	0	0	3	1	0	6	35	47	1	4	0	36	10	3
2012	4,659	410	139	2,438	138	245	185	256	131	267	184	207	450	586	280	215	43	407	234	287
Australia																				
1997	4,789	390	13	1,729	14	41	9	57	69	21	95	51	298	472	11	18	26	185	182	47
2012	16,575	1,659	206	5,455	244	508	271	545	524	337	595	329	1,555	2,199	286	251	231	1,105	1,174	447
New Zealand																				
1997	1,078	111	3	390	5	10	1	16	16	7	29	14	53	76	3	7	4	31	30	6
2012	3,156	270	97	1,076	25	121	30	136	180	106	95	124	277	409	98	98	48	264	184	119

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
World																					
1997	869	5,188	5,055	16,819	1,655	6,499	5,581	136	2,869	225	600	472	856	3,699	1,649	9,011	505	1,813	1,128	4,789	1,078
2012	4,554	18,045	10,159	39,227	4,799	7,413	13,031	2,634	4,558	3,048	2,997	2,138	3,352	31,081	7,332	16,591	4,359	10,079	4,659	16,575	3,156
Canada																					
1997	26	167	214	1,031	65	239	314	16	186	21	22	21	58	299	106	559	27	68	72	390	111
2012	283	1,154	808	3,363	558	549	1,015	305	508	219	287	117	392	2,324	474	1,124	197	550	410	1,659	270
Mexico																					
1997	2	119	18	99	5	68	18	0	21	0	3	3	3	8	22	14	1	11	1	13	3
2012	159	819	153	487	66	246	193	85	61	26	147	94	78	270	211	162	14	181	139	206	97
United States																					
1997	178	1,357	1,470	5,050	432	1,518	1,778	33	1,596	79	201	179	274	1,300	662	4,002	161	1,115	768	1,729	390
2012	1,142	5,319	3,103	13,005	1,479	2,218	4,356	672	2,535	734	1,209	489	1,318	14,759	2,504	6,157	1,382	5,437	2,438	5,455	1,076
Argentina																					
1997	2	165	28	86	1	22	36	0	10	2	6	2	10	9	14	31	1	12	2	14	5
2012	168	722	218	377	139	171	239	15	151	6	153	9	159	207	75	194	6	52	138	244	25
Brazil																					
1997	46	146	62	285	35	113	79	2	31	2	5	0	15	26	36	95	1	14	8	41	10
2012	586	981	360	1,164	219	455	530	105	206	34	263	105	229	524	305	334	48	240	245	508	121
Chile																					
1997	3	79	25	52	2	9	12	0	9	0	1	2	6	6	5	11	3	3	0	9	1
2012	197	615	200	552	166	188	223	12	174	7	141	6	182	195	47	233	7	53	185	271	30
Austria																					
1997	32	125	92	269	51	122	235	2	27	3	6	6	25	41	12	70	4	24	0	57	16
2012	310	791	558	1,288	297	431	887	132	233	28	302	106	204	458	195	415	54	184	256	545	136
Belgium																					
1997	75	228	219	565	65	188	227	5	48	9	13	10	32	42	30	124	3	16	3	69	16
2012	339	1,047	536	1,925	215	321	811	152	149	41	193	103	171	463	218	342	54	183	131	524	180
Czech Republic																					
1997	30	64	89	199	37	133	99	1	26	2	3	4	7	11	8	78	0	1	1	21	7
2012	313	593	403	829	235	514	489	106	196	31	274	101	194	419	261	380	32	238	267	337	106
Denmark																					
1997	52	178	447	530	204	175	177	0	42	1	8	0	11	64	24	110	3	25	0	95	29
2012	295	822	1,200	1,676	725	286	600	54	244	25	205	18	239	542	110	369	56	103	184	595	95
Finland																					
1997	35	128	402	311	147	212	140	0	36	3	10	10	9	53	33	100	5	32	6	51	14
2012	213	629	931	1,120	331	488	464	103	80	33	155	98	72	316	163	282	35	220	207	329	124
France																					
1997	181	1,042	478	1,853	161	861	1,017	4	279	11	45	14	60	225	171	537	7	102	35	298	53
2012	892	3,450	1,467	5,250	754	1,433	2,586	241	600	164	467	158	541	1,713	791	1,515	207	592	450	1,555	277
Germany																					
1997	132	733	744	2,322	247	1,559	1,521	9	448	12	62	61	126	417	260	954	12	125	47	472	76
2012	850	3,641	2,259	7,141	959	2,309	4,238	306	990	300	657	380	596	2,753	1,029	2,196	253	918	586	2,199	409

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Greece																					
1997	48	103	73	316	51	52	110	2	14	2	5	0	6	32	6	36	1	20	1	11	3
2012	290	773	425	1,115	269	376	508	94	204	49	303	104	166	330	160	302	41	193	280	286	98
Hungary																					
1997	5	67	63	212	20	78	121	1	62	3	10	5	5	34	30	118	1	28	4	18	7
2012	269	498	350	677	201	340	389	87	177	15	257	87	173	323	162	277	9	166	215	251	98
Ireland																					
1997	13	38	31	327	21	18	32	0	10	0	0	1	8	5	1	24	4	9	0	26	4
2012	65	369	246	1,218	101	177	207	12	33	15	34	12	47	238	84	121	31	72	43	231	48
Italy																					
1997	116	642	364	1,365	115	503	764	4	183	4	34	29	37	166	104	344	5	92	36	185	31
2012	724	3,182	1,228	4,459	608	988	2,003	266	541	129	495	168	337	925	501	1,066	120	479	407	1,105	264
Netherlands																					
1997	101	364	324	1,170	164	308	407	1	106	3	24	19	31	131	76	265	2	48	10	182	30
2012	506	1,727	1,241	4,065	677	612	1,358	115	436	94	337	36	389	968	300	664	137	270	234	1,174	184
Poland																					
1997	35	141	204	308	60	288	151	0	39	4	10	6	16	18	16	149	0	22	3	47	6
2012	383	880	491	1,230	309	715	669	111	239	38	308	102	236	487	313	473	45	257	287	447	119
Portugal																					
1997	na	164	73	245	40	48	58	0	10	1	1	1	5	10	3	18	1	1	2	8	3
2012	na	1,340	333	1,013	237	315	384	110	178	27	242	93	161	359	201	237	22	132	228	336	95
Spain																					
1997	164	na	164	879	84	254	273	0	82	6	24	9	21	89	53	117	3	69	9	70	22
2012	1,340	na	1,109	3,886	565	888	1,323	206	444	106	407	129	310	794	477	791	99	417	382	929	191
Sweden																					
1997	73	164	na	697	403	301	250	1	41	12	16	2	14	98	37	253	14	19	8	180	32
2012	333	1,109	na	2,311	1,061	520	819	100	287	37	237	46	327	829	229	581	96	230	194	736	97
United Kingdom																					
1997	245	879	697	na	301	606	814	33	272	42	130	36	206	409	206	863	73	100	57	919	201
2012	1,013	3,886	2,311	na	1,209	1,210	2,693	323	772	328	594	293	925	3,231	930	1,908	540	883	613	3,810	758
Norway																					
1997	40	84	403	301	na	119	95	1	24	0	4	4	9	20	5	50	2	5	1	47	8
2012	237	565	1,061	1,209	na	330	401	21	210	14	176	15	245	336	106	295	34	54	168	397	52
Russia																					
1997	48	254	301	606	119	na	295	1	157	2	28	6	20	93	72	428	1	119	18	75	11
2012	315	888	520	1,210	330	na	691	106	310	24	294	90	206	766	369	685	39	476	407	416	102
Switzerland																					
1997	58	273	250	814	95	295	na	3	143	5	26	11	32	91	67	302	5	58	31	130	27
2012	384	1,323	819	2,693	401	691	na	164	365	64	323	123	309	750	348	789	124	400	360	864	202
Iran																					
1997	0	0	1	33	1	1	3	na	0	1	1	0	0	5	7	11	0	0	2	13	1
2012	110	206	100	323	21	106	164	na	15	32	168	87	64	162	144	93	26	143	87	253	110

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Israel																					
1997	10	82	41	272	24	157	143	0	na	3	21	4	25	29	16	129	6	19	4	87	11
2012	178	444	287	772	210	310	365	15	na	13	208	19	164	323	156	313	61	92	163	343	44
Saudi Arabia																					
1997	1	6	12	42	0	2	5	1	3	na	8	18	2	2	4	17	0	3	1	4	1
2012	27	106	37	328	14	24	64	32	13	na	121	669	32	300	243	91	62	129	36	118	20
Turkey																					
1997	1	24	16	130	4	28	26	1	21	8	na	0	2	9	0	33	0	5	1	8	3
2012	242	407	237	594	176	294	323	168	208	121	na	146	170	321	194	251	37	163	216	257	99
Egypt																					
1997	1	9	2	36	4	6	11	0	4	18	0	na	3	7	8	40	3	6	2	2	0
2012	93	129	46	293	15	90	123	87	19	669	146	na	24	137	108	184	7	160	94	79	86
South Africa																					
1997	5	21	14	206	9	20	32	0	25	2	2	3	na	11	12	25	3	2	1	81	12
2012	161	310	327	925	245	206	309	64	164	32	170	24	na	274	152	234	14	61	149	486	70
China																					
1997	10	89	98	409	20	93	91	5	29	2	9	7	11	na	60	592	99	135	89	180	28
2012	359	794	829	3,231	336	766	750	162	323	300	321	137	274	na	522	3,004	1,419	1,464	1,228	2,706	271
India																					
1997	3	53	37	206	5	72	67	7	16	4	0	8	12	60	na	128	12	51	17	45	8
2012	201	477	229	930	106	369	348	144	156	243	194	108	152	522	na	606	196	845	324	451	122
Japan																					
1997	18	117	253	863	50	428	302	11	129	17	33	40	25	592	128	na	32	395	115	351	64
2012	237	791	581	1,908	295	685	789	93	313	91	251	184	234	3,004	606	na	262	1,523	780	1,024	133
Singapore																					
1997	1	3	14	73	2	1	5	0	6	0	0	3	3	99	12	32	na	4	20	59	10
2012	22	99	96	540	34	39	124	26	61	62	37	7	14	1,419	196	262	na	223	142	504	69
South Korea																					
1997	1	69	19	100	5	119	58	0	19	3	5	6	2	135	51	395	4	na	20	37	13
2012	132	417	230	883	54	476	400	143	92	129	163	160	61	1,464	845	1,523	223	na	391	424	135
Taiwan																					
1997	2	9	8	57	1	18	31	2	4	1	1	2	1	89	17	115	20	20	na	28	5
2012	228	382	194	613	168	407	360	87	163	36	216	94	149	1,228	324	780	142	391	na	415	111

Appendix table 5-56

Internationally coauthored S&E articles, by selected country/economy pairs: 1997 and 2012

Country/economy and year	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzer-land	Iran	Israel	Saudi Arabia	Turkey	Egypt	South Africa	China	India	Japan	Singa-pore	South Korea	Taiwan	Australia	New Zealand
Australia																					
1997	8	70	180	919	47	75	130	13	87	4	8	2	81	180	45	351	59	37	28	na	246
2012	336	929	736	3,810	397	416	864	253	343	118	257	79	486	2,706	451	1,024	504	424	415	na	902
New Zealand																					
1997	3	22	32	201	8	11	27	1	11	1	3	0	12	28	8	64	10	13	5	246	na
2012	95	191	97	758	52	102	202	110	44	20	99	86	70	271	122	133	69	135	111	902	na

na = not applicable.

NOTES: Article counts are fom the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited one count). Detail adds to more than world total because of articles with three or more country/economy coauthors. Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-57

Share of all S&E articles, top 1% of cited articles, and index of highly cited articles, by field and selected country/economy: 2002 and 2012

(Percent)

Field and citation period	Share of all articles[a]				Share of top 1% cited articles				Index of highly cited articles			
	United States	EU	China	Japan	United States	EU	China	Japan	United States	EU	China	Japan
All fields												
2002	30.8	35.6	2.6	9.0	57.0	28.2	0.3	5.0	1.8	0.8	0.1	0.6
2012	26.6	31.6	9.2	6.3	46.4	29.8	5.8	4.0	1.7	0.9	0.6	0.6
Engineering												
2002	24.4	31.5	5.0	12.2	42.7	29.9	2.5	10.1	1.7	1.0	0.5	0.8
2012	18.4	26.4	15.2	6.7	37.5	24.6	12.2	4.3	2.0	0.9	0.8	0.6
Astronomy												
2002	33.5	39.2	1.9	5.9	54.9	34.4	0.0	1.2	1.6	0.9	0.0	0.2
2012	31.1	38.8	4.7	4.9	48.5	39.3	0.7	3.6	1.6	1.0	0.1	0.7
Chemistry												
2002	19.1	37.9	5.3	11.6	44.2	32.7	1.9	9.4	2.3	0.9	0.4	0.8
2012	16.2	29.6	16.9	7.9	33.5	28.4	16.3	5.6	2.1	1.0	1.0	0.7
Physics												
2002	20.6	35.9	4.7	12.2	42.4	36.8	0.8	8.3	2.1	1.0	0.2	0.7
2012	17.4	30.2	14.8	8.7	37.8	36.2	5.2	6.4	2.2	1.2	0.4	0.7
Geosciences												
2002	32.0	34.6	1.9	5.3	53.2	27.7	0.5	1.8	1.7	0.8	0.2	0.3
2012	26.6	31.7	7.6	4.8	43.4	26.9	8.4	2.2	1.6	0.8	1.1	0.5
Mathematics												
2002	29.0	40.4	4.7	4.6	54.8	32.0	3.1	1.3	1.9	0.8	0.7	0.3
2012	22.0	37.7	12.4	4.1	44.1	34.3	7.3	1.8	2.0	0.9	0.6	0.4
Computer sciences												
2002	39.8	28.9	4.3	4.2	63.3	20.6	0.9	1.3	1.6	0.7	0.2	0.3
2012	27.2	30.6	13.0	2.0	43.6	21.6	16.7	0.5	1.6	0.7	1.3	0.3
Agricultural sciences												
2002	26.2	35.0	0.9	8.6	37.3	41.9	0.5	4.1	1.4	1.2	0.5	0.5
2012	19.6	32.9	7.9	6.7	27.6	38.6	5.9	1.9	1.4	1.2	0.7	0.3
Biological sciences												
2002	35.3	34.6	1.4	8.7	62.4	24.1	0.1	5.3	1.8	0.7	0.1	0.6
2012	31.6	31.5	6.6	6.6	56.0	26.5	2.0	3.6	1.8	0.8	0.3	0.5
Medical sciences												
2002	34.6	38.6	0.9	8.5	56.8	30.2	0.4	3.1	1.6	0.8	0.4	0.4
2012	32.9	34.5	4.0	5.9	51.0	32.1	1.5	2.2	1.6	0.9	0.4	0.4
Other life sciences												
2002	58.7	23.8	0.9	0.6	83.7	10.8	0.0	0.0	1.4	0.5	0.0	0.0
2012	47.0	24.0	1.5	0.9	68.1	18.9	1.1	0.2	1.4	0.8	0.7	0.2
Psychology												
2002	53.6	26.6	0.7	2.0	71.7	18.8	0.1	0.5	1.3	0.7	0.1	0.2
2012	45.2	31.7	1.3	1.6	63.7	25.0	0.3	0.2	1.4	0.8	0.2	0.1

Appendix table 5-57

Share of all S&E articles, top 1% of cited articles, and index of highly cited articles, by field and selected country/economy: 2002 and 2012

(Percent)

Field and citation period	Share of all articles[a]				Share of top 1% cited articles				Index of highly cited articles			
	United States	EU	China	Japan	United States	EU	China	Japan	United States	EU	China	Japan
Social sciences												
2002	48.0	30.6	0.9	1.5	70.0	22.9	0.4	0.2	1.5	0.7	0.5	0.1
2012	37.4	35.6	1.9	1.6	49.3	32.5	1.0	0.4	1.3	0.9	0.5	0.2

EU = European Union.

[a] Article data refer to articles in the 3-year cited window (i.e., 2002 data are articles in 1998–2000; 2012 data are articles in 2008–10).

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database and assigned to country/economy on the basis of the institutional address(es) listed in the article. Articles/citations are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). See appendix table 5-25 for countries/economies included in the EU and Asia. Citation data are based on the year the article entered the database. Citation data are based on a 3-year period with 2-year lag (e.g., citations for 2012 are references made in articles in the 2012 data tape to articles in the 2008–10 data tapes). The index of highly cited articles is the share of the world's top 1% cited articles divided by the share of world articles in the cited-year window.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
			1998–2000 articles cited by 2002 articles (% of world)			
All fields	na	1,844,003	30.8	35.6	2.6	9.0
99th	≥ 20	17,439	57.0	28.2	0.3	5.0
95th	9–19	70,882	48.8	32.6	0.7	6.3
90th	6–8	89,959	42.5	35.2	1.2	7.2
75th	3–5	280,400	36.3	37.2	1.6	8.3
50th	2	221,009	32.1	37.1	2.1	9.2
< 50th	0–1	1,164,314	26.9	35.3	3.2	9.5
Engineering	na	146,483	24.4	31.5	5.0	12.2
99th	≥ 8	1,409	42.7	29.9	2.5	10.1
95th	5–7	3,335	34.7	33.2	3.8	10.6
90th	3–4	9,173	29.4	34.0	4.1	10.9
75th	2	12,916	27.0	33.5	4.6	11.5
50th	1	30,726	24.9	32.9	5.0	11.7
< 50th	0	88,924	22.7	30.4	5.3	12.7
Astronomy	na	21,847	33.5	39.2	1.9	5.9
99th	≥ 25	205	54.9	34.4	0.0	1.2
95th	12–24	867	52.0	35.2	0.5	2.5
90th	9–11	742	48.8	36.3	0.4	3.4
75th	5–8	2,730	43.9	38.0	0.9	4.4
50th	2–4	6,203	37.3	38.6	1.6	5.2
< 50th	0–1	11,100	26.1	40.3	2.6	7.1
Chemistry	na	227,040	19.1	37.9	5.3	11.6
99th	≥ 15	2,217	44.2	32.7	1.9	9.4
95th	8–14	7,812	35.7	36.5	2.4	10.3
90th	6–7	7,948	30.5	38.1	3.6	11.5
75th	3–5	36,633	24.6	40.6	4.0	12.1
50th	2	29,679	20.4	40.6	4.8	12.7
< 50th	0–1	142,751	15.5	36.7	6.0	11.4
Physics	na	256,589	20.6	35.9	4.7	12.2
99th	≥ 15	2,484	42.4	36.8	0.8	8.3
95th	8–14	7,489	35.7	38.2	1.9	9.6
90th	5–7	13,654	29.8	40.1	2.7	10.5
75th	3–4	26,349	26.2	39.7	3.1	11.4
50th	2	28,276	22.8	38.6	3.9	12.0
< 50th	0–1	178,337	17.8	34.5	5.4	12.6
Geosciences	na	92,346	32.0	34.6	1.9	5.3
99th	≥ 12	805	53.2	27.7	0.5	1.8
95th	7–11	2,982	43.6	33.3	1.2	2.9
90th	5–6	4,455	39.5	35.1	1.6	3.3

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
75th	3–4	11,892	37.6	36.2	1.3	3.8
50th	2	12,730	34.1	36.2	1.7	4.5
< 50th	0–1	59,482	28.9	34.0	2.2	6.1
Mathematics	na	37,391	29.0	40.4	4.7	4.6
99th	≥ 7	235	54.8	32.0	3.1	1.3
95th	4–6	929	41.4	37.7	3.5	2.3
90th	3	1,162	36.2	39.0	3.2	4.2
75th	2	2,820	34.7	40.4	4.4	3.5
50th	1	7,668	30.6	41.5	4.6	4.1
< 50th	0	24,577	26.8	40.2	4.9	5.1
Computer sciences	na	15,168	39.8	28.9	4.3	4.2
99th	≥ 7	127	63.3	20.6	0.9	1.3
95th	4–6	315	55.2	23.9	1.3	2.4
90th	3	420	47.1	29.0	5.4	2.2
75th	2	975	43.8	27.8	4.8	4.3
50th	1	2,966	41.2	30.3	4.7	3.8
< 50th	0	10,365	38.0	28.9	4.3	4.5
Agricultural sciences	na	37,851	26.2	35.0	0.9	8.6
99th	≥ 9	358	37.3	41.9	0.5	4.1
95th	5–8	1,510	34.0	41.0	0.2	5.2
90th	4	1,291	30.4	38.1	1.0	7.3
75th	3	2,503	30.2	39.9	0.9	7.3
50th	2	4,640	28.6	38.4	0.9	7.1
< 50th	0–1	27,549	24.6	33.4	0.9	9.2
Biological sciences	na	437,232	35.3	34.6	1.4	8.7
99th	≥ 30	4,251	62.4	24.1	0.1	5.3
95th	14–29	14,982	55.5	28.5	0.2	5.6
90th	9–13	21,795	50.8	31.4	0.3	6.1
75th	5–8	53,057	44.7	34.4	0.5	6.9
50th	2–4	123,647	37.2	36.0	0.9	8.7
< 50th	0–1	219,500	28.6	34.8	2.1	9.8
Medical sciences	na	452,823	34.6	38.6	0.9	8.5
99th	≥ 20	4,376	56.8	30.2	0.4	3.1
95th	10–19	16,030	50.8	33.0	0.4	5.3
90th	7–9	19,157	46.7	35.1	0.6	6.0
75th	4–6	52,179	41.5	37.2	0.6	7.2
50th	2–3	94,283	36.5	38.4	0.8	8.5
< 50th	0–1	266,798	30.4	39.6	1.1	9.2
Other life sciences	na	15,035	58.7	23.8	0.9	0.6

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
99th	≥ 8	135	83.7	10.8	0.0	0.0
95th	5–7	312	73.8	15.8	0.0	0.1
90th	3–4	945	63.1	22.5	0.8	0.6
75th	2	1,523	58.3	24.9	0.9	0.4
50th	1	3,390	54.5	26.9	0.9	0.8
< 50th	0	8,730	59.0	22.9	1.0	0.7
Psychology	na	42,991	53.6	26.6	0.7	2.0
99th	≥ 13	411	71.7	18.8	0.1	0.5
95th	7–12	1,435	64.2	23.0	0.3	0.2
90th	5–6	1,846	59.3	25.6	0.4	0.7
75th	3–4	4,784	58.1	25.9	0.4	0.9
50th	2	5,086	56.1	26.4	0.6	1.2
< 50th	0–1	29,429	51.3	27.1	0.8	2.4
Social sciences	na	61,207	48.0	30.6	0.9	1.5
99th	≥ 8	483	70.0	22.9	0.4	0.2
95th	4–7	2,111	63.0	26.1	0.7	0.2
90th	3	2,061	57.3	28.1	0.9	0.6
75th	2	4,530	54.0	29.7	0.9	0.5
50th	1	11,677	50.3	30.3	0.9	1.3
< 50th	0	40,345	45.2	31.3	0.9	1.8
			2008–10 articles cited by 2012 articles (% of world)			
All fields	na	2,403,728	26.6	31.6	9.2	6.3
99th	≥ 21	23,456	46.4	29.8	5.8	4.0
95th	10–20	83,363	39.9	31.7	7.2	4.5
90th	7–9	99,979	35.5	33.0	7.7	4.8
75th	4–6	288,842	31.5	33.5	8.2	5.4
50th	2–3	533,481	27.7	32.8	8.8	6.1
< 50th	0–1	1,374,607	23.3	30.6	9.8	6.8
Engineering	na	240,499	18.4	26.4	15.2	6.7
99th	≥ 17	2,253	37.5	24.6	12.2	4.3
95th	8–16	7,542	27.5	25.3	16.3	3.9
90th	5–7	13,858	22.2	26.6	16.8	4.7
75th	3–4	27,643	19.1	27.4	16.9	5.2
50th	2	30,399	17.8	27.7	16.5	6.0
< 50th	0–1	158,804	17.4	26.1	14.6	7.4
Astronomy	na	29,835	31.1	38.8	4.7	4.9
99th	≥ 31	297	48.5	39.3	0.7	3.6
95th	16–30	1,022	45.9	38.8	0.9	3.1
90th	11–15	1,419	44.6	38.9	1.2	3.1
75th	6–10	4,099	40.2	40.2	2.1	3.8

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
50th	3–5	6,814	34.0	40.7	3.7	4.9
< 50th	0–2	16,184	25.1	37.6	6.5	5.4
Chemistry	na	312,908	16.2	29.6	16.9	7.9
99th	≥ 26	2,976	33.5	28.4	16.3	5.6
95th	12–25	11,160	26.4	28.9	18.9	6.7
90th	8–11	15,922	23.1	30.2	18.9	7.1
75th	5–7	32,632	20.5	32.0	17.1	7.3
50th	3–4	50,820	17.8	32.5	16.3	7.9
< 50th	0–2	199,398	13.7	28.5	16.7	8.1
Physics	na	327,258	17.4	30.2	14.8	8.7
99th	≥ 18	3,097	37.8	36.2	5.2	6.4
95th	9–17	9,925	29.2	36.4	8.6	7.1
90th	6–8	14,861	25.9	36.8	9.6	7.2
75th	3–5	49,417	21.8	34.6	12.2	7.8
50th	2	41,310	18.6	32.5	14.0	8.5
< 50th	0–1	208,648	14.6	27.8	16.4	9.1
Geosciences	na	134,494	26.6	31.7	7.6	4.8
99th	≥ 16	1,310	43.4	26.9	8.4	2.2
95th	9–15	4,551	36.7	30.6	9.2	2.6
90th	7–8	4,702	34.7	31.8	8.5	2.7
75th	4–6	18,608	30.1	34.5	7.8	3.1
50th	2–3	34,162	27.4	33.8	7.3	4.0
< 50th	0–1	71,161	23.8	30.1	7.5	5.9
Mathematics	na	57,309	22.0	37.7	12.4	4.1
99th	≥ 7	557	44.1	34.3	7.3	1.8
95th	4–6	1,740	31.7	40.0	9.8	1.8
90th	3	1,981	27.8	40.7	10.5	2.1
75th	2	4,723	25.9	40.1	10.9	3.3
50th	1	12,269	22.8	40.0	11.4	4.0
< 50th	0	36,039	20.1	36.4	13.2	4.5
Computer sciences	na	24,945	27.2	30.6	13.0	2.0
99th	≥ 10	225	43.6	21.6	16.7	0.5
95th	5–9	863	32.0	24.3	18.7	0.8
90th	4	643	31.0	29.1	15.3	1.6
75th	2–3	3,539	27.9	29.9	13.5	1.6
50th	1	5,577	25.9	30.6	13.3	1.9
< 50th	0	14,098	26.8	31.4	12.2	2.3
Agricultural sciences	na	54,668	19.6	32.9	7.9	6.7
99th	≥ 11	515	27.6	38.6	5.9	1.9

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
95th	7–10	1,553	23.0	36.9	8.3	2.2
90th	5–6	2,893	20.2	37.6	8.0	3.4
75th	3–4	7,861	19.7	37.7	7.9	4.5
50th	2	8,485	19.6	35.2	8.0	5.6
< 50th	0–1	33,361	19.3	30.5	7.9	8.1
Biological sciences	na	482,780	31.6	31.5	6.6	6.6
99th	≥ 29	4,608	56.0	26.5	2.0	3.6
95th	12–28	19,380	48.3	31.2	2.6	4.1
90th	9–11	15,737	44.3	32.0	3.4	4.4
75th	5–8	59,288	38.7	33.2	4.6	5.2
50th	3–4	82,346	34.3	32.6	5.7	6.1
< 50th	0–2	301,421	27.3	31.0	7.7	7.4
Medical sciences	na	544,150	32.9	34.5	4.0	5.9
99th	≥ 20	5,182	51.0	32.1	1.5	2.2
95th	10–19	19,218	47.2	33.6	2.0	3.2
90th	7–9	24,274	42.9	34.7	2.5	4.0
75th	4–6	69,209	38.7	34.9	3.3	4.7
50th	2–3	124,975	34.1	34.5	4.1	5.8
< 50th	0–1	301,292	29.0	34.5	4.4	6.7
Other life sciences	na	29,364	47.0	24.0	1.5	0.9
99th	≥ 9	267	68.1	18.9	1.1	0.2
95th	5–8	1,117	55.5	22.8	1.1	0.3
90th	4	990	46.4	27.9	1.4	0.2
75th	3	1,845	50.0	24.8	1.3	0.4
50th	2	3,609	46.3	25.9	1.5	0.4
< 50th	0–1	21,536	46.2	23.6	1.5	1.2
Psychology	na	66,147	45.2	31.7	1.3	1.6
99th	≥ 16	636	63.7	25.0	0.3	0.2
95th	9–15	2,011	58.8	27.5	0.5	0.2
90th	6–8	3,543	52.7	31.0	0.4	0.5
75th	4–5	6,279	48.9	32.1	0.8	0.7
50th	2–3	15,520	46.9	31.9	1.2	1.1
< 50th	0–1	38,158	42.2	31.9	1.6	2.2
Social sciences	na	99,371	37.4	35.6	1.9	1.6
99th	≥ 10	945	49.3	32.5	1.0	0.4
95th	6–9	2,503	45.9	34.4	2.0	0.9
90th	4–5	4,729	44.5	35.2	1.7	0.8

Appendix table 5-58

S&E articles, by field, citation percentile, and country/economy of institutional author: 2002 and 2012

Field and percentile	Citations (*n*)	Articles (*n*)	United States	EU	China	Japan
75th	2–3	15,626	40.8	35.9	1.9	1.0
50th	1	21,335	37.9	36.3	2.0	1.4
< 50th	0	54,233	34.9	35.5	1.9	1.9

na = not applicable.

EU = European Union.

NOTES: Article counts are from the from set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions. Citation data are based on a 3-year period with 2-year lag (e.g., citations for 2012 are references made in articles in the 2012 data tape to articles in the 2008–10 data tapes). See appendix table 5-25 for countries/economies included in the EU and Asia. Percentiles are approximate because of the method of counting citations and are always higher than stated. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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Appendix table 5-59

U.S. utility patents citing S&E literature, by patent assignee sector, article author sector, and patent issue year: 2003–12

Patent assignee sector and article sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	USPTO utility patents									
All utility patents	169,009	164,285	143,802	173,780	157,282	157,772	167,349	219,612	224,504	253,152
Patents citing S&E literature, all assignee sectors	20,026	19,053	17,445	23,148	21,517	21,860	24,469	32,895	33,479	36,925
Foreign	6,308	6,226	5,721	7,695	7,225	7,590	8,613	12,032	12,622	13,932
United States	13,719	12,827	11,724	15,453	14,291	14,270	15,856	20,863	20,857	22,993
Government	188	223	180	217	194	218	250	348	311	329
Private	11,425	10,607	9,775	13,006	12,082	12,076	13,394	17,463	17,631	19,367
Academic	2,106	1,998	1,769	2,230	2,016	1,976	2,212	3,052	2,916	3,297
	S&E articles									
All S&E articles, all article author sectors	5,904,436	6,055,266	6,201,116	6,333,831	6,461,493	6,601,419	6,753,101	6,906,527	7,082,299	7,259,142
All cited S&E articles, all article author sectors	95,741	87,118	84,139	110,082	100,878	107,323	120,826	154,249	156,435	163,225
Foreign	44,924	41,213	40,235	53,743	49,406	53,238	61,288	79,803	82,649	86,295
United States	50,817	45,905	43,904	56,339	51,472	54,085	59,538	74,446	73,786	76,930
Federal government	3,796	3,183	2,970	3,817	3,519	3,595	3,958	4,901	4,790	4,704
Industry	9,168	8,421	8,221	10,124	9,107	9,392	9,824	11,783	11,452	11,220
Academic	31,561	28,787	27,488	35,556	32,578	34,486	38,314	48,503	48,423	51,521
FFRDCs	1,065	1,030	896	1,290	1,122	1,192	1,369	1,583	1,506	1,621
Nonprofit	4,813	4,143	3,993	5,095	4,722	5,026	5,635	7,090	7,058	7,309
State/local government	246	186	197	274	248	222	260	338	334	325
Joint/unknown sectors	168	155	138	183	175	171	178	248	224	231
	Citations from USPTO utility patents to S&E articles									
All citations, all article author sectors	164,283	143,718	135,427	191,725	190,996	198,191	221,456	305,873	323,073	332,778
Foreign	72,031	64,037	62,199	87,954	88,463	94,643	105,242	147,096	158,870	165,271
United States	92,252	79,681	73,228	103,771	102,533	103,548	116,214	158,777	164,203	167,507
Federal government	6,584	5,290	4,483	6,533	6,654	6,590	7,416	10,078	9,806	9,767
Industry	18,870	16,660	15,338	21,409	19,800	19,514	22,021	28,822	28,814	28,156
Academic	54,685	47,735	44,509	63,087	63,380	64,379	72,235	99,771	104,748	108,660
FFRDCs	2,146	2,049	1,695	2,480	2,420	2,456	2,662	3,455	3,464	3,533
Nonprofit	9,325	7,396	6,682	9,494	9,566	9,976	11,139	15,576	16,289	16,192
State/local government	351	278	276	421	398	328	409	573	582	628
Joint/unknown sectors	292	274	246	347	315	305	332	502	499	571

FFRDC = federally funded R&D center; USPTO = U.S. Patent and Trademark Office.

NOTES: Article/citation counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are assigned to a sector on the basis of the institutional address(es) listed in the article. Article/citations are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple sectors, each sector receives fractional credit on the basis of the proportion of its participating institutions). Citation counts are based on an 11-year window with a 5-year lag (e.g., citations for 2012 are references in U.S. patents issued in 2012 to articles published in 1997–2007). Article counts are a sum of articles in the cited-year window. Detail may not add to total because of rounding. Data in the table are not comparable to previous versions due to changes in the cited-year window.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from USPTO, Patent Grant Bibliographic Data, and Thomson Reuters, SCI and SSCI, http://www.thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-60

Citation of S&E articles in USPTO patents, by cited field and cited country/sector: 2003–12

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All fields, all sectors	164,283	143,718	135,427	191,725	190,996	198,191	221,456	305,873	323,073	332,778
Foreign	72,031	64,037	62,199	87,954	88,463	94,643	105,242	147,096	158,870	165,271
United States	92,252	79,681	73,228	103,771	102,533	103,548	116,214	158,777	164,203	167,507
Federal government	6,584	5,290	4,483	6,533	6,654	6,590	7,416	10,078	9,806	9,767
Industry	18,870	16,660	15,338	21,409	19,800	19,514	22,021	28,822	28,814	28,156
Academic	54,685	47,735	44,509	63,087	63,380	64,379	72,235	99,771	104,748	108,660
FFRDCs	2,146	2,049	1,695	2,480	2,420	2,456	2,662	3,455	3,464	3,533
Nonprofit	9,325	7,396	6,682	9,494	9,566	9,976	11,139	15,576	16,289	16,192
State/local government	351	278	276	421	398	328	409	573	582	628
Joint/unknown sectors	292	274	246	347	315	305	332	502	499	571
Engineering	9,267	10,497	10,539	14,181	13,520	13,342	16,310	21,267	24,309	27,205
Foreign	5,086	5,701	5,769	7,672	7,080	7,203	8,915	11,637	13,541	15,495
United States	4,181	4,796	4,770	6,509	6,440	6,139	7,395	9,630	10,768	11,710
Federal government	174	186	178	236	210	208	249	293	318	370
Industry	1,601	1,850	1,654	2,256	2,126	1,959	2,227	2,655	2,655	2,547
Academic	2,093	2,400	2,524	3,518	3,601	3,522	4,360	5,994	7,023	7,998
FFRDCs	194	246	242	278	277	225	302	370	418	426
Nonprofit	95	95	147	183	204	194	228	281	306	300
State/local government	3	1	1	2	0 *	3	5	9	11	14
Joint/unknown sectors	21	17	25	35	21	28	24	28	37	56
Astronomy	8	11	2	10	8	11	21	19	39	24
Foreign	6	7	1	1	4	3	10	16	21	13
United States	2	5	1	9	4	8	11	3	18	11
Federal government	1	2	0	0 *	1	1	0	1	0	1
Industry	1	1	0	1	0	1	1	0	2	1
Academic	0	2	1	7	3	5	5	1	13	6
FFRDCs	0	1	0	0 *	0 *	0 *	4	0	3	2
Nonprofit	0	0	0	0	0	0	1	1	1	2
State/local government	0	0	0	0	0	0	0	0	0	0
Joint/unknown sectors	0	0	0	0	0	0	0	0	0	0
Chemistry	19,180	17,528	16,734	22,511	20,029	20,330	26,353	37,066	40,643	43,382
Foreign	10,115	9,107	8,880	11,782	10,339	10,873	14,356	20,100	22,692	24,254
United States	9,065	8,421	7,854	10,729	9,690	9,457	11,997	16,966	17,951	19,128
Federal government	259	246	243	335	331	248	343	465	499	581
Industry	2,403	1,991	1,845	2,407	2,148	1,978	2,381	3,377	3,342	3,397
Academic	5,527	5,304	5,022	6,958	6,239	6,364	8,119	11,415	12,382	13,390
FFRDCs	487	516	366	542	475	500	538	778	751	866
Nonprofit	368	333	347	423	454	348	569	873	933	846
State/local government	8	6	12	36	16	6	22	20	19	14
Joint/unknown sectors	14	25	18	29	28	13	25	38	24	33
Physics	13,787	13,931	15,136	19,880	18,041	18,747	20,809	25,222	26,628	25,189
Foreign	7,414	7,587	8,302	10,641	9,519	10,057	11,060	13,311	14,357	13,985

Appendix table 5-60

Citation of S&E articles in USPTO patents, by cited field and cited country/sector: 2003–12

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	6,373	6,344	6,834	9,239	8,522	8,690	9,749	11,911	12,271	11,204
Federal government	286	256	283	389	361	373	445	540	517	472
Industry	2,255	2,214	2,182	2,718	2,281	2,041	2,169	2,500	2,373	2,089
Academic	3,246	3,329	3,916	5,399	5,134	5,423	6,294	7,792	8,169	7,580
FFRDCs	490	445	382	629	640	703	713	793	865	840
Nonprofit	83	81	55	90	90	138	112	251	319	187
State/local government	0	0	0	0	0 *	1	1	1	1	1
Joint/unknown sectors	13	19	16	13	16	13	15	32	26	35
Geosciences	568	664	473	651	467	722	854	1,096	1,247	1,330
Foreign	227	253	214	274	246	384	385	585	677	787
United States	341	411	259	376	221	338	469	511	570	543
Federal government	39	42	21	45	24	32	43	56	47	51
Industry	59	90	50	57	35	55	77	87	74	78
Academic	217	246	168	249	140	227	311	321	395	361
FFRDCs	8	16	10	11	13	11	25	38	37	37
Nonprofit	10	6	5	7	4	9	7	5	10	8
State/local government	5	10	4	4	4	4	2	2	7	5
Joint/unknown sectors	2	2	1	3	1	0 *	3	3	1	3
Mathematics	77	69	94	116	91	111	178	222	215	274
Foreign	27	35	25	41	30	46	81	105	82	130
United States	50	34	69	75	61	65	97	117	133	144
Federal government	3	2	1	2	0	4	4	1	3	0
Industry	10	2	5	6	7	7	8	13	6	8
Academic	36	29	60	61	51	46	82	92	113	128
FFRDCs	2	1	2	6	2	7	1	6	7	5
Nonprofit	0	0	0 *	1	0	0	2	4	2	3
State/local government	0	0	0	0	0	0	1	0 *	0	0 *
Joint/unknown sectors	0	0	0	0	1	1	0	1	1	0
Computer sciences	1,407	1,711	1,975	3,200	2,782	3,368	4,306	5,212	5,414	6,564
Foreign	407	573	628	1,010	906	1,038	1,335	1,744	1,855	2,377
United States	1,000	1,138	1,347	2,190	1,876	2,330	2,971	3,468	3,559	4,187
Federal government	8	11	12	35	12	21	39	41	42	39
Industry	372	445	516	790	740	965	1,136	1,289	1,318	1,341
Academic	590	653	792	1,307	1,076	1,298	1,710	2,043	2,108	2,687
FFRDCs	16	18	13	19	9	13	30	34	34	50
Nonprofit	10	8	7	23	22	24	42	39	36	52
State/local government	3	0	0	1	2	0	0	0	0 *	0
Joint/unknown sectors	3	3	7	14	16	9	14	22	20	17
Agricultural sciences	1,110	923	784	1,223	1,607	1,276	1,754	3,038	2,880	2,924
Foreign	530	443	399	620	736	591	833	1,435	1,565	1,829
United States	580	480	385	603	871	685	921	1,603	1,315	1,095
Federal government	116	94	81	116	149	133	204	404	312	220

Appendix table 5-60

Citation of S&E articles in USPTO patents, by cited field and cited country/sector: 2003–12

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Industry	65	81	59	120	84	90	113	203	155	168
Academic	390	297	237	353	622	445	589	969	824	691
FFRDCs	0	0	0	2	2	4	1	6	3	2
Nonprofit	6	3	4	9	9	4	5	10	14	12
State/local government	1	2	1	0 *	2	0 *	2	1	2	0
Joint/unknown sectors	2	2	2	3	3	8	8	10	5	3
Biological sciences	88,293	72,506	66,539	96,508	94,558	95,994	106,407	144,718	149,974	149,016
Foreign	34,709	28,812	27,364	40,138	39,819	41,823	46,547	64,795	68,762	68,346
United States	53,584	43,694	39,176	56,370	54,739	54,171	59,860	79,923	81,212	80,670
Federal government	4,291	3,418	2,718	4,095	4,043	4,030	4,514	5,847	5,669	5,569
Industry	10,386	8,592	7,657	11,115	10,309	10,230	11,382	14,980	14,833	13,996
Academic	31,500	26,015	23,735	33,775	33,225	32,741	36,077	48,802	50,121	50,704
FFRDCs	776	671	580	847	850	764	893	1,205	1,107	1,095
Nonprofit	6,305	4,735	4,234	6,168	5,976	6,102	6,637	8,625	8,995	8,813
State/local government	202	150	152	234	209	180	223	284	302	287
Joint/unknown sectors	124	113	101	136	127	124	135	180	186	205
Medical sciences	30,379	25,685	22,921	33,142	39,640	43,948	44,044	67,417	71,025	76,054
Foreign	13,448	11,438	10,544	15,660	19,664	22,493	21,571	33,152	35,069	37,773
United States	16,932	14,247	12,377	17,482	19,976	21,455	22,473	34,265	35,956	38,281
Federal government	1,404	1,030	943	1,274	1,519	1,528	1,563	2,414	2,367	2,425
Industry	1,685	1,372	1,331	1,916	2,056	2,164	2,510	3,689	4,013	4,498
Academic	10,987	9,382	7,951	11,328	13,190	14,150	14,480	22,040	23,262	24,702
FFRDCs	173	135	100	145	152	229	153	223	238	200
Nonprofit	2,441	2,131	1,874	2,570	2,794	3,144	3,512	5,456	5,644	5,937
State/local government	131	108	105	138	163	134	151	255	236	303
Joint/unknown sectors	111	90	74	111	102	106	105	187	197	214
Other life sciences	56	44	60	81	57	81	100	127	158	185
Foreign	18	26	25	47	33	40	43	56	56	59
United States	38	18	35	34	24	41	57	71	102	126
Federal government	1	0	1	1	1	4	5	8	8	10
Industry	6	10	18	6	6	10	7	8	10	14
Academic	28	4	12	16	10	24	35	41	71	81
FFRDCs	1	1	0	1	0	0	2	1	1	9
Nonprofit	1	3	3	8	6	3	5	12	11	9
State/local government	0	0	0	1	0	1	0	0 *	0 *	0 *
Joint/unknown sectors	1	0	0	2	1	0 *	2	1	2	3
Psychology	134	137	142	167	156	196	236	318	416	501
Foreign	41	50	43	54	68	79	91	133	163	182
United States	93	87	99	113	88	117	145	185	253	319
Federal government	2	4	2	4	3	3	3	5	14	14
Industry	22	12	15	13	6	13	10	16	28	16
Academic	62	67	73	80	72	89	116	151	190	265

Appendix table 5-60

Citation of S&E articles in USPTO patents, by cited field and cited country/sector: 2003–12

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
FFRDCs	0	0	0	0	0	0	0	0	0	0
Nonprofit	6	2	6	13	6	10	11	11	17	21
State/local government	0	0	1	3	1	1	3	0	4	2
Joint/unknown sectors	1	1	1	1	1	2	1	1	1	0 *
Social sciences	17	12	28	55	40	65	84	151	125	130
Foreign	4	5	5	13	18	13	15	26	31	42
United States	12	7	22	42	21	52	69	124	94	88
Federal government	0	0	0	1	1	5	4	2	11	15
Industry	3	0	5	5	1	0 *	0	5	4	2
Academic	9	6	17	36	17	45	58	110	76	67
FFRDCs	0	0	1	0	0	0	0	0	0	0
Nonprofit	1	0	0	1	2	1	7	7	2	4
State/local government	0	0	0	0 *	1	0	0	0 *	1	0 *
Joint/unknown sectors	0	1	0	0	0	0	0	0 *	0	0

* = rounds to zero.

FFRDC = federally funded R&D center; USPTO = U.S. Patent and Trademark Office.

NOTES: Citations are references to country/sector of S&E articles in journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Citations are credited on a fractional-count basis (i.e., for cited articles with collaborating institutions from more than one country/sector, each receives fractional credit on the basis of the of proportion of its participating institutions). Citation counts are based on an 11-year window with a 5-year lag (e.g., citations for 2012 are references in USPTO patents issued in 2012 to articles published in 1997–2007). Detail may not add to total because of rounding. Data in the table are not comparable to previous versions due to changes in the cited-year window.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from USPTO, Patent Grant Bibliographic Data, and Thomson Reuters, SCI and SSCI, http://www.thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-61

U.S. utility patents in clean energy and pollution control technologies citing S&E literature, by patent assignee sector, article author sector, and patent issue year: 2003–12

Patent assignee sector and article sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	USPTO utility patents									
All utility patents	4,255	4,085	3,594	3,960	3,701	3,742	4,297	6,260	6,907	8,835
Patents citing S&E literature, all assignee sectors	440	409	391	477	473	496	707	1,060	1,264	1,527
Foreign	169	152	146	166	154	165	236	380	456	558
United States	271	258	246	312	319	332	472	680	808	969
Government	3	7	8	5	3	8	9	16	11	13
Private	210	199	189	237	252	260	383	548	658	820
Academic	58	52	49	70	63	64	79	117	139	136
	Citations from USPTO utility patents to S&E articles									
All citations, all article author sectors	1,470	1,500	1,824	2,549	2,480	2,438	4,061	5,413	8,308	10,098
Foreign	791	826	993	1,407	1,403	1,323	2,238	3,193	4,876	6,038
United States	679	674	831	1,142	1,077	1,115	1,823	2,220	3,432	4,060
Federal government	44	52	45	62	44	54	80	104	146	196
Industry	149	140	166	180	184	180	284	297	471	470
Academic	401	391	526	772	730	769	1,271	1,472	2,434	2,853
FFRDCs	63	75	75	101	102	98	155	275	323	410
Nonprofit	14	13	14	24	11	11	26	60	45	109
State/local government	3	2	3	2	3	2	1	1	2	3
Joint/unknown sectors	4	1	2	3	3	1	5	10	11	19

FFRDC = federally funded R&D center; USPTO = U.S. Patent and Trademark Office.

NOTES: Article/citation counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are assigned to a sector on the basis of the institutional address(es) listed in the article. Article/citations are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple sectors, each sector receives fractional credit on the basis of the proportion of its participating institutions). Citation counts are based on an 11-year window with a 5-year lag (e.g., citations for 2012 are references in U.S. patents issued in 2012 to articles published in 1997–2007). Article counts are a sum of articles in the cited-year window. Detail may not add to total because of rounding. Data in the table are not comparable to previous versions due to changes in the cited-year window.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from USPTO, Patent Grant Bibliographic Data, and Thomson Reuters, SCI and SSCI, http://www.thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014

Appendix table 5-62

U.S. utility patent awards, by selected characteristics of patent owner: 1997–2012

Characteristic	1997–2012	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Patents granted	2,734,378	111,982	147,509	153,481	157,489	166,033	167,327	169,020	164,290	143,805	173,771	157,282	157,772	167,349	219,612	224,504	253,152
Patents granted to U.S. owners	1,446,088	64,353	83,842	87,501	88,427	91,038	89,677	90,223	86,475	76,620	92,029	81,568	80,049	84,860	111,306	112,359	125,761
Patents granted to U.S. nongovernment owners	1,241,259	51,119	67,223	70,671	72,229	75,787	75,361	76,545	74,173	66,183	80,141	71,628	70,877	75,859	99,124	100,990	113,349
Patents granted to U.S. universities	57,003	2,652	3,434	3,654	3,426	3,554	3,560	3,510	3,271	2,928	3,537	3,198	3,001	3,267	4,550	4,389	5,072
Top 200 R&D institutions in 2012	55,628	2,591	3,394	3,593	3,366	3,502	3,461	3,417	3,188	2,868	3,451	3,124	2,956	3,202	4,416	4,224	4,875
U. of California	6,425	312	421	470	462	443	467	466	449	410	443	371	256	275	396	370	414
MIT/Massachusetts Institute of Technology	2,414	109	148	155	121	142	152	135	139	146	143	145	138	141	190	173	237
U. of Texas	1,839	93	115	116	101	101	109	110	115	101	118	100	90	117	141	138	174
Stanford U.	1,830	69	84	92	111	91	112	87	84	96	106	95	131	123	174	174	201
California Institute of Technology	1,828	50	95	103	108	128	117	144	136	112	123	117	106	94	138	113	144
U. of Wisconsin	1,585	64	85	89	70	76	82	89	74	79	106	99	92	123	145	150	162
Johns Hopkins U.	1,342	61	86	110	89	87	97	81	101	80	99	69	71	62	85	77	87
U. of North Carolina	1,226	81	66	85	73	81	69	87	78	84	74	75	68	56	81	75	93
U. of Michigan	1,195	58	55	58	75	59	57	75	76	86	81	68	80	69	86	93	119
Cornell U.	977	53	73	70	53	72	40	64	45	46	65	55	57	61	84	72	67
Columbia U.	973	38	59	59	59	63	47	65	53	60	57	58	56	50	85	81	83
U. of Florida	954	51	60	55	68	59	47	64	45	71	83	63	47	57	49	60	75
U. of Pennsylvania	869	60	80	64	38	55	49	32	35	47	49	43	48	40	79	63	87
U. of Washington	822	45	60	54	63	52	44	36	33	33	44	43	47	55	84	52	77
U. of Illinois	821	19	20	34	29	36	34	44	63	37	51	47	51	70	94	99	93
Georgia Institute of Technology	810	20	28	38	42	40	49	47	37	45	55	55	48	47	82	90	87
State U. of New York	782	48	54	59	65	42	55	38	39	32	46	29	45	58	67	45	60
Harvard U.	764	38	64	49	44	42	52	45	45	31	43	47	52	38	50	63	61
U. of Minnesota	686	36	48	55	48	42	42	43	46	42	39	40	36	39	42	46	42
Michigan State U.	682	42	61	54	44	41	53	51	30	27	36	38	48	43	43	39	32
U. of Maryland System	680	20	30	41	29	43	34	48	38	32	47	41	43	41	61	62	70
Duke U.	671	27	38	42	47	59	43	47	29	27	52	35	36	38	52	49	50
U. of Southern California	660	21	20	16	21	33	36	32	38	36	41	40	42	52	68	65	99
New York U.	650	28	30	32	29	39	29	31	28	22	42	55	32	39	77	74	63
Pennsylvania State U.	637	21	27	45	40	63	58	56	45	34	34	31	34	33	47	31	38
U. of Chicago	636	50	57	53	61	63	55	47	53	30	49	29	16	19	18	20	16
Scripps Research Institute	620	28	62	46	38	60	36	32	23	31	42	35	46	36	35	33	37
U. of Utah	595	35	41	37	25	46	30	24	26	20	23	33	29	33	54	48	91
North Carolina State U.	566	27	28	25	28	32	39	49	44	41	35	34	36	28	36	41	43
U. of South Florida	562	14	19	20	20	16	19	12	30	18	32	28	34	38	89	89	84
Northwestern U.	557	28	39	26	20	35	30	21	20	18	20	24	30	39	63	71	73
U. of Central Florida	548	14	12	15	11	21	16	26	30	24	32	34	41	57	65	71	79
U. of Massachusetts	526	17	29	59	28	24	18	21	21	13	21	21	28	45	62	56	63
U. of Pittsburgh	521	18	35	41	40	45	22	30	29	19	28	24	33	28	39	37	53

Appendix table 5-62

U.S. utility patent awards, by selected characteristics of patent owner: 1997–2012

Characteristic	1997–2012	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Princeton U.	507	18	29	30	30	47	38	32	24	35	28	31	34	29	34	41	27
Arizona State Board of Regents	496	24	18	24	23	24	28	26	35	25	38	34	33	28	31	45	60
Purdue U.	492	25	22	23	13	18	24	25	26	27	29	34	22	47	56	47	54
Washington U.	471	25	45	60	40	42	32	26	22	20	22	20	16	17	23	32	29
Yale U.	457	23	38	32	32	34	30	31	21	31	21	21	10	28	38	38	29
Ohio State U.	452	28	24	25	26	21	21	23	33	31	31	22	17	27	36	42	45
Iowa State U.	448	37	54	46	35	29	21	29	25	14	24	28	12	32	25	20	17
U. of Iowa	438	15	27	34	20	41	25	31	20	19	33	27	24	25	34	27	36
Rutgers U.	437	23	28	35	33	22	43	28	22	18	34	24	26	20	23	25	33
U. of Alabama	436	21	36	44	28	34	30	47	43	20	20	20	11	20	15	24	23
Texas A&M U.	427	22	26	25	21	27	37	22	30	25	28	30	20	19	30	22	43
U. of Kentucky	398	16	23	32	28	23	35	29	17	22	25	16	20	23	33	24	32
U. of Colorado	387	23	31	29	20	23	21	25	17	14	27	18	24	22	31	31	31
Rockefeller U.	372	23	37	36	43	28	34	15	20	11	24	7	22	19	14	22	17
U. of Arkansas	356	8	10	31	20	30	19	29	17	19	27	22	18	18	26	27	35
Carnegie Mellon U.	344	9	26	27	33	13	19	25	25	9	30	16	14	11	27	21	39
Vanderbilt U.	350	15	17	20	23	27	22	23	22	16	22	17	17	20	21	32	36
Louisiana State U.	342	21	35	17	22	36	27	25	16	18	20	18	22	14	14	17	20
Emory U.	331	14	36	28	25	21	31	23	18	17	20	15	17	15	25	14	12
Virginia Polytechnic Institute and State U.	330	20	23	27	21	13	19	17	20	13	26	30	16	28	27	16	14
U. of Rochester	312	8	19	7	15	16	20	19	15	18	28	20	22	28	23	24	30
U. of Nebraska	311	24	26	25	28	18	25	20	20	14	20	16	18	8	19	11	19
U. of Missouri	306	19	13	17	6	16	14	19	21	9	22	19	13	19	30	30	39
U. of Connecticut	303	13	11	19	14	9	14	17	11	19	32	23	23	19	26	24	29
U. of New Mexico	301	16	16	17	23	17	21	18	16	15	10	11	15	16	20	32	38
Case Western Reserve U.	298	12	15	29	20	21	26	15	12	11	14	7	10	19	22	30	35
U. of Virginia	295	15	20	16	16	20	12	24	8	9	11	16	22	14	33	28	31
William Marsh Rice U.	285	2	2	2	2	6	11	6	22	20	32	24	26	24	35	34	37
Baylor C. of Medicine	277	20	31	23	28	17	18	17	19	9	19	16	18	8	16	10	8
U. of Tennessee	276	15	10	15	21	24	35	10	9	8	16	15	12	15	29	23	19
Thomas Jefferson U.	275	26	30	30	27	39	30	22	13	10	6	9	4	7	14	3	5
Florida State U.	271	7	14	9	14	7	21	18	15	17	17	17	8	14	36	24	33
U. of Georgia	269	11	23	12	20	22	23	16	9	15	6	9	10	18	22	21	32
Boston U.	267	24	19	20	21	20	15	16	10	10	10	15	14	12	21	13	27
U. of Oklahoma	257	17	10	16	19	20	9	13	4	6	22	23	12	19	32	21	14
Oregon Health Sciences U.	239	13	20	17	23	16	15	9	13	8	10	12	17	15	11	19	21
Rensselaer Polytechnic Institute	213	6	4	5	9	8	6	15	15	14	19	27	13	18	25	12	17
Yeshiva U.	211	8	14	10	17	18	15	13	19	10	16	7	10	7	19	13	15
Indiana U.	210	16	23	12	17	20	18	20	8	14	9	9	6	2	14	13	9
Tufts U.	207	5	12	8	10	14	14	11	14	13	17	9	7	14	14	17	28
Dartmouth C.	203	2	12	10	11	8	9	10	11	7	18	16	10	11	18	22	28

Appendix table 5-62

U.S. utility patent awards, by selected characteristics of patent owner: 1997–2012

Characteristic	1997–2012	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
U. of Medicine & Dentistry NJ	196	9	17	11	7	15	7	15	11	5	20	12	9	10	15	18	15
Brown U.	195	10	17	20	15	22	9	16	13	14	10	11	10	9	9	6	4
Wayne State U.	189	10	14	18	14	15	12	8	10	11	13	9	6	11	7	13	18
Clemson U.	186	9	8	2	4	7	21	17	11	13	13	10	8	7	33	7	16
Mt. Sinai School of Medicine of CUNY	180	13	17	14	8	10	8	24	5	9	7	4	13	11	12	14	11
NJIT/New Jersey Institute of Technology	178	6	6	8	9	4	6	5	7	0	8	7	11	14	20	30	37
U. of Cincinnati	177	10	6	8	17	17	14	9	9	10	11	8	8	5	16	18	11
Auburn U.	176	7	6	10	9	9	8	7	11	14	10	17	10	16	17	11	14
Drexel U.	171	7	6	5	4	7	12	5	7	4	5	8	10	15	25	22	29
U. of Akron	166	5	10	12	11	13	11	11	15	8	8	7	7	6	11	11	20
Wake Forest U.	164	9	9	9	12	12	8	9	13	3	10	10	6	5	16	11	22
Georgetown U.	163	8	11	8	14	8	10	13	12	3	11	10	9	9	10	12	15
U. of Delaware	151	4	6	2	5	5	9	7	10	7	5	10	14	17	20	14	16
U. of Kansas	151	3	7	16	5	9	21	9	11	5	3	5	5	15	10	3	24
Washington State U.	147	6	8	12	15	15	8	8	8	8	6	4	11	4	10	13	11
U. of Houston	140	4	5	5	11	10	6	13	3	7	3	6	8	12	14	14	19
Virginia Commonwealth U.	140	8	6	18	21	11	10	12	4	2	6	8	5	5	10	6	8
Oregon State U.	137	8	10	5	4	8	9	9	11	7	9	9	7	6	7	13	15
Northeastern U.	128	13	12	9	15	9	5	3	10	9	5	4	3	3	9	7	12
Colorado State U.	124	5	11	7	12	6	14	7	5	4	3	5	6	4	9	10	16
City U. of New York	118	5	8	7	5	6	9	8	6	4	5	9	8	4	13	11	10
U. of Hawaii	118	6	8	9	14	8	7	8	9	6	10	7	9	6	5	2	4
Temple U.	113	10	6	5	5	7	9	12	10	6	8	5	3	7	2	7	11
U. of Miami	112	15	5	4	4	4	7	10	4	4	3	8	4	5	8	3	24
Cold Spring Harbor Laboratory	111	6	7	21	13	8	7	10	2	5	1	4	4	4	3	7	9
George Mason U.	110	0	1	2	0	0	4	4	3	3	5	8	6	8	30	20	16
Nevada System of Higher Education	109	2	0	4	3	4	3	9	8	2	5	8	5	11	10	20	15
Kansas State U.	104	5	7	12	8	10	10	7	9	2	3	4	3	4	11	4	5
U. South Carolina	102	4	1	4	1	6	4	8	7	3	8	4	4	4	5	14	25
U. of Vermont	98	5	2	8	2	5	10	6	3	5	5	7	8	7	11	8	6
Tulane U.	96	6	9	6	7	9	8	7	2	0	4	6	9	4	7	6	6
U. of Rhode Island	94	2	6	4	6	7	4	6	11	5	4	2	5	4	6	12	10
St. Louis U.	90	2	4	12	4	7	8	4	4	6	4	2	1	5	9	9	9
U. of Wyoming	90	4	7	5	0	3	6	4	6	4	4	11	2	8	8	9	9
Mississippi State U.	89	4	3	6	5	5	9	5	6	7	8	7	6	3	5	5	5
U. of Toledo	86	9	6	6	8	6	4	3	5	3	4	2	4	2	6	7	11
Utah State U.	86	2	5	5	4	2	2	4	1	5	2	5	7	12	11	8	11
U. of Dayton	84	2	7	7	5	5	6	2	4	1	5	7	3	4	11	7	8
Ohio U.	83	2	8	5	7	3	3	7	4	3	4	6	2	4	7	11	7
U. of Louisville	81	2	0	2	0	0	1	3	4	3	5	7	6	6	7	18	17

Appendix table 5-62

U.S. utility patent awards, by selected characteristics of patent owner: 1997–2012

Characteristic	1997–2012	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
U. of Notre Dame	80	2	4	0	1	3	4	1	2	6	1	7	4	6	8	13	18
Brandeis U.	75	4	9	6	6	1	3	9	4	1	7	3	2	7	4	5	4
Georgia State U.	70	10	5	4	6	3	3	3	2	2	2	6	4	5	4	4	7
Medical C. of Wisconsin	70	4	8	2	4	5	6	5	4	0	1	3	4	5	5	8	6
Oklahoma State U.	70	0	2	5	3	2	5	3	8	7	3	6	4	4	4	4	10
Texas Tech U.	68	4	2	3	3	8	14	4	4	7	5	3	3	2	2	2	2
Syracuse U.	65	9	9	4	3	0	2	1	1	1	3	1	4	4	8	6	9
U. of Southern Mississippi	65	2	2	7	8	7	2	3	4	8	2	2	4	2	6	5	1
Michigan Technological U.	63	0	1	2	3	3	4	2	5	8	5	8	4	4	5	6	3
U. of Mississippi	63	4	1	3	6	3	5	3	3	5	3	4	11	1	4	4	3
George Washington U.	61	3	5	2	7	3	7	3	0	1	2	2	1	7	3	7	8
West Virginia U.	58	2	0	1	0	6	4	12	4	0	2	2	3	7	8	2	5
Montana State U.	53	1	1	5	1	1	1	3	0	1	4	7	8	5	3	6	6
Florida Atlantic U.	52	3	3	1	3	3	1	1	6	3	6	4	4	2	3	5	4
U. of Maine	51	0	0	1	2	2	1	2	5	1	5	2	5	2	10	9	4
Colorado School of Mines	45	3	0	3	1	5	4	0	2	0	2	4	1	2	4	7	7
Boston C.	42	0	1	0	0	0	0	0	1	7	4	5	7	5	6	1	5
Southern Illinois U.	42	0	0	4	2	7	2	4	6	1	2	1	1	2	2	4	4
U. of Oregon	38	2	2	2	2	2	1	0	2	1	2	1	3	7	2	4	5
U. of New Hampshire	33	1	0	0	1	3	3	1	2	3	2	2	2	3	3	4	3
Old Dominion U.	27	1	1	1	3	2	2	2	1	1	0	1	2	1	2	2	5
San Diego State U.	27	2	1	1	2	2	3	3	2	4	0	0	1	2	1	1	2
U. of Montana	27	3	2	3	1	3	0	2	0	4	2	0	1	0	4	2	0
Cleveland State U.	26	1	2	1	1	0	4	2	1	0	3	0	0	1	2	7	1
New Mexico State U.	26	3	2	5	3	2	2	5	3	1	0	0	0	0	0	0	0
Medical U. of South Carolina	25	1	4	4	5	0	2	3	2	2	0	0	1	0	0	1	0
Portland State U.	23	0	0	2	0	0	0	0	0	2	1	3	2	3	2	5	3
Woods Hole Oceanographic Institute	22	2	3	0	1	1	0	1	1	0	2	0	1	3	2	2	3
Rush U.	21	0	0	0	0	0	0	1	0	0	3	0	1	7	3	3	3
North Dakota State U.	19	5	1	4	3	1	0	2	0	0	1	1	0	0	0	0	1
U. of North Dakota	19	0	1	0	0	0	2	0	2	0	1	0	2	5	2	2	2
C. of William and Mary	18	0	0	0	1	0	1	1	2	1	0	4	1	2	2	0	3
Florida A&M U.	14	0	0	0	0	0	1	0	0	0	0	0	0	0	5	2	6
Florida International U.	14	0	0	0	2	2	1	1	1	0	0	0	0	1	2	3	1
Uniformed Services U. of The Health Sciences	12	0	0	0	0	2	3	2	0	0	0	0	3	0	2	0	0
U. of Memphis	12	1	0	1	0	0	0	0	0	0	0	0	0	0	2	5	3
South Dakota State U.	11	2	1	0	1	1	1	0	0	1	0	1	1	0	0	1	1
U. of Alaska	11	2	0	0	1	0	2	0	1	0	0	0	0	0	2	3	0
U. of Louisiana	10	0	0	0	0	0	0	1	0	1	1	0	0	2	1	2	2

Appendix table 5-62

U.S. utility patent awards, by selected characteristics of patent owner: 1997–2012

Characteristic	1997–2012	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Wichita State U.	6	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	0
U. of Idaho	4	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0
Georgia Health Sciences U.	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2

NOTES: Data include institutions affiliated with academic institutions, such as university and alumni organizations, foundations, and university associations. Fewer than 200 institutions are shown because data for certain institutions are for the entire university system and incorporate data from various campuses. Patents assigned to the Naval Postgraduate School and Air Force Academy are not shown here. The top 200 R&D institutions are ranked by the sum of their patents from 1997 through 2012. Unlike some previous versions of this table, data include all assignees on a patent and not just the first assignee; therefore, patent counts in this table are slightly higher than reported in some previous years. Patents are credited on a whole-count basis (i.e., each assignee is credited one count) so the sum of the individual institution counts may be greater than the top 200 total due to double counting of co-assigned patents.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from U.S. Patent and Trademark Office (USPTO), Patent Grant Bibliographic Data.

Science and Engineering Indicators 2014

Appendix table 5-63

U.S. university patent awards, by technology area: 1992–2012

Technology area	1992–2012	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All university patents	66,509	1,602	1,698	1,875	2,009	2,322	2,652	3,434	3,654	3,426	3,554	3,560	3,510	3,271	2,928	3,537	3,198	3,001	3,267	4,550	4,389	5,072
Biotechnology	18,628	259	337	313	383	550	863	1,172	1,197	1,048	1,187	1,060	914	896	728	1,027	965	898	973	1,365	1,234	1,259
Pharmaceuticals	7,702	201	232	257	247	383	375	453	535	528	460	479	458	348	297	338	267	245	273	397	354	575
Measurement techniques and instrumentation	5,129	140	147	175	180	189	172	211	226	230	243	233	286	318	268	277	263	254	244	332	357	384
Materials	3,088	118	119	117	135	144	113	138	143	147	152	169	169	158	139	181	133	123	135	187	188	180
Medical equipment	3,051	114	97	130	116	128	145	196	215	174	162	163	192	150	127	114	87	90	107	151	154	239
Semiconductors	2,891	88	71	107	112	76	76	97	95	120	121	131	165	120	136	169	163	148	168	242	242	244
Optics	2,634	68	65	61	69	60	85	105	115	128	112	141	139	153	143	184	181	183	166	169	133	174
Information processing	2,597	33	38	46	43	69	77	125	92	84	102	92	99	113	109	162	153	157	170	247	255	331
Medical electronics	2,463	78	65	101	91	91	75	92	111	100	120	112	135	113	97	123	109	126	127	195	186	216
Chemicals	2,375	80	79	77	99	90	100	125	117	138	159	181	179	123	145	100	81	69	78	127	101	127
Agriculture	2,342	64	50	69	63	71	127	124	140	115	144	112	124	81	112	119	117	114	126	139	146	185
Materials manufacturing	2,067	47	59	72	71	54	58	91	91	105	84	114	104	111	102	98	119	79	109	159	161	179
Chemical engineering and environmental processes	1,619	78	78	69	70	72	67	71	100	95	74	86	81	83	71	74	63	58	72	81	83	93
Telecommunications	1,429	21	26	38	32	36	23	51	37	36	47	59	57	65	61	103	84	104	108	126	138	177
Electronic components and devices	1,392	20	21	24	34	35	38	50	57	56	47	51	82	76	79	94	76	81	82	122	147	120
Power generation and distribution	775	16	24	20	30	29	32	27	35	21	35	30	34	43	38	51	39	40	37	78	52	64
Computer systems	707	14	16	15	28	21	20	28	35	39	24	32	30	32	33	36	40	38	43	56	56	71
Industrial machinery and tools	637	21	22	21	22	31	28	36	38	25	39	29	41	35	28	39	30	18	31	37	35	31
Food and tobacco	629	31	26	28	36	49	42	40	58	44	43	47	37	25	21	16	9	11	20	17	13	16
Automation and control	527	8	16	12	17	17	25	24	18	16	25	18	19	21	20	32	39	28	31	46	49	46
Networking	465	6	6	6	11	10	6	6	10	12	14	19	13	21	23	35	29	27	21	47	70	73
Audio-visual electronics	432	11	9	9	16	10	11	22	20	17	23	18	16	19	16	33	25	11	30	25	32	59
Electrical components and equipment	426	5	9	21	15	9	14	14	22	11	18	19	19	21	16	31	23	9	21	53	42	34
Motor vehicles and parts	382	10	8	5	18	12	11	14	19	27	19	20	22	25	19	19	19	18	16	18	32	31
Personal care and household goods	381	15	24	18	15	17	14	22	20	17	17	49	23	22	23	9	8	14	9	12	16	17
Aerospace and defense	281	7	9	4	4	8	5	13	20	14	13	22	15	17	16	12	12	11	14	21	19	25
Other	269	5	11	11	6	9	11	17	16	13	14	8	16	18	11	10	15	10	10	19	17	22
Oil, gas, and mining	227	11	9	10	11	15	8	11	10	7	12	13	1	10	7	7	7	7	10	18	18	25
Industrial manufacturing	224	15	7	18	7	10	4	11	11	10	6	17	5	12	11	10	8	10	6	13	14	19
Construction and building components	217	6	3	5	4	8	8	15	15	10	9	6	13	11	8	13	10	6	12	18	17	20
Civil engineering	180	5	3	5	8	7	8	7	18	19	13	11	9	10	10	2	6	7	6	6	10	10
Household appliances and lighting	127	2	3	4	8	4	3	13	9	8	3	4	4	2	8	8	8	4	5	11	8	8

Appendix table 5-63

U.S. university patent awards, by technology area: 1992–2012

Technology area	1992–2012	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Recreation and sports equipment	91	3	5	4	2	3	5	5	2	4	7	3	5	6	1	3	4	2	3	9	6	9
Office equipment	63	1	2	2	4	3	2	5	5	4	3	6	1	5	3	2	5	1	2	2	2	3
Other transport	62	1	2	1	2	2	1	3	2	4	3	6	3	8	2	6	1	0	2	5	2	6

NOTES: Data include institutions affiliated with academic institutions, such as university and alumni organizations, foundations, and university associations. Universities vary in how patents are assigned (e.g., to boards of regents, individual campuses, or entities with or without affiliation with university). The Patent Board™ technology areas constitute an application-oriented classification system that maps the thousands of International Patent Classes (IPCs) at the main group level into 1 of 35 technology areas. If a patent has more than one IPC, only the primary IPC is considered in mapping. Data in the table are not comparable to previous versions due to changes in the classification system.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from U.S. Patent and Trademark Office (USPTO), Patent Grant Bibliographic Data.

Science and Engineering Indicators 2014

Appendix table 5-64

Academic patenting and licensing activities: 2001–11

Activity indicator	2001 (139)	2002 (156)	2003 (165)	2004 (164)	2005 (159)	2006 (161)	2007 (161)	2008 (159)	2009 (153)	2010 (155)	2011 (157)
						$millions					
Net royalties[a]	753.8	868.9	866.8	924.9	1,588.1	1,322.3	1,898.8	2,127.1	1,474.6	1,480.5	1,486.0
Gross royalties[a]	868.3	997.8	1,033.6	1,088.5	1,775.0	1,511.6	2,098.8	2,397.2	1,782.1	1,790.1	1,814.0
Royalties paid to others	41.0	38.8	65.5	54.4	67.8	67.8	63.7	114.8	153.2	164.4	175.5
Unreimbursed legal fees expended	73.5	90.1	101.3	109.2	119.1	121.5	136.3	155.3	154.3	145.2	152.5
						Number					
Invention disclosures received	11,259	12,638	13,718	15,002	15,371	16,855	17,677	17,694	18,163	18,635	19,732
New U.S. patent applications filed	5,784	6,509	7,203	9,462	9,306	10,748	10,899	11,197	11,222	11,075	12,090
U.S. patents granted	3,179	3,109	3,450	3,268	2,944	2,895	3,291	2,933	3,088	4,018	4,296
Startup companies formed	402	364	348	425	418	500	510	549	555	613	617
Operational startups	1,904	2,070	2,090	2,451	2,652	2,960	3,148	3,076	3,175	3,339	3,573
Active licenses	18,845	20,927	22,091	23,269	23,896	26,070	26,094	26,816	28,763	33,309	33,284
Revenue-generating licenses/options	7,715	8,490	8,976	9,543	10,251	10,733	12,467	13,231	13,927	13,995	14,754
New licenses/options executed[b]	3,300	3,739	3,855	4,087	4,201	4,192	4,419	4,416	4,624	4,735	5,398
Equity licenses/options	328	373	316	318	278	357	377	382	354	357	387

[a] One-year spikes in royalty data reflect extraordinary one-time payments.
[b] Data prior to 2004 may not be comparable with data for 2004 and beyond due to changes in survey wording.

NOTES: Number of institutions reporting is given in parentheses. Data from nonuniversity hospitals and medical institutes are not included. Responding institutions may report for any 12-month period ending in the identified year.

SOURCE: Association of University Technology Managers (AUTM), AUTM Licensing Survey (various years).

Science and Engineering Indicators 2014

Appendix table 6-1

Regions/countries/economies in world industry data

- North America
  - Canada
  - Mexico
  - United States
- Central and South America
  - Argentina
  - Bolivia
  - Brazil
  - Chile
  - Colombia
  - Costa Rica
  - Ecuador
  - Honduras
  - Jamaica
  - Panama
  - Peru
  - Uruguay
  - Venezuela
- Europe
  - EU
    - Belgium
    - Czech Republic
    - Denmark
    - Finland
    - France
    - Germany
    - Ireland
    - Italy
    - Netherlands
    - Poland
    - Spain
    - Sweden
    - United Kingdom
    - All others
      - Austria
      - Bulgaria
      - Greece
      - Hungary
      - Portugal
      - Romania
      - Slovakia
  - Other Europe
    - Norway
    - Russia
    - Switzerland
    - Ukraine
- Middle East
  - Bahrain
  - Iran
  - Israel
  - Jordan
  - Kuwait
  - Qatar
  - Saudi Arabia
  - Turkey
  - United Arab Emirates
- Africa
  - Cameroon
  - Egypt
  - Kenya
  - Morocco
  - Nigeria
  - Senegal
  - South Africa
  - Tunisia
  - Zimbabwe
- Asia
  - Bangladesh
  - China
  - India
  - Indonesia
  - Japan
  - Malaysia
  - Pakistan
  - Philippines
  - Singapore
  - South Korea
  - Sri Lanka
  - Taiwan
  - Thailand
  - Vietnam
- Australia/Oceania
  - Australia
  - New Zealand

EU = European Union.

NOTES: Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong.

SOURCE: IHS Global Insight, World Industry Service database (15 February 2013).

Science and Engineering Indicators 2014

Appendix table 6-2

Value added of KTI industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	8,047,291	8,221,079	8,706,645	9,068,485	9,186,971	9,701,658	10,887,321	12,073,780	13,011,910	14,006,017	15,610,189	16,817,919	16,702,381	17,768,533	19,168,836	19,603,713
North America																
Canada	169,934	166,946	178,040	195,033	195,348	201,332	238,937	273,688	309,811	357,567	400,616	421,117	401,414	474,597	526,516	542,750
Mexico	75,763	84,997	101,427	120,001	135,540	152,202	149,161	156,522	181,882	199,655	220,894	232,352	198,388	224,693	245,760	252,908
United States	2,854,611	3,101,958	3,316,850	3,602,369	3,798,858	3,979,938	4,175,586	4,426,289	4,763,168	5,079,251	5,333,762	5,497,684	5,544,438	5,756,243	5,961,854	6,232,154
Central and South America																
Argentina	63,435	66,334	67,275	67,976	68,893	22,268	24,201	27,898	34,581	43,172	54,207	69,312	70,273	81,251	95,792	103,807
Bolivia	1,099	1,261	1,396	1,323	1,249	1,159	1,102	1,114	1,160	1,277	1,428	1,735	1,934	2,145	2,380	2,645
Brazil	177,770	170,489	120,191	138,764	125,473	117,494	124,016	140,495	193,527	244,120	314,207	370,494	379,107	479,239	503,108	475,747
Chile	19,467	19,514	18,260	18,528	16,975	16,775	17,910	22,316	26,915	31,275	36,851	41,709	42,772	51,667	59,557	64,030
Colombia	34,879	31,901	26,397	22,671	22,730	22,415	21,196	25,799	32,066	34,796	44,477	52,209	52,589	64,216	71,361	78,904
Costa Rica	2,739	2,928	3,190	3,523	3,839	4,141	4,385	4,602	4,949	5,608	6,588	7,823	8,512	10,837	12,371	13,618
Ecuador	4,589	4,396	2,553	2,079	3,409	4,546	5,788	6,913	8,157	9,237	10,039	17,204	18,356	20,211	23,203	25,738
Honduras	1,028	1,227	1,316	1,479	1,663	1,774	1,908	2,051	2,163	2,470	2,907	3,399	3,835	4,150	4,445	4,701
Jamaica	1,381	1,471	1,605	1,955	2,089	2,320	2,340	2,428	2,657	2,820	3,082	3,376	3,170	3,315	3,596	3,665
Panama	2,730	2,977	3,215	3,397	3,582	3,757	3,841	4,002	4,338	4,666	5,300	6,066	6,575	7,137	8,137	9,376
Peru	9,310	9,224	8,497	8,803	8,977	9,574	10,357	11,221	12,508	14,037	16,403	19,596	21,299	24,983	28,830	32,859
Uruguay	6,260	6,634	6,534	6,448	6,163	3,993	3,104	3,206	4,124	4,651	5,437	7,105	7,643	9,824	11,739	12,664
Venezuela	13,540	18,532	20,110	22,635	25,445	18,816	15,952	17,377	20,034	26,661	36,900	47,416	59,143	36,579	50,082	59,972
Europe																
EU	2,339,533	2,432,007	2,493,871	2,328,048	2,373,722	2,647,910	3,261,419	3,762,012	3,940,941	4,193,184	4,836,801	5,207,741	4,944,989	4,832,373	5,100,164	4,900,623
Austria	48,930	50,565	50,463	46,449	47,299	52,391	64,023	72,489	77,252	83,064	95,027	104,833	97,400	96,980	104,992	99,958
Belgium	73,596	76,493	78,285	72,432	73,762	81,038	100,289	116,536	121,984	129,538	148,930	167,104	164,944	166,285	180,609	171,578
Bulgaria	1,110	1,519	1,786	1,831	1,968	2,417	3,020	3,675	4,390	4,456	6,227	6,958	7,154	7,261	8,046	7,625
Czech Republic	10,727	12,154	11,825	11,150	12,683	16,509	20,410	23,544	26,890	30,520	37,940	48,545	43,940	44,100	49,026	44,962
Denmark	46,394	48,051	48,466	44,751	46,378	50,198	63,126	72,605	76,207	80,583	91,743	102,998	103,530	102,409	109,806	106,150
Finland	30,116	33,005	34,248	33,639	33,708	37,775	44,710	51,453	52,873	57,060	69,004	75,172	67,074	66,235	70,708	68,359
France	427,003	441,376	446,516	413,521	415,961	462,536	574,311	654,705	682,300	726,809	825,766	908,519	904,383	857,463	888,515	848,763
Germany	581,160	585,713	593,741	516,316	516,347	568,145	701,884	799,815	811,490	841,337	945,900	1,019,175	988,751	981,999	1,033,827	993,330
Greece	24,098	25,242	26,546	23,971	23,770	28,422	36,997	44,280	46,101	50,662	60,881	68,623	67,893	62,482	61,566	54,978
Hungary	10,897	11,333	11,368	11,246	12,906	16,757	22,215	26,887	29,801	30,658	34,740	38,967	32,311	31,217	34,482	31,725
Ireland	23,420	25,327	29,388	31,422	33,629	39,206	52,095	60,377	70,340	78,633	91,077	97,433	86,174	79,391	83,169	78,316
Italy	277,556	281,921	286,921	268,232	277,867	305,261	383,148	432,498	450,316	465,989	531,833	582,880	554,448	538,500	548,321	510,477
Netherlands	111,449	117,507	122,172	114,927	120,745	135,217	171,900	195,308	206,635	214,338	244,565	273,621	273,509	268,275	283,958	267,914
Poland	28,804	32,609	32,169	34,427	39,706	42,309	46,061	52,804	63,822	70,836	88,559	110,775	87,793	96,772	101,856	98,630
Portugal	26,803	28,077	29,409	27,673	29,335	32,523	40,224	46,705	49,153	52,492	61,011	67,805	66,105	63,793	65,551	60,029
Romania	4,033	5,018	4,857	5,206	5,436	5,755	6,906	9,449	12,660	15,612	22,914	30,248	23,860	23,760	26,093	26,940
Slovakia	4,070	4,100	3,517	3,630	3,703	4,775	6,247	7,646	9,137	10,510	14,123	18,172	18,318	16,658	17,492	16,888

Appendix table 6-2

Value added of KTI industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	125,380	132,264	135,106	128,040	137,241	155,417	200,159	234,339	253,081	278,116	338,561	389,971	394,176	373,907	401,992	371,928
Sweden	75,716	76,990	81,160	76,859	71,830	79,748	100,817	119,590	123,314	130,843	149,830	159,718	140,988	154,837	180,605	177,475
United Kingdom	408,271	442,744	465,927	462,327	469,450	531,510	622,878	737,308	773,193	841,128	978,171	936,226	822,240	800,049	849,549	864,597
Other Europe																
Norway	35,172	35,861	37,333	35,550	37,651	44,998	55,311	63,046	70,953	75,540	92,540	103,226	98,775	104,730	118,457	121,781
Russia	71,868	47,528	30,632	35,170	47,464	55,658	70,052	91,659	118,327	157,445	222,191	281,697	237,598	271,371	315,288	342,215
Switzerland	82,275	87,256	85,751	81,808	81,838	92,017	109,847	123,179	127,562	137,176	155,508	178,759	175,322	185,063	221,970	221,360
Ukraine	8,461	6,786	4,630	4,575	6,432	7,672	9,779	14,408	17,426	21,893	31,110	41,563	30,259	32,853	35,528	36,613
Middle East																
Bahrain	2,364	2,497	2,544	2,856	2,710	2,858	3,567	4,396	5,088	5,792	6,633	7,227	7,267	7,871	8,281	8,806
Iran	7,184	8,592	7,344	9,565	12,443	16,374	20,509	25,269	29,387	36,277	46,006	53,529	55,994	64,779	77,205	63,249
Israel	39,143	41,420	42,451	50,343	49,808	46,333	47,178	51,076	55,154	59,310	68,439	83,597	83,231	93,090	102,118	102,047
Jordan	1,351	1,510	1,558	1,721	1,924	2,107	2,223	2,541	2,973	3,354	3,831	4,764	5,001	5,558	6,048	6,615
Kuwait	4,569	5,038	5,471	5,830	6,223	7,155	9,046	10,851	15,137	19,239	26,088	27,808	23,360	25,433	25,613	27,345
Qatar	1,006	1,184	1,224	1,280	1,468	1,683	1,840	3,135	4,705	8,289	11,463	14,799	16,970	18,399	22,410	24,930
Saudi Arabia	20,942	21,023	22,058	22,902	23,862	24,962	26,207	27,980	30,115	32,365	34,721	37,603	40,798	43,355	47,256	50,857
Turkey	41,907	58,051	65,705	64,144	52,127	51,731	64,941	82,930	102,142	116,500	149,167	172,271	157,479	176,484	178,222	181,627
United Arab Emirates	7,839	8,685	9,277	10,053	16,885	19,258	21,768	26,101	31,725	37,360	48,824	54,972	54,628	56,279	59,654	63,282
Africa																
Cameroon	1,037	1,093	1,135	967	1,018	1,120	1,422	1,513	1,634	1,705	2,018	2,288	2,378	2,532	2,718	2,704
Egypt	21,248	23,111	24,699	25,287	25,223	22,564	19,004	20,199	23,116	25,458	24,744	29,548	33,065	37,018	39,562	41,843
Kenya	2,220	2,400	2,151	2,042	2,357	2,598	3,138	3,188	3,632	4,353	5,376	5,769	5,992	6,415	6,774	8,117
Morocco	5,524	7,283	7,599	7,480	7,719	8,303	10,045	11,554	12,990	14,150	17,538	19,839	20,238	20,196	22,224	22,711
Nigeria	4,300	5,329	1,536	1,658	1,845	2,124	2,373	3,274	4,741	7,605	8,469	10,191	9,860	13,115	15,296	19,383
Senegal	609	636	693	655	712	797	1,040	1,288	1,427	1,645	2,029	2,412	2,288	2,271	2,585	2,680
South Africa	23,104	21,837	23,066	23,222	21,326	20,242	32,011	42,135	47,845	50,704	56,981	52,283	53,401	67,396	75,286	72,892
Tunisia	3,261	3,372	3,627	3,360	3,565	3,852	4,604	5,222	5,490	5,992	6,801	7,771	7,865	8,067	8,494	8,520
Zimbabwe	2,608	2,025	1,669	1,880	1,673	1,545	1,717	1,535	1,215	388	788	865	1,188	1,317	1,848	1,748
Asia																
Bangladesh	4,768	4,935	5,212	5,388	5,429	5,686	6,180	6,616	6,891	7,225	8,293	9,488	10,896	12,215	13,111	13,299
China	197,969	205,380	218,848	239,357	262,480	287,094	323,991	378,533	450,409	556,633	724,019	904,549	1,010,059	1,206,648	1,476,879	1,701,560
India	67,748	70,532	78,912	81,181	87,753	94,605	110,723	124,856	144,115	161,833	205,268	232,868	246,710	312,061	358,102	354,842
Indonesia	29,191	11,410	15,842	21,366	19,657	25,911	32,318	35,942	39,655	49,737	59,324	66,840	71,220	94,992	113,521	117,754
Japan	1,116,081	1,024,898	1,185,660	1,303,108	1,156,986	1,127,191	1,239,271	1,334,632	1,341,754	1,294,899	1,286,159	1,410,082	1,471,966	1,587,964	1,702,199	1,718,154
Malaysia	27,348	20,191	22,741	23,235	22,492	24,282	26,303	28,225	28,025	31,621	37,398	41,115	40,532	48,708	52,564	55,009
Pakistan	8,612	8,734	8,908	10,012	9,366	10,763	12,051	13,310	15,647	18,966	21,931	22,953	24,853	27,256	32,018	34,852
Philippines	14,878	14,346	18,289	18,202	16,678	18,235	18,214	20,188	23,036	27,400	33,780	38,684	39,147	45,829	52,170	57,465
Singapore	42,410	33,347	33,419	38,190	34,410	36,709	39,345	46,973	47,553	55,142	59,683	64,701	64,723	79,580	93,506	96,380
South Korea	122,772	89,184	117,783	134,903	131,627	156,624	177,810	202,074	239,618	274,209	304,113	273,420	243,334	301,528	322,884	324,812
Sri Lanka	1,895	2,266	2,362	2,366	2,341	2,926	3,145	3,465	4,075	4,882	5,680	7,238	8,149	9,835	11,420	11,271
Taiwan	73,199	69,709	80,123	91,389	82,286	88,021	94,960	103,695	112,256	120,049	123,394	127,573	115,777	132,653	143,560	140,846
Thailand	27,306	18,746	20,424	21,200	20,568	24,841	28,134	32,740	36,107	41,203	48,716	53,026	51,719	59,723	66,038	69,531
Vietnam	3,185	3,253	3,412	3,644	3,835	4,138	4,767	5,504	6,295	7,167	8,280	10,013	10,910	11,895	13,663	15,062

Appendix table 6-2

Value added of KTI industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	126,701	114,230	126,604	124,028	117,186	131,957	169,248	205,589	229,520	247,555	297,077	320,681	371,997	469,385	565,266	592,743
New Zealand	17,167	14,608	15,225	13,538	13,651	16,311	22,034	27,026	31,187	30,508	35,912	35,570	32,994	41,209	50,207	52,642

EU = European Union; KTI = knowledge and technology intensive.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. KTI industries include knowledge intensive (KI) services and high technology (HT) manufacturing industries classified by Organisation for Economic Co-operation and Development. KI services include education, health, and business, financial, and communications services. HT manufacturing industries include aerospace, communications and semiconductors, computers and office machinery, pharmaceuticals, and scientific instruments and measuring equipment. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-3

Nominal GDP, by region/country/economy: Selected years, 1997–2012

(Billions of current dollars)

Region/country/economy	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	30,333	31,337	32,347	32,158	33,408	37,589	42,293	45,728	49,542	55,875	61,335	58,080	63,412	70,371	71,666
North America															
Canada	651	674	739	733	752	888	1,018	1,165	1,311	1,458	1,542	1,373	1,614	1,779	1,821
Mexico	468	566	672	710	722	700	760	848	952	1,036	1,094	883	1,034	1,158	1,186
United States	8,332	9,354	9,951	10,286	10,642	11,142	11,853	12,623	13,377	14,029	14,292	13,974	14,499	15,076	15,685
Central and South America															
Argentina	293	284	284	269	102	129	153	183	214	262	328	309	370	446	476
Bolivia	8	8	8	8	8	8	9	10	11	13	17	17	20	24	26
Brazil	871	587	645	554	506	552	664	882	1,089	1,367	1,654	1,620	2,143	2,477	2,254
Chile	85	75	78	71	70	76	99	123	155	173	180	172	218	251	268
Colombia	127	103	100	98	98	95	117	147	163	207	244	233	287	336	370
Costa Rica	13	16	16	16	17	18	19	20	23	26	30	29	36	41	46
Ecuador	22	16	18	24	29	32	37	42	47	51	62	63	68	78	85
Honduras	6	6	7	8	8	8	9	10	11	12	14	15	16	18	18
Jamaica	8	9	9	9	10	9	10	11	12	13	14	12	13	14	15
Panama	10	11	12	12	12	13	14	15	17	20	23	24	27	31	37
Peru	59	52	53	54	57	61	70	79	92	107	127	127	154	177	199
Uruguay	24	24	23	21	14	12	14	17	20	23	30	30	39	46	50
Venezuela	86	98	117	123	93	85	113	146	184	232	317	330	242	318	383
Europe															
EU															
Austria	208	212	192	191	207	254	290	305	325	374	412	383	380	419	399
Belgium	250	254	233	233	253	312	362	377	400	460	507	474	472	515	483
Bulgaria	10	13	13	14	16	21	25	29	33	42	52	49	48	54	51
Czech Republic	59	62	59	64	78	95	114	130	149	181	225	197	198	216	196
Denmark	170	174	160	161	174	213	245	258	274	311	344	311	313	334	314
Finland	123	130	122	125	135	164	189	196	208	246	272	239	237	263	250
France	1,422	1,455	1,328	1,339	1,454	1,794	2,053	2,133	2,257	2,583	2,827	2,621	2,564	2,775	2,611
Germany	2,161	2,127	1,887	1,884	2,012	2,428	2,719	2,761	2,904	3,329	3,616	3,297	3,299	3,600	3,400
Greece	136	141	127	131	148	195	230	240	262	305	341	321	294	290	249
Hungary	47	48	46	53	66	84	102	110	113	136	154	127	128	139	126
Ireland	81	97	97	105	123	159	187	203	223	258	262	224	207	221	210
Italy	1,199	1,207	1,105	1,124	1,226	1,516	1,734	1,786	1,875	2,127	2,305	2,111	2,054	2,196	2,012
Netherlands	387	411	386	401	439	539	610	638	678	783	871	797	780	838	772
Poland	157	168	171	190	198	217	253	304	342	425	529	431	470	515	490
Portugal	116	126	117	120	132	162	185	192	202	232	252	234	229	238	212
Romania	35	36	37	41	46	60	76	99	123	171	204	164	165	183	171
Slovakia	21	20	20	21	24	33	42	48	56	75	94	87	87	96	92
Spain	573	618	580	609	687	884	1,045	1,130	1,236	1,442	1,592	1,456	1,389	1,479	1,348
Sweden	253	259	247	227	251	315	362	370	399	462	486	406	463	539	525

Appendix table 6-3

Nominal GDP, by region/country/economy: Selected years, 1997–2012

(Billions of current dollars)

Region/country/economy	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United Kingdom	1,368	1,504	1,476	1,468	1,602	1,856	2,197	2,296	2,453	2,825	2,649	2,184	2,266	2,430	2,443
Other Europe															
Norway	158	159	168	171	192	225	260	304	340	393	454	379	421	490	499
Russia	401	196	260	307	345	430	591	764	990	1,300	1,661	1,223	1,525	1,898	2,014
Switzerland	272	274	256	263	287	335	374	385	405	451	524	509	551	661	632
Ukraine	50	32	31	38	42	50	65	86	108	143	180	117	136	163	176
Middle East															
Bahrain	6	7	8	8	8	10	11	13	19	22	26	23	26	29	30
Iran	62	54	69	84	116	139	171	204	243	307	356	363	423	501	388
Israel	108	111	124	122	113	118	126	134	145	166	202	195	218	244	241
Jordan	7	8	8	9	10	10	11	13	15	17	22	24	26	29	31
Kuwait	30	30	38	35	38	48	59	81	102	115	147	106	120	161	171
Qatar	11	12	18	18	19	24	32	45	61	80	115	98	125	171	192
Saudi Arabia	165	161	188	183	189	215	259	328	376	416	520	429	527	670	727
Turkey	255	248	267	195	232	303	391	483	530	646	731	614	731	776	789
United Arab Emirates	79	84	104	103	110	124	148	181	222	258	314	260	284	339	358
Africa															
Cameroon	9	10	9	10	11	14	16	17	19	22	24	24	23	26	25
Egypt	78	91	98	90	84	71	78	93	108	132	165	188	215	230	254
Kenya	13	13	13	13	13	15	16	19	23	27	30	31	32	34	41
Morocco	33	40	37	38	40	50	57	60	66	75	89	91	91	99	96
Nigeria	135	37	47	43	50	57	89	112	147	165	199	189	230	270	313
Senegal	5	5	5	5	5	7	8	9	9	11	12	12	12	14	13
South Africa	149	133	133	119	111	168	219	247	261	286	273	285	363	402	384
Tunisia	21	23	21	22	23	27	31	32	34	39	45	43	44	46	45
Zimbabwe	9	6	6	6	5	5	5	5	5	4	4	5	6	7	8
Asia															
Bangladesh	41	45	45	45	47	52	56	58	60	69	80	89	100	107	112
China[a]	1,130	1,249	1,370	1,494	1,620	1,802	2,101	2,460	2,907	3,707	4,738	5,204	6,160	7,569	8,495
India	421	453	468	483	505	591	715	837	948	1,206	1,294	1,338	1,705	1,923	1,875
Indonesia	216	140	165	160	196	235	257	286	365	432	510	540	709	846	878
Japan	4,327	4,437	4,734	4,162	3,982	4,305	4,657	4,573	4,357	4,356	4,848	5,035	5,496	5,899	5,961
Malaysia	100	79	94	93	101	110	125	144	163	194	231	202	248	289	305
Pakistan	59	59	71	68	75	84	97	109	126	143	145	156	174	209	223
Philippines	91	83	81	76	81	84	91	103	122	149	174	168	200	224	250
Singapore	99	85	94	88	91	96	113	125	146	178	191	189	232	266	277
South Korea	538	464	533	505	576	644	722	845	952	1,049	931	834	1,015	1,115	1,129
Sri Lanka	15	16	16	16	17	19	21	24	28	32	41	42	50	59	59
Taiwan	299	299	326	294	301	311	341	365	376	392	400	378	428	464	474
Thailand	151	123	123	116	127	143	161	176	207	247	273	264	319	346	366
Vietnam	27	29	31	33	35	39	45	53	61	71	91	96	106	124	142

Appendix table 6-3

Nominal GDP, by region/country/economy: Selected years, 1997–2012

(Billions of current dollars)

Region/country/economy	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania															
Australia	425	412	398	377	423	536	654	732	778	943	1,035	978	1,244	1,489	1,541
New Zealand	68	58	53	53	61	81	101	112	108	132	131	117	142	162	170

EU = European Union; GDP = gross domestic product.

[a] China includes Hong Kong.

NOTES: World GDP is from the World Bank. GDP for selected regions/countries/economies from IHS Global Insight. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. Detail does not add to total because some countries/economies are not included.

SOURCES: IHS Global Insight, special tabulations (2013) of the World Industry Services database, and the World Bank, World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators, accessed 10 July 2013.

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Appendix table 6-4

Value added of commercial KI services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	4,624,927	4,776,527	5,082,325	5,314,467	5,454,920	5,738,580	6,398,932	7,075,828	7,668,451	8,282,324	9,291,216	9,931,452	9,820,891	10,454,133	11,259,656	11,540,869
North America																
Canada	91,074	91,391	96,943	107,909	110,073	113,864	135,228	156,759	178,690	207,238	230,436	238,887	233,859	280,274	313,383	322,593
Mexico	38,192	42,826	51,827	61,148	68,297	81,252	80,492	87,153	104,418	115,183	129,398	136,492	115,587	131,067	146,080	151,738
United States	1,699,485	1,882,788	2,035,562	2,233,195	2,384,094	2,472,242	2,575,712	2,721,246	2,956,962	3,153,332	3,299,492	3,354,127	3,289,335	3,429,935	3,572,143	3,739,939
Central and South America																
Argentina	40,642	42,981	42,960	42,845	43,898	14,528	15,373	18,039	22,061	27,060	33,524	42,546	43,096	50,425	58,030	62,507
Bolivia	835	968	1,076	1,008	932	843	779	775	811	892	1,007	1,237	1,373	1,541	1,721	1,918
Brazil	108,915	108,088	70,370	74,870	71,395	68,520	73,762	81,823	118,858	147,990	191,659	216,893	223,036	283,693	276,753	260,760
Chile	11,949	11,831	10,754	10,593	9,685	9,472	11,449	14,202	17,348	20,071	23,715	28,060	28,428	34,686	39,614	42,736
Colombia	20,542	18,488	13,766	13,068	12,941	14,613	13,780	16,753	20,818	22,739	29,436	34,722	35,343	42,636	47,451	52,381
Costa Rica	1,566	1,626	1,746	1,954	2,109	2,289	2,449	2,586	2,823	3,255	3,863	4,538	4,731	5,902	6,728	7,390
Ecuador	2,672	2,543	1,381	1,139	1,868	2,519	3,118	3,698	4,447	4,993	5,309	3,254	3,554	4,028	4,608	5,075
Honduras	662	792	850	963	1,039	1,076	1,158	1,258	1,333	1,517	1,758	2,034	2,195	2,362	2,547	2,705
Jamaica	1,275	1,304	1,425	1,473	1,559	1,762	1,798	1,855	2,048	2,152	2,367	2,595	2,348	2,472	2,627	2,685
Panama	1,981	2,210	2,370	2,519	2,635	2,739	2,761	2,884	3,172	3,459	3,976	4,555	4,977	5,467	6,218	7,216
Peru	6,287	6,152	5,533	5,751	5,756	6,178	6,617	7,185	8,081	9,170	10,957	13,296	14,675	17,192	19,794	22,698
Uruguay	4,044	4,334	4,252	4,186	4,015	2,653	2,052	2,073	2,651	2,947	3,423	4,294	4,537	5,920	7,069	7,645
Venezuela	7,261	9,884	10,280	10,743	11,791	9,140	7,630	8,276	9,386	13,126	18,631	23,512	28,594	17,795	24,460	30,197
Europe																
EU	1,264,030	1,322,469	1,371,621	1,281,583	1,314,579	1,472,836	1,818,380	2,107,548	2,200,538	2,355,501	2,742,537	2,939,322	2,796,192	2,700,980	2,818,502	2,700,927
Austria	25,186	25,956	26,072	24,145	24,972	28,144	33,782	38,263	41,151	44,524	51,726	56,509	50,179	50,129	54,279	51,041
Belgium	40,720	43,249	43,893	41,063	41,756	45,842	56,532	66,788	69,839	74,595	86,182	95,481	93,549	94,173	101,224	94,986
Bulgaria	710	940	984	1,025	1,203	1,441	1,944	2,387	2,823	2,982	4,358	4,925	4,945	4,960	5,460	5,085
Czech Republic	5,969	7,216	6,797	6,314	7,338	9,763	11,966	13,796	15,513	17,572	22,777	29,429	26,535	26,545	29,535	27,224
Denmark	20,558	20,993	20,911	19,678	20,530	22,286	28,156	32,842	34,911	37,340	43,375	48,826	48,173	46,564	51,239	49,383
Finland	11,937	13,175	13,603	13,955	14,391	15,733	17,497	20,952	20,882	23,123	28,856	31,993	29,770	29,493	32,193	31,404
France	225,428	235,307	242,333	228,555	228,651	255,459	317,404	364,341	379,034	408,492	466,586	512,087	516,787	482,600	484,515	460,458
Germany	324,134	325,163	334,376	281,234	283,758	311,193	387,224	443,298	442,882	461,377	513,522	551,377	539,175	530,963	545,124	525,638
Greece	12,603	13,535	14,819	13,406	13,161	15,776	18,986	23,517	23,592	25,463	30,507	33,783	33,373	31,287	29,652	26,016
Hungary	5,874	6,165	6,215	6,206	7,139	9,375	11,667	14,304	15,993	16,948	19,807	22,458	18,558	17,948	19,967	18,452
Ireland	10,833	12,263	13,138	15,408	17,208	19,803	28,548	33,142	40,328	45,358	52,788	55,233	45,255	42,045	43,979	41,473
Italy	145,909	149,977	156,658	148,299	154,354	170,634	217,567	245,134	254,252	259,408	303,148	332,345	313,573	303,987	307,580	285,697
Netherlands	65,993	70,147	73,682	69,072	73,089	80,414	101,902	115,798	124,044	128,640	146,316	162,152	160,878	157,405	164,188	152,727
Poland	16,150	18,535	18,638	20,776	23,318	24,549	26,107	30,855	37,296	41,490	53,117	66,274	52,613	57,554	59,520	57,927
Portugal	14,662	15,348	16,070	15,016	15,841	17,257	21,477	24,790	25,855	28,236	32,889	36,433	36,247	35,061	36,053	32,591
Romania	2,541	3,151	2,832	3,182	3,064	2,832	3,204	4,560	6,025	8,018	12,763	16,647	12,808	12,703	14,064	15,266
Slovakia	2,282	2,311	1,944	2,059	2,067	2,888	3,744	4,868	5,802	6,683	9,060	11,500	11,609	10,347	10,901	10,671
Spain	66,129	70,608	71,554	68,849	75,722	86,509	110,486	128,995	139,404	155,041	192,801	219,296	223,060	211,118	228,999	209,155
Sweden	34,355	34,474	37,318	36,225	34,192	36,124	44,869	54,038	56,309	60,036	70,257	74,533	63,427	70,367	82,707	81,506
United Kingdom	232,057	253,956	269,784	267,117	272,826	316,814	375,319	444,881	464,604	510,175	601,700	578,042	515,678	485,731	517,324	524,227
Other Europe																
Norway	15,683	16,195	16,718	16,139	16,976	20,019	25,216	29,795	33,878	35,602	45,021	49,141	46,920	47,970	53,469	55,582

Appendix table 6-4

Value added of commercial KI services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Russia	30,179	19,969	15,113	20,846	29,287	32,638	42,553	55,654	74,665	98,673	144,317	181,435	148,432	167,218	188,897	203,272
Switzerland	54,374	57,215	56,324	54,382	52,274	58,436	70,224	77,901	80,148	86,430	98,878	111,488	109,442	113,419	136,680	134,371
Ukraine	3,375	2,859	2,065	2,091	3,236	3,788	4,881	8,586	9,794	12,215	18,765	25,880	18,410	18,919	20,012	19,901
Middle East																
Bahrain	1,941	2,062	2,090	2,390	2,198	2,267	2,870	3,621	4,229	4,794	5,504	5,912	5,804	6,262	6,596	6,990
Iran	5,124	5,370	4,802	6,423	8,272	10,989	14,333	17,381	19,856	24,948	33,336	38,825	41,015	47,326	56,519	45,595
Israel	20,713	22,827	23,284	27,941	27,914	26,641	26,733	29,465	33,035	35,480	41,485	51,223	51,760	58,396	64,204	64,549
Jordan	1,068	1,179	1,208	1,338	1,507	1,638	1,734	1,971	2,323	2,612	2,934	3,722	3,938	4,393	4,751	5,187
Kuwait	2,192	2,552	2,866	3,194	3,527	4,185	5,871	7,418	11,278	14,814	20,866	21,337	16,833	18,230	18,170	19,440
Qatar	968	1,111	1,156	1,210	1,395	1,602	1,758	2,510	3,901	7,152	10,044	12,999	14,796	15,975	19,441	21,665
Saudi Arabia	17,282	17,317	18,258	18,956	19,760	20,671	21,732	23,257	25,133	27,134	29,219	31,789	34,594	36,472	39,519	42,599
Turkey	32,336	46,613	53,233	51,437	42,293	41,070	50,294	64,635	78,940	90,995	117,135	134,835	122,805	137,786	139,633	141,105
United Arab Emirates	7,171	7,984	8,532	9,241	15,288	17,419	19,691	23,732	29,145	34,444	45,288	50,550	49,846	51,320	53,918	56,989
Africa																
Cameroon	766	802	777	681	736	782	989	922	974	978	1,091	1,271	1,289	1,330	1,421	1,404
Egypt	13,069	14,573	16,175	16,801	16,522	13,950	11,801	13,746	14,980	16,124	18,451	22,481	25,038	27,808	29,627	31,274
Kenya	967	983	819	984	1,205	1,246	1,489	1,433	1,685	2,141	2,796	3,028	3,298	3,506	3,854	4,565
Morocco	2,295	5,002	5,121	4,998	5,052	5,513	6,485	7,556	8,472	9,483	12,062	13,513	13,912	13,742	15,097	15,241
Nigeria	3,270	4,224	1,248	1,358	1,503	1,776	2,000	2,837	4,231	7,014	7,813	9,387	9,185	12,276	14,341	18,196
Senegal	379	390	434	418	471	535	722	918	1,034	1,201	1,467	1,766	1,647	1,618	1,850	1,906
South Africa	19,334	18,200	19,383	19,285	17,868	16,806	26,554	34,941	39,663	42,293	47,983	44,046	44,316	56,985	63,821	61,793
Tunisia	3,118	3,218	3,463	3,202	3,392	3,684	4,399	4,999	5,260	5,749	6,512	7,423	7,532	7,696	8,104	8,161
Zimbabwe	1,351	1,209	803	784	1,120	935	1,363	715	292	117	254	400	574	542	787	748
Asia																
Bangladesh	2,903	2,938	3,109	3,158	3,193	3,354	3,621	3,860	4,032	4,228	4,806	5,447	6,289	7,041	7,425	7,478
China	123,774	123,274	127,591	136,587	145,048	153,865	165,221	188,283	218,751	278,695	389,355	489,283	563,064	666,433	818,253	950,962
India	41,794	42,960	48,699	50,140	55,514	60,146	70,977	79,661	91,031	103,982	133,001	152,638	159,590	204,165	236,443	234,491
Indonesia	18,924	7,139	9,358	13,206	12,581	16,377	20,228	22,565	25,082	31,557	37,369	42,943	46,062	61,683	73,557	76,312
Japan	628,793	573,819	660,665	728,208	663,355	651,907	708,344	753,456	765,039	740,221	734,745	798,894	837,912	907,009	977,916	989,659
Malaysia	18,147	13,159	13,945	13,450	14,065	15,519	16,255	17,016	18,269	21,179	24,759	28,126	28,867	34,123	37,967	40,876
Pakistan	4,461	4,415	4,508	4,746	4,380	4,983	5,491	6,046	7,334	9,556	11,104	11,491	11,940	12,236	13,839	14,955
Philippines	8,220	8,229	10,499	10,094	9,853	10,797	11,606	12,901	15,220	18,629	23,168	27,060	27,811	32,643	37,319	41,359
Singapore	22,325	18,993	18,157	18,782	18,152	18,346	20,236	23,053	21,702	25,614	32,744	36,987	36,704	43,982	51,949	55,200
South Korea	65,598	45,314	60,247	65,634	66,753	82,674	92,327	98,837	118,416	133,692	148,693	133,470	115,211	141,673	154,056	159,960
Sri Lanka	1,629	2,072	2,100	2,180	2,167	2,715	2,994	3,318	3,904	4,750	5,585	7,130	7,863	9,414	10,936	10,794
Taiwan	39,537	36,728	41,471	45,202	41,566	41,369	41,490	44,888	48,385	48,604	50,674	52,969	47,385	53,153	58,887	59,851
Thailand	16,581	10,776	11,602	12,209	12,124	14,316	16,425	19,088	21,076	24,340	28,808	31,568	30,961	35,681	40,208	43,716
Vietnam	1,715	1,731	1,811	1,929	2,058	2,205	2,461	2,867	3,276	3,747	4,372	5,544	6,093	6,569	7,300	8,195

Appendix table 6-4

Value added of commercial KI services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	81,062	73,096	82,218	81,333	76,893	86,333	110,837	134,644	149,629	163,022	196,414	212,299	270,378	345,637	411,559	430,281
New Zealand	11,100	9,356	9,756	8,564	8,757	10,558	14,185	17,236	19,944	19,487	22,911	22,790	21,516	27,124	33,603	35,141

EU = European Union; KI = knowledge intensive.

NOTES: Value added is the amount contributed by country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. KI services include education, health, and business, financial, and communications services and are classified by Organisation for Economic Co-operation and Development. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

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Appendix table 6-5

Value added of education services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,237,764	1,253,381	1,315,348	1,331,237	1,356,374	1,435,912	1,611,856	1,770,426	1,885,626	2,006,470	2,234,288	2,442,080	2,461,790	2,580,541	2,811,044	2,873,366
North America																
Canada	30,560	29,319	30,221	31,501	31,633	32,855	38,590	43,597	49,204	57,342	62,047	65,674	61,050	71,596	78,434	81,451
Mexico	17,403	19,145	22,510	26,966	32,018	34,816	34,851	35,386	40,084	43,538	47,076	50,236	43,860	49,377	51,959	52,947
United States	401,587	425,500	453,800	483,300	511,500	545,000	581,000	609,800	637,900	674,900	717,000	753,658	784,132	796,533	833,908	865,275
Central and South America																
Argentina	11,716	12,182	12,958	13,615	13,542	4,266	4,838	5,469	7,181	9,577	12,428	16,563	17,201	19,675	24,335	26,637
Bolivia	103	113	121	124	124	124	125	132	133	149	164	192	216	235	254	278
Brazil	31,215	28,285	22,337	29,278	23,731	22,467	23,863	26,307	33,737	43,438	56,317	69,380	72,213	90,312	104,720	100,320
Chile	3,354	3,459	3,549	3,726	3,478	3,508	3,627	4,494	5,312	6,158	7,210	7,732	8,092	9,402	11,042	11,827
Colombia	8,122	7,464	7,066	6,405	6,492	5,091	4,825	5,815	7,227	7,585	9,445	11,158	11,072	13,628	15,054	16,743
Costa Rica	616	697	774	855	949	1,004	1,050	1,081	1,127	1,216	1,386	1,650	1,932	2,496	2,852	3,147
Ecuador	1,160	1,145	778	536	1,025	1,375	1,843	2,295	2,660	3,060	3,375	10,088	10,714	11,716	13,461	14,940
Honduras	248	295	316	348	423	481	522	552	580	659	802	940	1,116	1,205	1,278	1,341
Jamaica	49	92	98	400	447	469	459	486	511	563	599	654	710	723	834	844
Panama	401	402	447	476	512	536	568	588	604	635	721	841	885	903	1,038	1,160
Peru	1,890	1,961	1,837	1,915	2,039	2,123	2,336	2,560	2,793	3,032	3,410	3,903	4,142	4,893	5,680	6,347
Uruguay	793	842	870	845	813	513	415	460	591	689	837	1,169	1,322	1,630	1,942	2,088
Venezuela	3,791	5,698	6,476	7,932	9,235	6,569	5,611	6,092	7,128	8,865	11,639	14,360	18,022	10,568	14,431	16,786
Europe																
EU	396,632	409,297	412,756	379,473	387,162	429,589	526,520	599,883	627,925	654,370	751,158	812,965	775,270	762,981	812,602	783,004
Austria	10,288	10,449	10,501	9,385	9,293	10,031	12,395	13,816	14,429	15,214	17,364	19,630	19,676	19,453	20,779	20,070
Belgium	14,761	15,086	14,818	13,210	13,526	14,917	18,531	20,893	21,917	23,065	26,336	30,198	29,983	30,037	33,156	32,067
Bulgaria	156	271	423	442	417	503	583	682	738	739	935	1,023	1,112	1,165	1,290	1,259
Czech Republic	2,054	2,094	2,160	2,038	2,247	2,783	3,532	4,057	4,803	5,452	6,506	8,118	7,438	7,485	8,319	7,635
Denmark	7,982	8,337	8,387	7,598	7,692	8,482	10,484	12,024	12,296	12,840	14,108	16,134	16,385	17,181	18,482	17,687
Finland	5,395	5,547	5,468	4,916	5,036	5,592	6,996	8,048	8,393	8,685	9,924	11,196	10,919	10,898	11,911	11,483
France	72,030	74,495	74,411	66,506	67,306	73,939	91,394	101,097	104,696	108,020	122,762	136,559	132,969	130,536	140,268	134,630
Germany	86,758	87,873	86,694	76,881	76,354	83,504	99,843	113,510	115,272	114,730	128,929	139,838	139,060	136,122	147,267	141,578
Greece	6,441	6,419	6,383	5,765	5,886	6,950	10,048	11,793	12,545	13,825	16,886	19,419	20,080	18,192	18,596	16,902
Hungary	1,940	1,959	2,040	1,944	2,245	3,021	4,210	4,826	5,351	5,342	6,008	6,590	5,292	5,189	5,600	5,242
Ireland	3,341	3,243	3,185	3,034	3,387	4,164	5,642	6,641	7,388	8,393	10,042	11,755	11,828	10,889	11,423	10,864
Italy	55,266	55,134	54,366	48,171	49,202	54,476	68,613	73,755	77,504	80,725	91,566	95,984	93,520	89,103	91,088	85,424
Netherlands	15,073	15,736	16,142	14,949	15,679	17,841	22,617	25,698	26,469	27,341	31,497	35,572	35,848	34,915	36,965	35,514
Poland	6,225	6,796	6,648	6,717	7,913	8,295	9,369	11,428	13,691	14,802	17,870	21,876	17,304	19,158	20,646	19,954
Portugal	6,290	6,622	6,869	6,457	6,736	7,730	9,444	10,939	11,513	11,763	13,667	15,235	14,579	14,073	14,434	13,405
Romania	637	789	991	969	1,200	1,341	1,840	2,560	3,342	3,889	4,954	6,884	5,523	5,538	6,019	5,828
Slovakia	635	698	651	659	699	790	1,068	1,267	1,470	1,544	1,970	2,690	2,712	2,535	2,586	2,489
Spain	25,689	26,882	27,716	25,748	27,167	30,512	38,822	45,523	48,382	51,890	61,131	70,476	70,752	67,496	72,106	67,983
Sweden	11,718	11,779	12,232	11,289	10,789	12,140	15,855	17,930	18,202	19,171	21,677	23,201	20,431	22,292	25,927	25,475
United Kingdom	63,954	69,088	72,669	72,793	74,387	82,578	95,235	113,394	119,525	126,942	147,025	140,586	119,860	120,724	125,740	127,514

Appendix table 6-5

Value added of education services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	6,411	6,608	6,795	6,400	6,848	8,090	9,885	10,780	11,867	12,442	14,441	16,248	15,700	17,325	19,343	19,671
Russia	15,195	10,085	5,107	6,379	8,445	8,931	10,359	13,887	17,437	22,773	30,095	39,056	35,734	40,370	47,745	51,519
Switzerland	1,785	1,808	1,722	1,545	1,605	1,757	1,936	1,996	1,985	1,999	2,203	2,544	2,628	2,620	3,139	2,962
Ukraine	2,470	2,013	1,357	1,360	1,657	2,031	2,584	3,055	4,075	5,197	6,516	8,262	6,320	7,016	7,794	8,250
Middle East																
Bahrain	260	268	282	290	324	381	459	513	557	636	715	836	953	1,011	1,052	1,139
Iran	649	1,791	1,216	1,113	1,639	2,377	2,355	3,248	3,820	4,639	4,876	5,645	5,751	6,701	7,942	6,853
Israel	7,650	7,556	7,626	8,181	8,677	7,893	8,066	8,648	8,684	9,213	10,374	12,430	11,829	13,383	14,775	14,679
Jordan	131	149	165	182	193	229	231	263	295	330	368	402	428	471	518	568
Kuwait	1,684	1,759	1,869	1,910	1,927	2,132	2,255	2,443	2,647	3,071	3,591	4,460	4,455	4,920	5,044	5,371
Qatar	29	56	55	54	56	60	61	485	672	825	1,029	1,302	1,580	1,758	2,150	2,361
Saudi Arabia	1,569	1,590	1,629	1,690	1,758	1,838	1,914	2,018	2,123	2,226	2,334	2,462	2,637	2,866	3,205	3,427
Turkey	5,771	5,921	6,508	6,471	4,887	6,251	8,380	10,599	13,224	14,842	18,855	21,812	20,588	22,957	22,568	23,654
United Arab Emirates	276	290	308	335	657	758	857	978	1,065	1,204	1,461	1,828	1,988	2,061	2,378	2,602
Africa																
Cameroon	200	211	284	228	224	280	360	475	498	565	742	804	860	933	1,007	1,006
Egypt	7,537	7,752	7,626	7,578	7,669	7,397	6,221	5,667	7,287	8,318	5,251	5,762	6,647	7,590	8,123	8,657
Kenya	911	1,049	964	748	802	958	1,191	1,266	1,382	1,563	1,835	1,912	1,839	2,003	1,988	2,409
Morocco	1,315	908	992	975	1,054	1,096	1,404	1,585	1,748	1,830	2,132	2,465	2,489	2,547	2,807	2,953
Nigeria	219	266	73	131	152	147	151	168	194	225	262	318	302	387	416	515
Senegal	155	165	169	151	158	177	209	270	291	322	414	465	464	465	523	542
South Africa	1,214	1,160	1,213	1,308	1,150	1,121	1,817	2,409	2,756	2,934	3,158	2,885	3,241	3,747	4,182	4,043
Tunisia	11	12	12	11	10	11	13	13	13	13	15	16	16	16	16	16
Zimbabwe	899	587	633	842	426	462	285	684	687	196	397	344	455	575	785	739
Asia																
Bangladesh	822	882	961	1,033	1,049	1,097	1,215	1,323	1,366	1,441	1,710	1,973	2,244	2,571	2,827	2,898
China	28,924	33,493	36,786	39,651	45,831	50,772	55,679	64,374	75,582	85,825	106,816	133,625	159,194	183,951	223,003	257,557
India	9,637	10,214	11,126	11,710	12,082	12,810	14,811	16,814	19,658	21,245	26,374	29,391	31,897	40,023	45,155	44,624
Indonesia	2,865	1,447	2,146	2,503	2,399	3,091	3,963	4,528	5,083	6,431	7,377	8,087	8,829	11,768	14,469	15,011
Japan	158,514	150,454	173,999	169,925	150,044	145,588	153,670	163,111	157,894	149,153	145,286	162,329	175,787	186,443	199,338	202,816
Malaysia	201	154	163	429	481	520	559	601	772	889	1,129	1,378	1,471	1,764	2,028	2,143
Pakistan	1,578	1,654	1,695	2,096	2,001	2,318	2,599	2,840	3,238	3,791	4,376	4,642	5,309	6,048	7,287	7,949
Philippines	2,131	1,693	2,355	2,355	2,288	2,496	2,603	2,805	2,997	3,405	4,180	4,566	4,647	5,432	6,200	6,674
Singapore	2,785	2,489	2,477	2,745	2,904	3,107	3,227	3,545	3,712	4,106	4,647	5,288	5,379	6,842	8,282	8,771
South Korea	24,858	17,239	21,401	24,334	24,231	27,917	32,901	37,790	45,407	53,453	59,784	55,307	49,179	56,184	61,438	61,950
Sri Lanka	96	63	72	57	59	73	47	42	48	20	17	29	103	157	181	180
Taiwan	11,560	10,831	12,128	13,318	13,533	14,122	15,436	15,958	17,034	17,605	18,221	19,123	18,714	19,861	21,717	22,249
Thailand	5,531	4,653	5,195	5,071	4,717	4,998	5,487	6,505	7,191	8,423	10,128	11,170	11,404	12,943	14,779	15,791
Vietnam	965	995	1,004	1,048	1,103	1,183	1,380	1,482	1,699	1,921	2,163	2,347	2,507	2,699	3,254	3,710

Appendix table 6-5

Value added of education services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	18,727	16,971	17,950	17,256	16,186	18,265	22,978	28,224	31,416	33,157	40,136	44,228	41,597	48,523	62,937	64,859
New Zealand	2,588	2,249	2,372	2,128	2,022	2,391	3,266	4,039	4,524	4,465	5,267	5,176	4,680	5,737	6,824	7,111

EU = European Union.

NOTES: Value added is amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

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Appendix table 6-6

Value added of health and social services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,421,533	1,448,925	1,515,070	1,560,906	1,621,924	1,749,944	2,003,892	2,235,658	2,382,368	2,540,381	2,810,695	3,101,124	3,142,272	3,316,555	3,583,613	3,663,531
North America																
Canada	37,125	35,722	37,475	40,561	41,777	43,393	52,053	59,007	66,271	75,246	86,425	94,078	87,454	101,894	112,656	117,390
Mexico	10,509	11,553	13,762	16,315	19,475	21,313	20,911	21,562	23,852	26,015	28,579	30,356	26,319	29,620	31,157	32,176
United States	505,107	536,550	567,964	601,604	650,514	701,661	752,522	802,641	846,795	901,204	955,360	1,024,008	1,080,237	1,121,581	1,156,816	1,210,596
Central and South America																
Argentina	9,661	9,931	10,238	10,464	10,522	3,150	3,529	3,821	4,661	5,793	7,388	9,207	9,006	10,046	12,110	13,299
Bolivia	141	155	166	170	170	169	171	180	182	204	225	263	295	322	348	383
Brazil	23,850	21,611	17,067	21,781	18,744	17,053	17,825	21,051	26,996	35,219	45,924	54,679	56,756	71,176	82,531	78,923
Chile	3,755	3,822	3,700	3,842	3,561	3,566	2,607	3,317	3,906	4,653	5,499	5,422	5,784	7,022	8,247	8,753
Colombia	5,248	5,050	4,828	2,521	2,578	2,006	1,951	2,402	3,151	3,501	4,354	4,925	4,914	6,449	7,124	7,889
Costa Rica	492	543	611	650	710	775	809	851	910	1,035	1,216	1,498	1,729	2,295	2,622	2,900
Ecuador	695	694	371	260	476	595	787	871	986	1,122	1,257	3,757	3,990	4,363	5,013	5,587
Honduras	110	131	141	157	192	207	217	230	238	280	333	410	509	566	600	634
Jamaica	33	50	56	56	56	60	56	58	65	70	78	87	76	80	93	94
Panama	338	351	385	390	416	461	492	511	539	548	577	640	684	736	847	963
Peru	922	910	936	955	1,009	1,074	1,201	1,303	1,431	1,565	1,707	2,004	2,104	2,519	2,924	3,324
Uruguay	1,275	1,335	1,285	1,308	1,232	755	573	611	799	914	1,059	1,491	1,629	2,100	2,515	2,704
Venezuela	2,166	2,530	2,955	3,466	3,922	2,765	2,396	2,589	3,001	4,056	5,873	8,460	11,424	7,495	10,234	11,943
Europe																
EU	502,782	517,752	518,722	482,501	495,891	561,599	700,155	811,809	854,501	908,036	1,030,332	1,135,962	1,099,465	1,094,275	1,176,207	1,142,404
Austria	9,827	10,214	10,079	9,044	9,405	10,324	13,114	15,032	15,713	16,872	19,219	21,658	21,152	20,709	22,854	22,147
Belgium	13,718	14,085	14,810	13,494	13,859	15,344	19,276	22,294	23,300	24,527	28,277	32,561	33,125	33,004	36,601	35,515
Bulgaria	118	197	270	249	226	342	328	414	577	503	631	739	894	908	1,009	989
Czech Republic	1,835	1,948	1,897	1,807	2,099	2,805	3,385	3,997	4,555	5,100	5,875	7,743	7,372	7,428	8,272	7,615
Denmark	14,841	15,550	15,635	14,113	14,533	15,987	20,017	22,962	23,554	24,891	28,204	31,862	33,201	32,087	33,411	32,079
Finland	8,891	9,046	8,966	8,157	8,523	9,486	11,963	13,866	14,760	15,585	17,998	20,687	20,495	20,298	22,435	21,700
France	100,453	102,303	100,601	89,604	91,716	104,164	131,691	154,841	162,085	171,867	196,117	218,223	215,718	212,877	231,105	222,541
Germany	127,632	129,754	127,927	114,331	115,368	129,594	158,649	176,929	182,447	190,380	211,077	234,364	237,766	236,621	251,252	243,533
Greece	4,505	4,685	4,699	4,180	3,926	4,711	6,823	7,940	8,834	10,190	12,184	13,898	13,261	11,931	12,189	11,115
Hungary	1,757	1,773	1,786	1,774	1,951	2,583	3,596	4,110	4,428	4,308	5,033	5,432	4,412	4,267	4,603	4,323
Ireland	4,280	4,195	4,477	4,642	5,349	6,362	8,828	11,056	12,054	13,584	14,996	17,436	16,518	15,098	15,831	15,038
Italy	56,330	56,241	55,258	52,681	54,325	59,041	72,951	86,424	91,734	97,330	105,448	121,037	117,004	116,090	122,504	115,262
Netherlands	25,269	26,441	26,821	25,098	27,116	32,629	42,143	48,094	49,708	52,231	60,040	68,410	69,891	69,073	75,174	72,458
Poland	4,654	5,337	4,690	4,970	6,337	7,404	8,384	8,111	9,766	11,114	13,648	17,393	13,758	15,129	16,295	15,801
Portugal	4,807	5,184	5,507	5,325	5,866	6,653	8,245	9,822	10,611	11,326	13,159	14,669	14,038	13,458	13,796	12,855
Romania	474	630	707	699	809	1,166	1,492	1,883	2,638	2,981	4,226	5,536	4,784	4,797	5,245	5,096
Slovakia	858	840	746	646	684	803	1,073	1,109	1,342	1,453	2,096	2,511	2,689	2,510	2,575	2,473
Spain	26,069	27,369	28,494	26,711	27,434	31,673	42,512	50,877	55,818	60,745	72,658	86,335	88,131	83,516	89,173	84,349
Sweden	21,281	21,340	21,904	21,330	20,642	23,870	30,426	34,452	35,185	37,179	43,022	46,769	41,431	45,550	53,064	52,308
United Kingdom	75,184	80,621	83,449	83,643	85,722	96,657	115,259	137,598	145,391	155,869	176,425	168,698	143,828	148,923	158,819	165,207

Appendix table 6-6

Value added of health and social services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	11,860	11,942	12,445	11,763	12,626	15,479	18,603	20,659	23,147	25,026	30,258	34,653	33,303	36,480	42,219	43,077
Russia	12,321	7,850	4,149	5,190	6,718	10,254	12,246	16,401	19,963	28,148	37,156	48,197	42,858	48,968	59,541	66,542
Switzerland	13,414	14,959	14,794	13,830	14,490	16,232	19,355	22,174	22,382	23,002	24,818	29,243	30,383	32,480	39,456	39,394
Ukraine	2,187	1,543	885	802	1,119	1,382	1,713	2,059	2,725	3,509	4,464	5,545	4,437	5,315	5,751	6,257
Middle East																
Bahrain	146	152	156	159	171	192	219	241	275	324	366	416	460	533	555	606
Iran	1,110	1,181	1,055	1,684	2,147	2,489	3,170	3,841	4,927	5,823	6,706	7,764	7,910	9,216	10,923	9,316
Israel	6,360	6,238	6,246	6,875	7,460	6,883	7,205	7,576	7,806	8,387	9,140	11,419	11,193	12,426	13,719	13,741
Jordan	76	90	96	102	113	120	130	147	156	198	237	259	269	296	326	358
Kuwait	666	696	703	698	737	800	876	937	1,082	1,199	1,445	1,800	1,901	2,083	2,136	2,278
Qatar	6	13	12	11	12	14	14	139	124	302	377	477	578	644	787	871
Saudi Arabia	2,012	2,039	2,089	2,167	2,254	2,358	2,454	2,588	2,722	2,854	2,993	3,157	3,370	3,777	4,218	4,525
Turkey	1,938	3,233	3,507	3,501	2,556	3,348	4,578	5,700	7,693	8,427	10,845	12,546	11,841	13,204	12,980	13,783
United Arab Emirates	378	397	422	459	900	1,038	1,175	1,341	1,459	1,650	2,002	2,505	2,724	2,824	3,269	3,595
Africa																
Cameroon	67	75	70	55	56	54	68	110	156	156	178	200	216	256	277	280
Egypt	190	235	284	299	309	312	253	230	296	338	214	234	270	309	330	356
Kenya	304	329	318	267	305	345	397	419	490	568	673	746	778	823	844	1,046
Morocco	1,802	1,244	1,359	1,336	1,445	1,502	1,924	2,172	2,395	2,507	2,922	3,378	3,410	3,490	3,847	4,059
Nigeria	57	70	19	34	40	38	40	44	51	59	69	80	71	91	98	121
Senegal	68	73	81	79	76	79	101	88	92	109	134	166	162	171	192	200
South Africa	1,663	1,589	1,662	1,792	1,576	1,536	2,490	3,301	3,776	4,021	4,327	3,954	4,441	5,135	5,730	5,559
Tunisia	15	16	16	14	14	14	17	18	17	18	19	21	20	21	22	22
Zimbabwe	348	222	227	249	122	144	64	133	234	67	135	117	155	196	268	254
Asia																
Bangladesh	898	932	986	1,031	1,025	1,050	1,135	1,209	1,260	1,309	1,496	1,723	1,940	2,174	2,367	2,413
China	20,141	22,836	24,780	25,433	28,785	31,467	34,044	38,874	43,709	49,213	60,556	74,475	82,284	96,651	113,662	128,102
India	13,205	13,996	15,246	16,045	16,556	17,553	20,295	23,040	26,936	29,111	36,139	40,273	43,708	54,842	61,875	61,501
Indonesia	3,673	1,856	2,752	3,210	3,077	3,964	5,083	5,806	6,518	8,247	9,460	10,370	11,051	15,077	18,113	18,792
Japan	168,024	158,864	185,795	219,830	207,670	206,253	231,204	254,060	260,248	252,523	255,871	295,089	319,553	347,548	381,530	396,352
Malaysia	191	146	155	391	459	508	587	662	947	1,052	1,289	1,475	1,537	1,843	2,102	2,228
Pakistan	2,023	2,121	2,174	2,688	2,566	2,973	3,333	3,642	4,153	4,861	5,612	5,952	6,867	8,104	9,807	10,771
Philippines	1,427	1,075	1,418	1,388	1,331	1,465	1,557	1,662	1,856	2,137	2,639	2,987	3,040	3,554	4,056	4,613
Singapore	3,571	3,192	3,176	3,521	3,724	3,984	4,138	4,546	4,761	5,265	5,959	6,782	6,892	9,064	10,917	11,657
South Korea	11,554	8,594	11,517	13,074	15,392	16,720	19,456	22,368	27,886	33,115	38,150	34,898	33,401	40,894	46,355	49,309
Sri Lanka	132	87	99	78	80	99	64	58	65	27	24	39	141	215	248	248
Taiwan	6,712	6,548	7,428	8,305	8,207	8,491	8,689	9,261	10,131	10,680	11,067	11,966	12,010	12,995	14,460	14,882
Thailand	2,035	1,652	1,967	1,948	1,913	2,227	2,386	2,855	3,116	3,586	4,165	4,497	4,429	4,898	5,593	5,971
Vietnam	375	375	387	423	436	462	572	689	783	881	1,003	1,176	1,262	1,274	1,323	1,519

Appendix table 6-6

Value added of health and social services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	23,160	20,980	23,043	22,522	21,550	24,384	31,723	38,408	43,428	46,028	54,295	58,117	54,538	68,186	82,334	89,019
New Zealand	3,212	2,797	2,888	2,649	2,663	3,127	4,280	5,387	6,316	6,193	7,306	7,180	6,492	7,958	9,337	9,954

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-7

Value added of HT manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	763,067	742,246	793,902	861,874	753,753	777,222	872,641	991,868	1,075,465	1,176,842	1,273,990	1,343,263	1,277,428	1,417,304	1,514,523	1,525,948
North America																
Canada	11,176	10,514	13,401	15,061	11,864	11,220	13,066	14,324	15,647	17,740	21,709	22,478	19,050	20,833	22,042	21,316
Mexico	9,660	11,474	13,328	15,572	15,751	14,821	12,907	12,421	13,529	14,919	15,840	15,268	12,622	14,629	16,564	16,047
United States	248,432	257,120	259,524	284,270	252,750	261,035	266,352	292,602	321,511	349,815	361,910	365,891	390,734	408,194	398,987	416,344
Central and South America																
Argentina	1,417	1,240	1,119	1,052	931	324	461	569	677	742	867	996	970	1,104	1,317	1,365
Bolivia	21	24	33	22	22	23	27	27	34	32	31	43	50	48	57	66
Brazil	13,791	12,505	10,416	12,835	11,603	9,454	8,566	11,315	13,936	17,473	20,307	29,542	27,102	34,058	39,104	35,744
Chile	408	401	257	367	251	228	228	303	349	393	427	494	467	557	654	715
Colombia	967	900	737	676	719	705	641	828	871	971	1,242	1,404	1,261	1,504	1,732	1,891
Costa Rica	65	62	59	63	71	73	76	84	90	101	123	137	120	145	169	181
Ecuador	61	14	24	144	39	57	40	50	63	61	97	105	99	104	122	136
Honduras	8	9	9	10	10	11	11	12	12	14	14	16	15	18	20	21
Jamaica	25	26	26	26	27	28	27	30	33	35	37	41	36	39	42	42
Panama	9	13	13	13	19	20	20	18	23	24	26	30	30	30	34	38
Peru	210	201	192	182	173	199	202	172	203	270	328	393	379	378	433	490
Uruguay	147	122	126	108	103	72	64	62	82	101	118	151	155	174	212	227
Venezuela	322	420	399	495	498	341	315	420	518	613	757	1,083	1,103	720	957	1,047
Europe																
EU	176,088	182,489	190,772	184,492	176,090	183,887	216,364	242,772	257,977	275,277	312,775	319,492	274,062	274,137	292,853	274,288
Austria	3,630	3,947	3,812	3,875	3,629	3,893	4,732	5,378	5,959	6,454	6,717	7,037	6,393	6,689	7,080	6,700
Belgium	4,397	4,073	4,763	4,666	4,621	4,935	5,950	6,562	6,928	7,351	8,136	8,863	8,287	9,071	9,627	9,009
Bulgaria	126	111	108	114	123	131	166	192	251	233	303	271	202	228	287	292
Czech Republic	869	897	972	991	999	1,158	1,527	1,694	2,019	2,396	2,782	3,255	2,596	2,642	2,900	2,487
Denmark	3,013	3,172	3,533	3,362	3,623	3,444	4,469	4,776	5,446	5,511	6,055	6,175	5,770	6,576	6,675	7,001
Finland	3,894	5,237	6,211	6,610	5,758	6,963	8,254	8,586	8,838	9,666	12,226	11,295	5,889	5,546	4,169	3,772
France	29,093	29,271	29,172	28,856	28,288	28,974	33,822	34,426	36,486	38,430	40,301	41,650	38,909	31,450	32,628	31,134
Germany	42,636	42,923	44,743	43,871	40,867	43,855	56,168	66,078	70,889	74,851	92,372	93,596	72,751	78,293	90,184	82,581
Greece	550	602	644	619	797	985	1,140	1,030	1,130	1,184	1,305	1,524	1,179	1,072	1,129	945
Hungary	1,325	1,436	1,326	1,321	1,571	1,778	2,741	3,647	4,030	4,060	3,892	4,487	4,049	3,813	4,312	3,710
Ireland	4,966	5,626	8,588	8,337	7,684	8,877	9,077	9,538	10,570	11,298	13,250	13,009	12,573	11,359	11,937	10,942
Italy	20,051	20,569	20,639	19,080	19,988	21,110	24,018	27,185	26,826	28,526	31,671	33,514	30,350	29,320	27,148	24,093
Netherlands	5,114	5,183	5,526	5,808	4,860	4,333	5,238	5,717	6,414	6,126	6,712	7,487	6,892	6,881	7,631	7,215
Poland	1,775	1,941	2,193	1,964	2,137	2,060	2,200	2,410	3,069	3,430	3,924	5,232	4,119	4,930	5,396	4,948
Portugal	1,044	924	963	874	892	884	1,059	1,155	1,175	1,167	1,296	1,468	1,240	1,201	1,268	1,178
Romania	381	447	328	356	363	416	370	447	655	725	971	1,180	746	723	765	749
Slovakia	295	250	176	266	252	295	361	401	523	830	996	1,471	1,309	1,266	1,430	1,255
Spain	7,493	7,404	7,342	6,732	6,918	6,723	8,338	8,945	9,477	10,440	11,971	13,864	12,233	11,778	11,714	10,442
Sweden	8,362	9,396	9,707	8,014	6,207	7,614	9,668	13,170	13,617	14,456	14,873	15,214	15,700	16,628	18,907	18,186
United Kingdom	37,076	39,079	40,026	38,774	36,515	35,461	37,067	41,435	43,673	48,142	53,020	48,900	42,875	44,671	47,666	47,650

Appendix table 6-7

Value added of HT manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	1,218	1,117	1,375	1,248	1,201	1,410	1,607	1,811	2,061	2,470	2,821	3,184	2,851	2,955	3,426	3,451
Russia	14,172	9,624	6,264	2,755	3,015	3,836	4,894	5,717	6,261	7,851	10,623	13,008	10,574	14,815	19,106	20,882
Switzerland	12,703	13,274	12,911	12,050	13,468	15,592	18,332	21,108	23,048	25,745	29,609	35,484	32,869	36,544	42,694	44,634
Ukraine	428	370	321	322	419	471	600	707	832	972	1,365	1,875	1,091	1,602	1,971	2,206
Middle East																
Bahrain	17	15	15	16	17	18	19	21	28	38	49	62	50	65	78	72
Iran	301	249	272	346	386	519	651	800	784	866	1,088	1,294	1,319	1,536	1,821	1,484
Israel	4,420	4,800	5,295	7,346	5,757	4,915	5,174	5,386	5,629	6,229	7,441	8,525	8,450	8,884	9,420	9,079
Jordan	75	93	89	99	110	119	128	160	200	213	292	381	367	397	452	502
Kuwait	27	31	33	28	32	38	44	53	130	155	186	211	172	200	264	255
Qatar	3	3	3	5	5	6	7	1	9	10	13	21	16	22	33	33
Saudi Arabia	80	76	82	89	91	95	107	117	136	151	174	196	196	241	313	306
Turkey	1,863	2,285	2,457	2,735	2,391	1,062	1,689	1,996	2,284	2,236	2,332	3,078	2,246	2,536	3,042	3,086
United Arab Emirates	14	14	16	18	41	42	45	50	56	62	74	88	70	75	89	96
Africa																
Cameroon	4	5	4	2	2	4	5	6	7	7	8	13	13	13	14	14
Egypt	452	551	614	609	722	903	729	555	552	677	828	1,070	1,110	1,312	1,482	1,556
Kenya	38	39	50	43	45	49	60	70	74	80	72	83	77	83	88	97
Morocco	113	129	127	170	167	192	232	241	375	330	421	483	428	417	473	458
Nigeria	753	768	196	134	151	163	183	225	265	306	324	406	301	360	441	551
Senegal	8	8	8	8	7	7	8	11	11	13	14	14	15	16	19	31
South Africa	893	888	806	837	731	780	1,150	1,484	1,650	1,456	1,514	1,398	1,402	1,529	1,552	1,497
Tunisia	118	126	136	133	149	144	176	192	200	212	255	312	298	334	352	321
Zimbabwe	10	7	6	6	5	4	5	5	2	9	3	4	5	5	8	8
Asia																
Bangladesh	145	184	156	166	163	185	208	224	233	247	281	346	423	428	492	510
China	25,129	25,777	29,691	37,685	42,816	50,990	69,047	87,003	112,367	142,900	167,291	207,166	205,517	259,613	321,961	364,938
India	3,112	3,362	3,841	3,285	3,601	4,095	4,640	5,340	6,490	7,494	9,753	10,567	11,514	13,031	14,629	14,226
Indonesia	3,730	968	1,586	2,447	1,600	2,480	3,043	3,043	2,972	3,502	5,118	5,440	5,278	6,464	7,381	7,639
Japan	160,749	141,761	165,201	185,145	135,917	123,443	146,053	164,005	158,573	153,003	150,256	153,771	138,715	146,964	143,415	129,327
Malaysia	8,809	6,732	8,478	8,964	7,487	7,735	8,902	9,945	8,036	8,502	10,221	10,136	8,657	10,977	10,467	9,762
Pakistan	550	545	531	482	418	489	627	782	922	757	839	868	736	869	1,085	1,177
Philippines	3,099	3,350	4,018	4,366	3,206	3,478	2,449	2,820	2,963	3,229	3,794	4,070	3,649	4,200	4,594	4,819
Singapore	13,729	8,673	9,610	13,141	9,630	11,273	11,745	15,829	17,378	20,157	16,333	15,644	15,749	19,692	22,358	20,752
South Korea	20,761	18,038	24,618	31,861	25,251	29,312	33,125	43,080	47,909	53,949	57,486	49,745	45,544	62,777	61,035	53,593
Sri Lanka	37	44	91	50	35	38	40	48	58	85	55	41	41	48	55	49
Taiwan	15,391	15,602	19,096	24,564	18,980	24,039	29,346	33,588	36,706	43,160	43,432	43,516	37,668	46,643	48,495	43,864
Thailand	3,159	1,665	1,660	1,972	1,814	3,299	3,836	4,291	4,724	4,854	5,614	5,791	4,925	6,202	5,458	4,054
Vietnam	130	152	210	244	238	288	354	466	537	618	741	946	1,049	1,353	1,786	1,638

Appendix table 6-7

Value added of HT manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	3,752	3,183	3,394	2,918	2,557	2,974	3,709	4,313	5,047	5,348	6,233	6,036	5,484	7,039	8,435	8,585
New Zealand	268	206	209	197	208	235	303	364	402	364	428	425	306	390	442	435

EU = European Union; HT = high technology.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. HT manufacturing industries include aerospace, communications and semiconductors, computers and office machinery, pharmaceuticals, and scientific instruments and measuring equipment classified by Organisation for Economic Co-operation and Development. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

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Appendix table 6-8

Value added of financial services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,677,094	1,698,010	1,804,834	1,855,726	1,915,275	2,027,850	2,270,545	2,466,032	2,699,472	2,931,345	3,258,855	3,369,826	3,484,920	3,826,796	4,135,254	4,302,918
North America																
Canada	42,314	41,415	42,682	47,516	48,418	49,576	58,685	68,954	77,937	91,336	103,641	105,862	96,031	114,919	125,435	130,064
Mexico	10,154	11,636	13,408	12,554	12,689	22,284	20,352	22,686	30,489	33,945	39,952	43,054	37,232	43,868	52,451	56,168
United States	551,667	634,698	681,747	762,012	838,678	863,537	902,447	919,020	1,019,432	1,092,676	1,080,004	1,041,460	1,093,586	1,157,274	1,159,310	1,242,322
Central and South America																
Argentina	10,121	11,129	11,524	11,523	13,768	5,372	4,717	5,865	7,371	9,183	11,748	15,473	16,130	19,671	23,128	25,877
Bolivia	348	412	458	436	387	357	305	277	313	360	435	579	630	743	859	968
Brazil	59,417	59,430	37,492	33,280	32,309	32,525	33,872	33,115	53,357	67,323	90,129	95,506	100,996	128,318	144,154	136,474
Chile	4,009	3,916	3,522	3,517	3,237	3,143	3,873	4,698	5,580	6,140	7,719	9,118	8,878	9,911	10,216	11,172
Colombia	9,092	7,672	5,447	4,976	4,958	3,920	3,733	4,665	5,778	6,279	8,557	11,095	10,973	12,799	14,518	16,158
Costa Rica	548	566	641	724	774	858	940	980	1,114	1,261	1,511	1,802	1,910	2,269	2,592	2,867
Ecuador	857	724	245	301	431	520	574	670	895	1,087	1,122	1,290	1,362	1,618	1,860	2,057
Honduras	237	285	305	343	373	383	400	462	511	623	735	889	893	937	993	1,056
Jamaica	667	568	671	720	737	794	916	926	1,005	1,030	1,145	1,295	1,177	1,160	1,253	1,321
Panama	855	993	1,020	1,089	1,156	1,184	1,155	1,193	1,344	1,423	1,663	1,962	2,038	2,102	2,417	2,844
Peru	1,744	1,743	1,410	1,456	1,340	1,628	1,811	1,947	2,355	2,694	3,229	4,120	4,565	5,314	6,168	7,259
Uruguay	1,318	1,440	1,377	1,383	1,419	1,030	776	729	933	1,015	1,135	1,320	1,316	1,682	1,996	2,146
Venezuela	2,053	3,327	2,778	2,763	3,059	2,601	2,239	2,309	2,346	3,765	6,592	8,118	8,983	5,261	7,183	9,793
Europe																
EU	403,039	399,787	414,251	366,006	362,912	422,342	537,520	631,696	653,895	696,415	816,462	846,188	847,040	854,153	893,494	851,541
Austria	10,511	10,557	10,215	9,616	9,398	10,210	11,870	13,637	14,549	15,870	18,636	19,875	16,210	16,704	18,386	17,108
Belgium	13,568	13,664	13,451	12,492	11,709	13,663	16,183	19,400	19,791	20,489	22,829	23,819	26,134	28,040	29,380	27,387
Bulgaria	159	204	163	189	250	319	527	682	1,020	1,050	1,811	1,820	2,040	2,115	2,290	2,191
Czech Republic	1,518	2,114	1,926	1,459	1,820	2,103	2,971	3,449	3,402	3,944	5,906	8,007	7,509	8,057	9,241	8,059
Denmark	7,248	7,526	6,813	6,484	6,543	7,419	9,779	11,156	11,784	12,462	14,996	17,543	17,564	16,719	18,893	17,524
Finland	3,783	4,109	3,765	4,722	3,980	4,287	3,483	4,311	4,213	5,269	6,961	6,640	6,099	5,955	6,428	6,192
France	62,560	62,072	62,454	61,215	54,712	62,492	79,960	90,284	93,559	99,374	110,990	109,008	127,164	132,431	127,462	121,641
Germany	96,412	90,196	102,079	71,656	69,624	79,586	104,009	126,328	119,001	117,791	118,486	117,439	130,418	136,594	146,287	140,561
Greece	5,373	5,946	6,569	6,215	4,917	5,480	7,438	10,474	10,434	11,767	14,035	15,754	15,806	15,222	15,232	13,365
Hungary	1,585	1,630	1,397	1,505	1,697	2,344	3,097	3,926	4,721	4,948	5,117	5,384	4,902	4,889	5,015	4,538
Ireland	4,718	5,280	6,014	6,264	7,186	8,319	12,965	16,001	18,018	20,247	24,316	24,223	19,795	18,598	19,586	18,793
Italy	44,137	47,863	48,313	45,893	48,178	49,976	65,088	72,929	76,872	79,199	99,549	108,718	100,397	98,681	103,659	97,138
Netherlands	21,431	21,709	22,732	20,895	21,789	25,346	34,871	40,020	43,615	40,667	41,079	43,951	53,178	57,579	58,393	54,816
Poland	5,349	5,223	5,915	7,498	7,700	7,284	7,985	9,381	11,661	13,543	19,568	24,314	14,227	15,964	17,477	17,639
Portugal	6,099	6,361	6,293	6,027	6,574	7,011	8,875	10,254	10,538	12,437	14,839	16,775	15,895	15,767	16,476	14,970
Romania	1,075	1,408	1,285	1,485	1,399	1,167	1,111	1,715	1,998	2,201	3,249	4,536	3,462	3,452	3,743	3,494
Slovakia	717	621	365	435	449	890	1,188	1,566	1,920	1,948	2,382	2,820	3,239	3,092	3,451	3,252
Spain	24,121	25,775	24,602	24,216	27,003	30,753	38,087	44,215	46,853	51,900	68,493	77,279	89,616	84,810	88,724	80,958
Sweden	12,553	10,728	11,356	9,668	8,597	8,722	11,243	14,437	15,302	14,264	15,826	16,657	15,639	16,384	20,321	19,822
United Kingdom	80,122	76,802	78,545	68,071	69,388	94,971	116,790	137,531	144,644	167,047	207,392	201,625	177,746	173,098	183,050	182,094

Appendix table 6-8

Value added of financial services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	5,057	5,000	4,599	4,499	4,531	5,212	7,877	9,896	10,614	10,220	13,256	14,658	15,063	16,574	18,204	18,902
Russia	2,872	1,065	1,794	3,242	6,779	8,942	12,642	16,455	24,789	35,933	49,012	61,878	53,785	58,401	66,534	74,745
Switzerland	28,917	31,112	30,514	30,702	26,777	29,125	37,985	41,082	42,375	47,261	55,758	60,138	56,621	57,311	68,213	67,834
Ukraine	996	858	491	531	981	1,164	1,757	3,995	3,859	5,027	8,395	13,097	8,563	8,887	9,286	8,245
Middle East																
Bahrain	1,342	1,417	1,429	1,702	1,481	1,485	2,054	2,709	3,211	3,620	4,204	4,462	4,265	4,617	4,806	5,110
Iran	511	684	723	1,117	1,286	2,138	3,416	4,385	4,375	5,277	7,389	8,555	8,715	10,155	12,036	9,460
Israel	7,399	8,320	8,594	10,473	10,522	10,177	10,036	11,155	12,720	13,809	16,194	19,891	19,748	22,436	24,770	25,168
Jordan	223	255	229	272	307	422	456	549	812	924	1,132	1,724	1,710	1,884	2,072	2,273
Kuwait	1,318	1,654	1,882	2,011	2,260	2,840	4,151	5,290	8,805	11,279	16,531	16,395	12,058	12,861	13,186	14,207
Qatar	393	459	466	497	610	740	885	1,030	1,946	3,853	5,507	6,766	7,621	8,148	9,964	11,130
Saudi Arabia	7,671	7,844	8,427	8,839	9,317	9,889	10,630	11,538	12,739	14,020	15,110	16,039	16,912	17,132	17,860	19,502
Turkey	13,260	20,510	25,287	18,632	16,819	10,207	10,359	13,036	13,611	15,274	20,904	24,183	22,825	25,452	25,020	25,870
United Arab Emirates	3,008	3,546	3,720	4,047	5,442	6,002	6,788	8,112	11,490	13,912	18,481	19,928	20,097	21,629	23,271	24,798
Africa																
Cameroon	159	161	147	113	113	133	205	198	193	149	159	210	196	204	220	219
Egypt	7,900	9,367	10,487	11,327	10,785	8,418	6,914	8,647	7,981	8,636	9,180	11,006	12,266	13,888	14,864	15,712
Kenya	496	520	434	449	536	472	644	560	660	889	1,308	1,414	1,664	1,811	2,174	2,581
Morocco	545	1,932	1,881	1,905	1,889	1,966	2,348	2,670	3,030	3,437	4,449	5,049	4,978	4,823	5,315	5,437
Nigeria	1,610	1,668	435	441	502	675	642	782	1,003	2,323	2,940	3,434	3,096	3,971	4,260	5,103
Senegal	38	25	29	28	29	34	60	87	91	88	98	120	97	102	114	120
South Africa	10,349	9,079	10,249	9,898	9,026	8,644	13,244	18,068	20,585	23,139	28,130	26,066	24,243	30,806	34,955	34,088
Tunisia	908	928	1,014	914	959	1,078	1,293	1,423	1,466	1,636	1,844	2,051	2,019	2,062	2,141	2,185
Zimbabwe	865	804	459	378	525	332	697	426	157	45	91	79	104	131	179	172
Asia																
Bangladesh	629	638	683	700	701	727	811	873	923	970	1,124	1,305	1,484	1,766	1,950	2,019
China	60,942	60,281	63,410	65,122	67,388	70,536	75,781	81,175	92,289	125,874	195,064	241,496	285,684	338,333	416,486	485,622
India	21,156	21,394	25,019	23,981	27,009	30,368	35,450	37,756	41,750	47,939	60,751	68,712	68,517	90,046	105,203	104,871
Indonesia	10,407	3,888	5,050	7,637	7,375	8,798	10,469	10,792	11,404	13,593	15,382	17,535	17,749	23,057	27,495	28,525
Japan	265,142	226,216	265,283	282,513	262,619	267,029	294,488	310,998	317,006	302,723	291,433	288,818	292,368	332,459	360,010	367,630
Malaysia	12,086	8,721	9,207	8,586	9,195	10,213	10,521	10,971	10,755	12,265	14,475	16,570	16,303	19,162	20,969	22,824
Pakistan	2,343	2,267	2,333	2,469	2,125	2,455	2,645	2,916	3,681	4,969	5,867	6,163	6,142	6,118	6,864	7,519
Philippines	3,576	3,544	4,484	4,199	4,057	4,329	4,528	4,966	6,012	7,669	9,661	11,184	11,324	13,681	15,868	17,425
Singapore	11,065	9,287	8,080	7,929	7,834	7,861	8,662	9,794	11,092	13,357	17,416	18,755	18,346	21,527	25,850	28,019
South Korea	29,885	20,427	27,915	27,529	28,829	38,364	41,856	43,541	52,137	57,850	65,766	58,937	50,715	61,920	70,399	74,916
Sri Lanka	649	968	969	1,012	993	1,386	1,529	1,693	1,966	2,511	2,904	3,680	4,066	4,896	5,643	5,641
Taiwan	25,871	23,032	25,926	27,094	24,166	24,073	23,486	25,766	28,032	27,406	28,314	29,038	24,094	27,312	30,627	31,376
Thailand	9,585	5,135	4,552	4,817	5,199	6,439	7,645	9,133	10,372	11,843	14,284	16,019	15,739	17,797	20,322	22,187
Vietnam	466	473	537	575	595	639	700	809	950	1,101	1,289	1,669	1,853	1,999	2,322	2,634

Appendix table 6-8

Value added of financial services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	25,479	21,732	25,894	26,012	26,070	28,768	37,549	46,494	52,832	56,885	70,918	75,457	132,721	172,332	206,507	216,913
New Zealand	3,534	3,059	3,226	2,933	3,000	3,716	5,026	6,069	7,106	7,086	8,359	8,215	7,428	9,105	11,265	11,846

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-9

Real GDP per employed person, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
North America															
Canada	73,301	75,358	78,820	81,428	81,854	81,452	82,631	84,041	84,905	84,735	83,910	82,907	84,433	85,134	85,974
Mexico	31,305	31,946	33,548	35,009	34,488	34,716	34,936	35,876	36,435	37,038	36,669	34,779	36,304	36,905	37,181
United States	81,531	85,101	90,219	93,564	95,514	97,152	99,446	100,757	101,526	102,336	102,450	103,143	106,209	107,551	108,080
Central and South America															
Argentina	28,928	32,867	33,268	30,752	30,782	31,236	31,393	31,768	32,858	35,195	35,772	35,202	37,488	38,216	38,403
Barbados	73,369	74,600	72,991	69,601	71,322	72,224	71,872	74,032	77,524	78,098	77,775	73,798	73,453	73,621	73,866
Bolivia	10,561	10,825	10,661	10,616	10,903	10,322	10,485	10,676	10,894	11,077	11,452	11,533	11,706	12,038	12,364
Brazil	17,108	18,397	18,005	17,864	17,678	17,627	17,691	17,741	18,051	18,901	19,232	19,029	19,807	19,950	19,899
Chile	27,252	30,007	29,660	30,112	30,213	30,506	32,001	32,806	31,938	33,388	33,485	33,385	32,747	34,356	35,812
Colombia	20,086	20,779	19,268	18,702	19,230	18,832	19,480	19,624	21,534	22,486	22,817	21,934	21,876	22,780	23,370
Costa Rica	25,404	24,987	27,054	25,679	25,795	26,616	27,521	27,314	28,851	29,592	29,903	29,073	29,633	30,347	31,298
Dominican Republic	21,067	22,066	22,429	23,948	24,487	24,524	23,919	25,606	26,780	28,388	29,037	29,475	31,279	32,066	32,754
Ecuador	16,816	17,252	16,861	16,576	16,397	16,741	16,673	17,480	17,676	18,031	19,192	18,991	19,604	20,698	21,100
Guatemala	19,113	19,630	19,929	19,867	19,827	19,736	20,607	20,521	20,856	21,382	21,298	20,649	20,493	20,654	20,675
Jamaica	27,475	27,446	27,948	28,353	26,295	26,467	26,764	26,187	26,038	25,493	25,337	25,364	25,688	25,580	25,414
Peru	17,785	18,156	17,240	18,201	18,957	19,675	20,232	20,759	20,495	20,638	22,210	23,000	23,883	25,131	26,251
Saint Lucia	31,085	34,274	34,833	31,892	33,885	32,431	36,059	34,616	37,610	37,525	38,543	37,607	37,011	37,069	36,960
Trinidad and Tobago	35,913	38,849	42,629	45,189	47,754	53,725	55,091	56,872	63,712	66,476	66,886	64,087	63,435	62,859	63,665
Uruguay	23,895	27,260	29,997	28,720	26,485	27,226	29,148	30,058	24,671	25,068	26,529	26,825	29,059	30,489	31,303
Venezuela	29,628	29,796	26,504	26,867	24,624	22,542	26,455	29,828	32,370	34,749	35,694	33,682	32,358	33,018	34,232
Europe															
EU	60,420	62,547	64,921	67,406	68,409	69,222	70,629	71,467	72,785	73,895	73,562	71,714	73,561	74,471	74,439
Austria	74,651	77,400	81,099	83,393	84,891	85,080	86,747	87,794	89,503	91,177	90,696	87,899	88,987	89,848	90,170
Belgium	83,571	87,096	89,115	90,071	91,428	92,232	94,278	94,579	96,042	97,188	96,429	93,921	95,550	95,928	95,700
Bulgaria	16,967	15,245	17,212	19,563	20,426	20,931	21,779	22,555	23,247	23,985	24,813	24,086	25,367	26,921	27,652
Cyprus	51,042	52,575	55,929	58,816	58,842	57,760	58,010	58,159	59,521	60,586	61,449	60,633	61,395	61,424	60,936
Czech Republic	35,647	37,018	39,079	42,447	43,088	45,070	47,359	49,523	52,303	54,154	54,574	53,059	54,942	55,834	55,215
Denmark	67,526	70,059	71,747	73,755	74,072	75,166	77,369	78,459	79,457	78,546	76,637	74,050	76,954	78,109	78,459
Estonia	18,877	22,862	25,976	30,490	32,051	34,068	36,235	38,666	40,397	43,079	41,220	39,362	42,711	43,235	44,080
Finland	64,697	67,853	70,944	73,896	74,545	76,000	78,823	80,025	82,043	84,582	82,698	77,655	80,298	81,563	81,743
France	76,190	77,723	79,766	80,888	81,219	81,847	83,807	84,776	85,939	86,692	86,201	84,594	86,054	87,108	86,888
Germany	69,721	71,657	72,427	74,305	74,744	75,113	75,759	76,391	78,781	79,999	79,881	75,745	78,441	79,716	79,441
Greece	52,433	56,115	58,072	62,840	63,569	66,561	67,830	67,354	69,735	71,178	70,162	68,377	66,714	65,666	64,812
Hungary	33,811	34,844	35,844	38,430	40,194	41,742	44,167	46,053	47,640	47,355	48,654	46,518	46,809	47,385	46,372
Ireland	66,851	74,507	77,946	84,365	87,741	89,487	90,330	91,159	92,065	93,666	92,669	95,369	98,807	102,319	103,400
Italy	79,618	81,302	81,969	83,217	82,188	80,938	81,980	82,268	82,459	82,805	81,626	78,434	80,434	80,517	79,330
Latvia	17,331	19,257	21,364	24,754	25,790	27,220	29,277	31,741	33,624	35,576	34,096	32,302	33,603	38,589	39,969
Lithuania	20,372	22,839	25,087	30,024	30,957	33,396	35,865	37,725	39,940	42,666	44,197	40,393	43,219	44,852	45,876
Luxembourg	110,999	112,926	118,852	118,604	119,589	119,420	121,931	124,709	126,349	128,930	121,871	115,677	116,964	115,561	113,725
Malta	54,250	58,354	62,206	59,863	60,991	60,819	61,009	62,284	63,065	63,616	64,248	62,901	63,093	62,550	62,806

Appendix table 6-9

Real GDP per employed person, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Netherlands	72,935	74,617	77,132	78,307	77,976	78,625	81,087	82,342	83,713	84,830	85,104	82,572	84,250	84,481	84,288
Poland	26,749	29,649	33,478	36,705	38,394	40,348	41,989	42,589	43,847	44,808	45,357	45,910	47,470	49,033	50,068
Portugal	42,227	43,813	46,000	46,895	46,979	46,828	47,596	48,123	48,570	49,741	49,512	49,346	51,089	51,079	51,262
Romania	13,276	13,665	13,802	15,215	17,797	18,737	20,672	21,863	23,424	24,813	26,633	25,383	25,457	25,898	25,987
Slovak Republic	30,996	34,267	36,878	39,230	40,989	42,486	44,739	46,958	49,839	53,941	55,263	53,583	56,792	57,602	58,514
Slovenia	39,500	44,659	48,004	50,458	51,576	53,247	55,371	57,856	60,307	62,424	62,913	59,053	61,102	62,474	62,106
Spain	72,314	73,084	73,194	73,477	73,655	73,572	73,314	72,918	72,983	73,303	74,051	76,251	77,951	79,508	81,360
Sweden	64,464	68,703	72,170	72,973	74,750	76,940	80,765	83,097	85,225	86,065	84,771	82,506	86,855	88,107	88,995
United Kingdom	67,736	70,067	73,053	76,809	78,086	80,305	81,773	83,197	84,608	87,079	85,618	83,592	84,908	85,118	84,489
Other Europe															
Albania	6,904	6,987	8,892	10,481	12,620	13,261	13,943	14,737	15,488	16,334	18,738	20,969	21,341	21,719	21,564
Belarus	12,141	14,030	15,484	17,252	18,260	19,722	22,078	23,965	26,055	28,007	29,593	29,942	31,843	33,088	34,686
Bosnia and Herzegovina	9,524	19,228	23,113	24,261	26,441	27,941	30,088	31,192	33,070	33,588	33,958	34,217	34,321	34,697	34,614
Croatia	35,377	35,634	38,325	41,919	42,207	44,213	45,272	46,849	49,454	50,218	50,720	48,084	49,377	51,427	50,493
Iceland	61,318	67,393	69,095	72,224	73,386	75,077	81,322	84,445	84,094	85,305	85,641	85,156	81,984	83,879	85,956
Macedonia	27,167	27,652	29,003	29,352	29,770	31,207	33,374	34,115	34,724	35,336	34,913	33,738	34,205	34,818	34,958
Moldova	5,805	5,657	5,204	5,623	6,037	7,142	7,904	8,480	9,319	9,677	10,403	10,334	11,464	12,293	12,790
Norway	91,581	96,612	97,702	101,916	103,048	105,321	108,974	110,368	109,098	107,569	104,225	102,955	104,006	103,869	106,167
Russian Federation	21,007	21,087	21,380	24,396	25,322	27,003	28,754	30,411	32,704	35,054	36,649	34,289	35,716	37,070	38,327
Serbia and Montenegro	13,286	15,607	13,158	14,608	15,709	16,544	17,840	20,202	21,973	23,239	23,078	21,667	26,039	28,136	28,146
Switzerland	71,583	73,355	74,768	75,908	75,512	75,791	77,412	78,925	80,234	81,207	81,005	79,078	80,921	80,497	80,299
Ukraine	10,466	9,589	9,721	11,676	12,080	13,196	14,798	14,919	15,977	17,102	17,439	15,440	16,022	17,000	17,638
Middle East															
Bahrain	55,604	55,261	56,370	60,751	65,300	70,694	71,795	69,410	63,042	56,884	51,065	46,111	44,092	43,601	43,155
Iran	32,397	33,405	31,669	30,873	31,497	32,109	32,264	32,157	33,975	36,046	37,311	37,716	38,810	38,960	38,042
Iraq	10,184	10,219	11,863	13,545	14,132	10,781	16,019	15,434	15,832	15,515	16,435	16,302	16,163	17,064	18,242
Israel	61,435	62,231	62,526	64,486	64,185	64,620	66,325	67,085	68,794	69,506	69,444	69,685	70,947	71,936	73,060
Jordan	16,052	15,666	15,965	16,497	16,994	17,316	18,364	19,136	20,430	21,078	22,448	22,831	23,122	23,250	23,844
Kuwait	52,839	50,861	46,738	44,663	44,126	49,721	53,269	56,829	59,488	61,590	62,390	55,554	55,232	58,467	60,932
Oman	53,197	57,191	59,470	65,734	66,141	64,517	64,328	63,737	63,334	63,109	66,839	65,253	65,286	67,117	68,745
Qatar	107,921	145,202	157,466	173,916	173,926	172,854	179,332	158,435	158,532	148,654	143,185	137,252	144,368	152,555	153,432
Saudi Arabia	68,540	72,993	74,640	71,625	67,369	67,271	66,127	65,941	65,017	63,933	64,858	63,493	64,632	67,506	69,849
Syria	15,109	14,497	14,012	14,149	14,638	14,025	14,901	15,762	16,579	17,259	17,825	19,130	19,164	18,337	18,420
Turkey	25,236	28,209	27,051	27,886	29,836	31,707	37,285	39,563	41,570	42,866	42,241	40,049	41,224	41,974	42,384
United Arab Emirates	120,600	122,649	114,417	117,416	110,720	120,820	121,083	116,016	108,297	98,266	89,453	75,518	70,203	71,415	72,077
Yemen	9,939	9,958	10,074	10,226	10,167	10,087	10,053	10,159	10,035	9,932	9,865	9,829	10,165	8,786	8,320
Africa															
Algeria	19,859	19,353	19,889	19,758	20,187	21,032	21,585	22,154	22,087	22,206	22,275	22,337	22,469	22,587	22,805
Angola	3,847	4,634	4,542	4,535	5,050	5,039	5,427	6,371	7,481	8,937	9,871	9,739	9,698	9,728	10,033
Burkina Faso	1,574	1,751	1,878	1,936	1,959	2,048	2,071	2,181	2,245	2,264	2,320	2,314	2,418	2,434	2,517
Cameroon	4,423	4,586	4,738	4,869	4,922	4,978	5,020	4,988	5,009	5,039	5,023	4,981	4,988	5,074	5,186

Appendix table 6-9

Real GDP per employed person, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Côte d'Ivoire	4,489	4,824	4,856	4,437	4,287	4,145	4,139	4,142	4,097	4,075	4,083	4,136	4,135	3,836	4,038
Congo, Democratic Republic of the	910	811	730	631	635	651	673	704	719	740	761	757	786	811	840
Egypt	11,909	12,877	13,645	14,333	14,533	14,264	14,172	14,159	15,109	15,452	16,132	16,461	16,876	16,849	16,841
Ethiopia	983	1,094	1,052	1,109	1,085	1,022	1,100	1,192	1,289	1,396	1,503	1,604	1,679	1,751	1,815
Ghana	3,737	3,828	3,925	4,058	4,176	4,323	4,480	4,689	4,908	5,074	5,344	5,401	5,671	6,331	6,689
Kenya	3,353	3,319	3,356	3,379	3,315	3,334	3,413	3,539	3,648	3,782	3,724	3,710	3,804	3,865	3,956
Madagascar	1,841	1,836	1,884	1,962	1,662	1,767	1,800	1,822	1,851	1,902	1,971	1,827	1,774	1,747	1,723
Malawi	1,374	1,548	1,529	1,380	1,356	1,383	1,409	1,395	1,376	1,472	1,531	1,619	1,673	1,692	1,711
Mali	2,867	3,060	3,183	3,243	3,267	3,407	3,364	3,448	3,506	3,526	3,577	3,610	3,690	3,681	3,412
Morocco	7,530	7,808	7,979	8,831	9,037	9,197	9,327	9,537	10,234	10,375	10,841	11,356	11,712	12,086	12,244
Mozambique	823	985	1,119	1,207	1,284	1,333	1,406	1,490	1,584	1,660	1,734	1,801	1,885	1,970	2,058
Niger	1,843	1,778	1,851	1,787	1,811	1,864	1,780	1,860	1,902	1,895	2,001	1,914	1,994	1,965	2,166
Nigeria	3,548	3,644	3,589	3,909	4,642	5,019	5,450	5,591	5,770	6,010	6,190	6,446	6,762	7,070	7,371
Senegal	3,469	3,440	3,669	3,730	3,632	3,757	3,857	3,947	3,920	3,990	4,012	3,971	4,010	3,992	4,016
South Africa	21,749	21,613	20,630	20,588	20,804	20,905	21,439	22,114	22,846	23,558	23,509	23,482	24,520	25,354	26,167
Sudan	2,179	3,530	4,990	5,773	5,959	6,262	6,475	6,534	7,125	7,801	7,804	7,979	7,945	7,367	6,350
Tanzania	1,639	1,675	1,704	1,799	1,870	1,940	2,034	2,122	2,201	2,297	2,402	2,476	2,578	2,665	2,755
Tunisia	14,886	15,877	17,004	17,942	17,929	18,688	19,481	19,995	20,653	21,489	21,962	22,203	22,429	21,783	22,150
Uganda	1,827	1,987	2,108	2,240	2,334	2,434	2,542	2,713	2,882	3,030	3,163	3,275	3,363	3,399	3,408
Zambia	3,269	3,420	3,247	3,372	3,413	3,521	3,642	3,754	3,902	4,050	4,173	4,333	4,604	4,759	4,916
Zimbabwe	611	645	614	515	444	355	323	305	295	284	232	246	265	273	268
Asia															
Armenia	4,459	5,248	6,148	7,321	9,629	10,969	12,408	13,921	15,836	17,863	18,834	16,584	16,715	17,250	17,817
Azerbaijan	4,419	4,630	5,455	6,338	6,937	7,631	8,312	10,394	13,810	17,056	18,651	20,108	20,842	20,642	21,182
Bangladesh	3,281	3,530	3,801	4,013	4,014	4,048	4,208	4,361	4,549	4,736	4,919	5,109	5,295	5,519	5,715
Cambodia	2,177	2,698	2,558	2,640	2,756	2,755	2,817	3,126	3,920	4,283	4,492	4,453	4,665	4,886	5,096
China	4,992	5,242	5,444	6,397	7,113	8,104	8,853	9,712	10,874	12,328	13,443	14,583	16,035	17,424	18,683
Georgia	6,071	7,255	8,378	8,069	8,689	9,779	10,536	11,802	12,889	14,846	16,159	15,041	16,257	17,009	18,145
India	4,937	5,400	5,954	6,278	6,359	6,733	7,063	7,548	8,071	8,611	9,028	9,630	10,226	10,659	11,048
Indonesia	8,523	9,024	7,598	8,081	8,368	8,658	9,005	9,493	9,858	10,015	10,345	10,580	10,879	11,428	11,904
Japan	63,620	65,590	65,818	68,484	69,775	71,183	72,707	73,375	74,292	75,639	75,113	72,125	76,243	75,960	76,340
Kazakhstan	12,768	13,214	14,097	16,026	17,568	18,443	19,659	21,331	23,170	24,468	24,548	24,698	25,812	27,121	28,346
Kyrgyz Republic	4,408	5,041	5,109	5,599	5,536	5,546	5,757	5,509	5,628	5,947	6,355	6,444	6,220	6,521	6,484
Malaysia	27,388	28,847	27,501	28,424	29,372	30,043	31,729	33,201	34,276	35,527	36,808	35,465	35,179	35,917	36,854
Pakistan	8,115	8,096	8,120	8,568	8,733	8,737	8,910	9,529	9,194	9,538	9,575	9,368	9,422	9,588	9,677
Philippines	7,789	8,446	8,252	8,435	8,475	8,733	9,029	9,293	9,643	9,996	10,254	10,080	10,553	10,624	10,887
Singapore	77,384	74,102	75,052	75,970	80,733	85,008	91,550	97,057	95,490	98,967	92,685	90,267	98,790	100,248	100,278
South Korea	38,523	42,016	45,869	48,802	50,889	52,398	53,747	55,143	57,260	59,459	60,453	60,831	63,799	64,984	65,505
Sri Lanka	9,292	9,804	9,873	10,067	10,012	9,860	9,861	11,012	11,739	12,649	13,154	13,686	14,587	15,378	16,310
Taiwan	50,729	55,663	59,673	62,102	64,880	66,425	69,001	71,113	73,726	76,748	76,498	76,019	82,482	84,104	84,655
Tajikistan	4,906	4,001	4,506	5,077	5,540	6,065	6,033	6,371	6,712	7,189	7,669	7,794	8,252	9,414	9,837

Appendix table 6-9

Real GDP per employed person, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Thailand	13,797	14,088	13,537	13,971	14,407	15,089	15,629	16,042	16,626	17,251	17,164	16,664	17,758	17,579	18,432
Turkmenistan	9,957	9,063	10,520	11,607	11,255	11,331	11,588	12,835	13,922	15,107	16,943	17,591	18,807	21,121	22,398
Uzbekistan	4,353	4,533	4,817	5,067	5,159	5,232	5,437	5,654	5,921	6,322	6,703	7,059	7,461	7,883	8,306
Vietnam	3,362	3,807	4,045	4,315	4,503	4,703	4,947	5,217	5,492	5,795	5,994	6,144	6,386	6,587	6,816
Australia/Oceania															
Australia	74,784	79,253	83,341	85,021	86,654	87,353	89,258	88,927	89,012	90,366	90,084	90,666	90,975	91,289	93,668
New Zealand	54,177	55,376	58,475	59,317	60,267	61,014	61,079	61,226	61,129	61,755	60,679	61,831	61,941	61,286	61,937

EU = European Union; GDP = gross domestic product; PPP = purchasing power parity.

NOTE: GDP per capita in 2012 U.S. dollar was converted to 2012 price levels with updated 2005 PPP indexes.

SOURCE: The Conference Board, Total Economy Database (October 2010), http://www.conference-board.org/data/productivity.cfm, accessed 15 January 2013.

Science and Engineering Indicators 2014

Appendix table 6-10

Real GDP per capita, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
North America															
Canada	32,997	34,239	36,985	38,912	39,716	40,148	41,084	41,996	42,824	43,395	43,330	41,784	42,779	43,460	43,996
Mexico	11,005	11,968	12,682	13,163	13,105	13,128	13,501	13,780	14,309	14,620	14,629	13,555	14,149	14,540	14,943
United States	38,945	41,216	44,055	45,408	45,805	46,567	47,738	48,752	49,568	50,038	49,400	47,466	48,199	48,714	49,428
Central and South America															
Argentina	10,473	11,587	11,494	10,717	9,467	10,113	10,716	11,488	12,242	13,068	13,413	12,887	13,795	14,337	14,548
Barbados	30,124	32,513	33,535	33,141	33,206	33,699	34,026	35,232	37,087	37,553	37,531	35,839	35,793	35,865	35,970
Bolivia	3,523	3,698	3,740	3,739	3,754	3,777	3,857	3,949	4,059	4,165	4,340	4,406	4,509	4,662	4,813
Brazil	7,750	7,943	7,735	7,944	8,045	8,032	8,386	8,549	8,787	9,223	9,601	9,476	10,095	10,279	10,292
Chile	9,452	10,509	10,485	11,055	11,173	11,497	12,184	12,815	13,417	13,978	14,299	14,014	14,728	15,466	16,132
Colombia	7,106	7,283	6,845	7,027	7,114	7,293	7,575	7,823	8,236	8,690	8,885	8,921	9,167	9,596	9,891
Costa Rica	8,997	9,106	10,190	10,072	10,198	10,684	10,970	11,444	12,271	13,057	13,224	12,908	13,329	13,705	14,178
Dominican Republic	6,519	7,279	8,028	8,346	8,685	8,527	8,509	9,163	9,998	10,695	11,101	11,328	12,040	12,412	12,745
Ecuador	5,837	5,918	5,479	5,807	5,913	5,991	6,377	6,598	6,785	6,816	7,198	7,116	7,262	7,715	7,913
Guatemala	5,590	5,738	6,023	6,170	6,285	6,324	6,406	6,483	6,682	6,951	7,028	6,919	6,976	7,104	7,182
Jamaica	10,715	10,365	10,109	10,114	10,119	10,395	10,440	10,443	10,653	10,718	10,547	10,102	9,875	9,927	9,943
Peru	5,560	5,887	5,727	5,751	5,963	6,127	6,356	6,712	7,152	7,703	8,366	8,354	8,993	9,517	9,990
Saint Lucia	12,188	12,791	13,705	12,830	12,770	13,277	14,332	13,997	15,224	15,380	16,126	16,079	16,078	16,219	16,270
Trinidad and Tobago	12,259	14,177	16,631	18,602	20,130	23,099	25,000	26,401	30,257	31,700	32,467	31,527	31,552	31,150	31,408
Uruguay	9,075	9,967	10,038	9,489	8,415	8,574	9,565	10,178	10,575	11,240	12,020	12,283	13,346	14,074	14,533
Venezuela	9,952	10,181	9,283	9,654	8,672	7,885	9,192	9,994	10,821	11,596	12,027	11,468	11,128	11,420	11,899
Europe															
EU	25,454	26,575	28,063	29,633	29,946	30,318	31,020	31,589	32,578	33,544	33,595	32,083	32,678	33,109	32,951
Austria	33,108	34,611	37,081	38,592	39,165	39,435	40,396	41,316	42,789	44,338	44,943	43,218	44,083	45,255	45,599
Belgium	31,872	33,387	35,113	36,495	36,919	37,149	38,300	38,911	39,891	40,990	41,347	40,159	41,095	41,796	41,685
Bulgaria	7,231	6,622	7,236	8,127	8,590	9,150	9,859	10,582	11,370	12,206	13,069	12,453	12,600	12,909	13,111
Cyprus	19,491	19,557	20,879	22,178	22,311	22,307	22,721	23,048	23,527	24,305	24,753	23,893	23,812	23,558	22,653
Czech Republic	17,616	18,299	18,599	20,013	20,456	21,237	22,255	23,769	25,452	26,929	27,785	26,556	27,245	27,791	27,476
Denmark	33,862	35,588	37,033	38,352	38,396	38,404	39,146	39,964	41,181	41,700	41,248	38,799	39,303	39,634	39,764
Estonia	8,269	10,013	10,847	12,828	13,769	14,942	15,997	17,527	19,422	21,011	20,266	17,525	18,224	19,859	20,493
Finland	26,016	28,451	30,908	33,154	33,679	34,282	35,627	36,603	38,160	40,141	40,211	36,739	37,925	38,934	38,940
France	30,203	30,912	32,700	34,150	34,268	34,383	35,052	35,476	36,124	36,720	36,481	35,136	35,521	35,928	35,813
Germany	32,175	32,849	34,060	35,527	35,471	35,318	35,735	36,001	37,375	38,648	39,149	37,245	38,885	40,148	40,511
Greece	20,739	21,906	23,341	25,302	26,117	27,612	28,759	29,358	30,917	31,956	31,838	30,798	29,241	27,137	25,480
Hungary	13,187	13,689	14,786	16,049	16,800	17,483	18,357	19,113	19,880	19,926	20,131	18,794	19,070	19,415	19,225
Ireland	23,773	28,446	33,515	38,092	39,622	40,451	41,297	42,599	43,757	44,981	43,080	40,176	39,498	39,651	39,391
Italy	30,335	31,144	31,963	33,588	33,655	33,489	33,848	33,977	34,587	34,960	34,289	32,207	32,635	32,633	31,760
Latvia	6,758	7,853	8,683	10,004	10,810	11,718	12,848	14,248	15,945	17,591	17,124	14,176	14,128	14,992	15,737
Lithuania	8,207	9,364	9,991	11,085	11,884	13,152	14,169	15,321	16,567	18,243	18,828	16,078	16,368	17,376	17,937
Luxembourg	58,384	61,101	68,669	74,238	76,244	76,500	78,821	81,920	84,905	89,404	87,691	83,128	84,561	84,977	84,310
Malta	20,406	21,899	23,203	22,761	23,218	23,286	23,121	23,849	24,362	25,248	26,063	25,336	25,918	26,225	26,389

Appendix table 6-10

Real GDP per capita, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Netherlands	33,752	36,055	38,735	40,456	40,240	40,198	40,971	41,725	43,085	44,691	45,333	43,458	43,944	44,167	43,841
Poland	10,237	11,630	12,758	13,470	13,671	14,208	14,976	15,527	16,502	17,631	18,543	18,854	19,594	20,452	20,956
Portugal	19,008	20,393	22,039	23,122	23,194	22,881	23,141	23,227	23,475	23,947	23,869	23,107	23,494	23,076	22,349
Romania	7,162	7,047	6,666	7,234	7,618	8,039	8,744	9,128	9,867	10,512	11,307	10,587	10,491	10,744	10,856
Slovak Republic	12,182	13,552	14,115	14,782	15,444	16,162	16,958	18,060	19,538	21,557	22,763	21,609	22,526	23,225	23,806
Slovenia	18,201	19,714	21,515	23,074	23,954	24,654	25,741	26,778	28,354	30,345	31,395	28,963	29,359	29,580	28,962
Spain	24,677	26,176	28,398	30,328	30,706	31,145	31,653	32,259	33,024	33,583	33,367	31,851	31,605	31,568	30,923
Sweden	29,981	31,220	34,002	35,843	36,675	37,464	38,980	40,144	41,800	43,116	42,784	40,569	43,160	44,688	45,126
United Kingdom	30,057	31,777	33,696	35,854	36,586	37,841	38,745	39,583	40,372	41,564	40,899	39,049	39,527	39,605	39,269
Other Europe															
Albania	3,242	3,088	3,866	4,536	4,774	5,096	5,429	5,784	6,136	6,529	7,039	7,276	7,539	7,745	7,763
Belarus	5,246	6,053	6,834	7,621	8,035	8,640	9,669	10,629	11,746	12,790	14,132	14,176	15,299	16,136	16,860
Bosnia and Herzegovina	1,871	3,893	4,803	5,040	5,289	5,470	5,762	5,960	6,335	6,748	7,149	6,956	7,010	7,103	7,109
Croatia	11,151	12,732	12,954	13,834	14,374	15,089	15,715	16,391	17,205	18,081	18,465	17,191	16,959	16,968	16,657
Iceland	32,543	35,292	38,200	40,320	39,925	40,471	43,211	45,902	47,638	50,064	50,254	46,591	44,401	45,222	46,137
Macedonia	6,564	6,633	7,078	6,999	7,036	7,218	7,533	7,841	8,215	8,697	9,104	8,996	9,233	9,468	9,520
Moldova	2,057	1,991	1,832	2,029	2,212	2,387	2,592	2,819	2,990	3,116	3,399	3,230	3,495	3,757	3,910
Norway	44,540	48,814	50,478	52,547	53,097	53,384	55,266	56,469	57,544	58,853	58,683	57,524	57,604	58,113	59,691
Russian Federation	9,367	9,177	9,281	10,833	11,410	12,309	13,260	14,173	15,391	16,739	17,624	16,237	16,934	17,669	18,323
Serbia and Montenegro	5,131	5,818	4,902	5,528	5,750	5,902	6,406	6,789	7,172	7,701	8,166	7,952	8,796	8,981	8,982
Switzerland	39,576	40,366	41,815	43,470	43,335	43,134	43,983	44,981	46,478	47,939	48,453	47,006	47,955	48,379	48,386
Ukraine	4,846	4,302	4,287	5,059	5,374	5,938	6,710	6,944	7,508	8,161	8,404	7,210	7,556	7,995	8,287
Middle East															
Bahrain	24,670	25,241	26,347	27,612	27,313	26,806	26,079	26,047	25,847	26,177	26,479	26,438	26,855	26,635	26,433
Iran	7,628	8,213	8,378	8,905	9,528	10,220	10,744	11,113	11,658	12,248	12,166	12,490	13,062	13,162	12,877
Iraq	2,410	2,456	2,889	3,301	3,434	2,611	3,869	3,737	3,864	3,820	4,076	4,089	4,107	4,364	4,695
Israel	24,264	24,963	25,526	26,398	25,890	25,777	26,526	27,314	28,376	29,519	30,204	30,026	31,007	31,918	32,407
Jordan	3,991	4,008	4,083	4,285	4,433	4,515	4,792	5,067	5,114	5,182	5,434	5,606	5,612	5,668	5,838
Kuwait	47,120	44,875	42,961	42,592	42,703	48,785	52,621	56,398	59,375	61,640	62,708	56,505	56,696	60,081	62,671
Oman	19,926	20,600	19,999	21,105	21,087	20,728	21,018	21,439	22,203	23,255	25,814	26,309	27,073	27,978	28,774
Qatar	60,695	78,082	80,769	86,400	85,115	86,528	90,781	82,824	90,748	94,546	99,502	100,705	107,233	113,784	114,596
Saudi Arabia	20,876	20,954	20,354	20,504	20,090	21,182	21,859	22,641	22,938	22,994	23,564	23,203	24,009	25,310	26,412
Syria	4,401	4,248	4,124	4,160	4,299	4,113	4,295	4,457	4,498	4,483	4,499	4,669	4,735	4,574	4,642
Turkey	8,591	9,552	9,206	8,978	9,385	9,729	10,482	11,196	11,797	12,176	12,090	11,355	12,236	13,111	13,380
United Arab Emirates	63,226	64,708	60,808	62,765	59,311	65,822	69,228	71,895	74,964	76,674	77,655	71,199	69,558	70,709	71,269
Yemen	2,264	2,342	2,417	2,499	2,517	2,531	2,552	2,613	2,617	2,625	2,644	2,670	2,797	2,438	2,329
Africa															
Algeria	5,306	5,379	5,663	5,774	5,960	6,281	6,511	6,746	6,777	6,861	6,900	6,939	7,031	7,058	7,101
Angola	1,822	2,174	2,120	2,141	2,385	2,384	2,558	2,990	3,507	4,176	4,620	4,599	4,623	4,666	4,844
Burkina Faso	751	833	892	912	911	946	958	1,009	1,039	1,049	1,076	1,074	1,123	1,134	1,177
Cameroon	1,733	1,821	1,904	1,977	2,007	2,038	2,065	2,065	2,084	2,106	2,113	2,107	2,123	2,165	2,219

Appendix table 6-10

Real GDP per capita, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Côte d'Ivoire	1,678	1,816	1,841	1,669	1,608	1,548	1,535	1,530	1,509	1,500	1,502	1,525	1,529	1,427	1,511
Congo, Democratic	322	291	260	223	224	230	239	250	256	264	273	273	285	297	310
Egypt	3,479	3,730	4,076	4,259	4,301	4,344	4,426	4,526	4,734	4,964	5,210	5,343	5,506	5,494	5,494
Ethiopia	431	476	458	492	486	462	501	548	594	645	697	745	781	815	847
Ghana	1,537	1,634	1,732	1,812	1,857	1,910	1,969	2,042	2,119	2,206	2,341	2,382	2,516	2,814	2,977
Kenya	1,299	1,290	1,303	1,305	1,273	1,271	1,292	1,329	1,372	1,425	1,404	1,400	1,440	1,463	1,500
Madagascar	856	853	874	914	778	830	849	863	881	910	948	884	864	856	849
Malawi	565	628	620	567	561	577	593	592	588	627	661	702	727	738	749
Mali	837	905	946	965	977	1,021	1,013	1,043	1,065	1,078	1,097	1,112	1,141	1,137	1,054
Morocco	2,529	2,691	2,831	3,014	3,075	3,229	3,343	3,403	3,625	3,680	3,843	3,988	4,091	4,244	4,320
Mozambique	397	478	553	603	645	672	709	752	800	839	877	912	955	1,001	1,050
Niger	569	563	601	591	601	621	595	622	635	632	668	639	666	659	729
Nigeria	1,127	1,158	1,138	1,232	1,454	1,562	1,681	1,725	1,785	1,860	1,920	2,001	2,106	2,203	2,299
Senegal	1,301	1,302	1,396	1,435	1,407	1,462	1,506	1,549	1,545	1,579	1,595	1,586	1,609	1,609	1,627
South Africa	6,509	6,788	6,800	7,109	7,290	7,426	7,687	8,016	8,387	8,771	9,011	8,824	9,069	9,372	9,655
Sudan	519	860	1,235	1,452	1,510	1,597	1,667	1,696	1,860	2,047	2,051	2,099	2,107	1,979	1,723
Tanzania	808	837	848	888	924	958	1,003	1,046	1,085	1,129	1,179	1,217	1,268	1,311	1,357
Tunisia	4,730	5,200	5,655	6,054	6,094	6,361	6,670	6,868	7,186	7,560	7,823	7,985	8,152	7,927	8,062
Uganda	775	841	886	938	978	1,010	1,041	1,094	1,160	1,220	1,274	1,322	1,358	1,382	1,393
Zambia	1,404	1,470	1,395	1,428	1,437	1,475	1,517	1,558	1,611	1,665	1,712	1,772	1,854	1,920	1,986
Zimbabwe	263	285	269	251	227	189	179	171	166	161	133	141	151	159	160
Asia															
Armenia	2,145	2,354	2,619	3,059	3,535	4,048	4,487	5,123	5,812	6,622	7,089	6,089	6,225	6,514	6,763
Azerbaijan	2,065	2,166	2,508	3,010	3,303	3,644	3,979	4,982	6,628	8,200	8,986	9,715	10,101	10,007	10,291
Bangladesh	996	1,063	1,134	1,221	1,253	1,295	1,353	1,410	1,479	1,549	1,619	1,687	1,759	1,848	1,929
Cambodia	958	1,022	1,165	1,318	1,389	1,485	1,615	1,803	1,967	2,134	2,237	2,201	2,293	2,414	2,527
China	2,805	2,954	3,083	3,646	4,054	4,618	5,051	5,538	6,194	7,018	7,637	8,273	9,084	9,865	10,568
Georgia	2,171	2,741	2,948	3,192	3,380	3,767	4,003	4,402	4,831	5,446	5,590	5,397	5,753	6,173	6,598
India	1,853	2,012	2,204	2,350	2,398	2,558	2,730	2,912	3,139	3,377	3,546	3,790	4,051	4,256	4,431
Indonesia	3,504	3,827	3,248	3,427	3,531	3,649	3,780	3,946	4,110	4,317	4,522	4,674	4,905	5,165	5,408
Japan	33,823	35,092	34,161	34,892	34,921	35,459	36,256	36,722	37,340	38,144	37,744	35,681	37,377	37,196	37,449
Kazakhstan	5,221	5,448	5,609	6,978	7,630	8,297	9,034	9,828	10,771	11,605	11,851	11,841	12,541	13,310	13,863
Kyrgyz Republic	1,602	1,833	1,888	2,057	2,041	2,165	2,293	2,266	2,315	2,492	2,680	2,726	2,663	2,829	2,833
Malaysia	10,515	11,795	11,008	11,444	11,790	12,173	12,695	13,119	13,610	14,218	14,649	14,190	14,966	15,481	15,912
Pakistan	2,031	2,089	2,147	2,153	2,172	2,234	2,357	2,522	2,621	2,750	2,803	2,805	2,845	2,885	2,945
Philippines	2,755	2,928	2,881	2,960	3,000	3,084	3,221	3,308	3,411	3,563	3,639	3,607	3,806	3,880	3,992
Singapore	36,929	40,804	40,304	41,311	41,924	42,752	45,551	47,766	50,764	54,018	53,726	52,088	58,566	60,180	60,206
South Korea	17,420	19,446	20,006	22,299	23,763	24,317	25,335	26,254	27,546	28,877	29,461	29,477	31,258	32,315	32,954
Sri Lanka	2,694	2,906	3,103	3,164	3,254	3,407	3,552	3,742	3,987	4,218	4,428	4,544	4,861	5,213	5,513
Taiwan	21,665	23,729	25,581	26,219	27,451	28,333	29,974	31,272	32,842	34,667	34,802	34,057	37,621	39,070	39,479
Tajikistan	1,601	1,222	1,281	1,465	1,595	1,741	1,885	1,975	2,066	2,184	2,306	2,354	2,461	2,595	2,725

Appendix table 6-10

Real GDP per capita, by region/country/economy: Selected years, 1995–2012

(2012 U.S. PPP dollars)

Region/country/economy	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Thailand	7,221	7,371	6,757	7,190	7,578	8,064	8,510	8,805	9,173	9,604	9,695	9,529	10,183	10,134	10,640
Turkmenistan	4,270	3,919	4,749	5,085	5,033	5,136	5,306	5,926	6,499	7,135	8,094	8,489	9,166	10,395	11,096
Uzbekistan	1,594	1,643	1,733	1,825	1,874	1,930	2,051	2,172	2,312	2,506	2,705	2,897	3,114	3,340	3,553
Vietnam	1,505	1,726	1,862	2,070	2,188	2,319	2,468	2,643	2,825	3,027	3,180	3,310	3,496	3,661	3,808
Australia/Oceania															
Australia	34,265	36,267	38,780	40,058	41,121	41,915	43,128	43,946	44,562	46,067	46,634	46,704	47,312	47,767	48,738
New Zealand	25,240	26,083	27,429	28,668	29,602	30,271	30,977	31,667	32,042	32,620	31,954	31,900	31,898	31,780	32,022

EU = European Union; GDP = gross domestic product; PPP = purchasing power parity.

NOTE: GDP per capita in 2012 U.S. dollars was converted to 2012 price levels with updated 2005 PPP indexes.

SOURCE: The Conference Board, Total Economy Database (October 2010), http://www.conference-board.org/data/productivity.cfm, accessed 15 January 2013.

Science and Engineering Indicators 2014

Appendix table 6-11

Value added of business services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	2,213,414	2,328,837	2,499,253	2,642,727	2,706,634	2,833,107	3,163,948	3,526,462	3,821,694	4,146,526	4,690,940	5,112,432	4,928,271	5,159,252	5,521,514	5,612,171
North America																
Canada	31,997	33,669	37,161	42,196	43,310	45,289	54,022	62,019	71,536	83,217	91,213	93,609	101,364	124,673	144,120	148,397
Mexico	21,432	23,642	29,209	37,546	42,732	45,908	47,337	49,846	56,066	60,520	64,817	68,453	56,181	61,711	66,821	67,275
United States	866,515	948,199	1,038,812	1,127,228	1,191,772	1,248,226	1,311,456	1,414,293	1,523,932	1,637,914	1,766,364	1,849,700	1,757,251	1,835,588	1,952,838	2,028,135
Central and South America																
Argentina	23,565	23,902	23,535	23,530	22,576	6,881	7,688	8,307	9,755	11,532	14,283	17,835	18,047	20,241	22,936	24,353
Bolivia	302	335	397	377	355	315	307	309	305	328	368	427	482	522	565	627
Brazil	38,674	37,744	25,520	33,052	26,553	24,572	27,330	33,154	45,811	57,696	73,103	87,621	89,041	118,359	82,021	77,568
Chile	6,410	6,263	5,632	5,624	5,177	5,027	5,889	7,488	9,420	11,180	12,880	15,652	16,171	20,522	24,776	26,665
Colombia	8,784	8,010	6,067	5,981	5,634	8,319	7,799	9,396	11,770	12,794	16,068	18,351	18,921	23,365	25,717	28,371
Costa Rica	474	497	531	594	679	708	720	757	790	934	1,120	1,325	1,459	1,902	2,178	2,395
Ecuador	1,553	1,461	866	530	801	1,227	1,623	2,019	2,275	2,502	2,723	897	993	1,188	1,371	1,523
Honduras	235	284	304	334	360	399	435	463	508	562	647	717	803	875	933	974
Jamaica	286	378	394	393	419	447	417	453	513	551	610	680	637	763	809	812
Panama	843	913	1,005	1,064	1,094	1,179	1,259	1,325	1,432	1,593	1,803	1,990	2,280	2,603	2,976	3,403
Peru	3,248	3,198	2,970	3,115	3,301	3,428	3,608	3,897	4,278	4,679	5,363	6,330	6,927	8,013	9,235	10,472
Uruguay	2,174	2,291	2,243	2,180	2,021	1,252	952	989	1,258	1,422	1,705	2,241	2,513	3,347	4,040	4,388
Venezuela	3,233	4,040	4,386	4,619	5,115	3,672	2,853	3,104	3,379	3,997	4,823	6,028	7,773	4,935	6,762	8,057
Europe																
EU	683,116	733,804	769,163	743,247	774,647	845,487	1,031,313	1,188,081	1,260,155	1,363,683	1,596,594	1,747,905	1,636,200	1,547,461	1,618,649	1,560,432
Austria	10,199	10,978	11,626	11,080	11,749	13,780	16,722	19,296	21,112	23,027	26,976	30,147	28,023	27,751	30,093	28,583
Belgium	21,644	23,757	24,504	23,324	24,743	26,173	32,815	38,402	40,936	44,714	53,089	60,588	56,912	55,993	61,394	57,852
Bulgaria	234	315	339	314	335	393	463	551	614	726	963	1,255	1,256	1,349	1,518	1,381
Czech Republic	3,094	3,524	3,416	3,374	3,790	5,425	6,257	7,365	8,829	9,854	12,422	16,043	14,357	14,050	15,746	15,162
Denmark	9,886	9,991	10,542	10,173	10,926	11,576	14,023	16,872	18,135	19,791	22,812	25,253	25,053	24,837	27,178	26,840
Finland	5,930	6,528	6,911	6,439	7,300	7,774	9,798	11,906	12,894	14,138	17,618	20,777	19,162	19,307	21,395	20,999
France	135,793	145,806	152,005	144,482	150,415	164,464	202,452	233,167	244,641	267,508	308,932	352,533	342,144	304,953	312,070	296,561
Germany	184,264	190,641	193,217	176,339	181,349	193,618	235,552	261,102	274,155	290,468	339,965	376,877	356,167	347,718	350,050	338,775
Greece	4,193	4,449	4,488	4,064	4,865	5,471	6,064	6,820	6,389	6,603	8,310	9,242	9,469	8,457	7,128	6,336
Hungary	2,844	2,979	3,122	3,216	3,783	4,967	6,034	7,374	8,050	8,883	11,016	12,906	10,357	9,987	11,685	10,873
Ireland	4,937	5,770	5,654	7,110	8,507	9,103	11,968	13,602	18,269	21,499	24,292	26,718	21,475	19,516	20,117	18,593
Italy	82,364	81,417	86,520	82,892	83,955	95,050	121,485	136,462	140,549	143,386	163,494	182,025	175,178	169,230	165,675	153,704
Netherlands	37,263	40,452	42,919	40,438	43,029	44,795	53,370	60,571	64,995	72,485	88,119	100,865	92,223	85,396	90,573	84,039
Poland	8,125	10,200	9,755	10,209	11,382	12,096	12,661	14,469	18,173	20,457	25,271	31,647	28,915	31,224	32,124	30,771
Portugal	5,706	6,176	6,701	6,149	6,149	6,767	8,353	9,722	10,383	10,778	12,351	13,678	13,917	13,124	13,406	12,242
Romania	423	508	403	508	520	669	860	1,039	1,592	2,329	3,653	4,608	3,796	3,838	4,258	4,782
Slovakia	1,037	1,103	1,078	1,125	1,075	1,355	1,695	2,266	2,667	3,438	5,064	6,708	6,443	5,722	5,921	5,885
Spain	28,431	30,404	32,658	31,691	35,450	40,470	52,918	62,054	68,887	78,180	95,852	110,931	104,451	99,805	114,662	105,871
Sweden	16,856	18,662	20,882	21,710	21,211	22,507	27,568	33,200	34,712	39,196	47,220	50,337	41,404	46,864	53,927	53,519
United Kingdom	119,893	140,145	152,424	158,608	164,114	179,036	210,255	251,843	264,171	286,222	329,174	314,767	285,497	258,343	279,729	287,663

Appendix table 6-11

Value added of business services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	7,579	8,228	9,038	9,112	9,662	11,297	13,135	15,330	18,328	20,347	26,322	29,413	26,620	26,089	29,972	31,359
Russia	17,852	13,297	9,832	13,246	17,368	17,242	21,531	24,948	33,049	42,621	67,943	86,822	66,554	80,441	91,215	96,584
Switzerland	20,286	20,702	20,698	19,188	20,909	22,469	24,188	27,841	28,721	30,185	33,539	40,320	41,990	44,536	54,167	52,955
Ukraine	987	862	754	759	1,247	1,485	1,673	2,338	3,150	4,066	6,666	8,360	6,695	6,864	7,479	8,290
Middle East																
Bahrain	365	378	389	395	406	437	452	503	581	661	725	786	809	851	891	934
Iran	4,265	4,366	3,819	4,662	6,177	7,847	9,604	11,435	13,428	17,081	22,730	26,186	27,896	32,509	38,594	31,407
Israel	9,013	10,135	10,469	12,757	12,817	12,397	12,225	13,588	15,495	16,822	19,727	24,347	25,286	28,581	31,319	31,351
Jordan	574	604	628	663	694	710	748	800	888	962	1,033	1,083	1,220	1,365	1,507	1,660
Kuwait	323	305	314	429	430	531	596	639	707	738	806	856	786	801	821	869
Qatar	368	411	426	420	432	451	468	897	1,110	2,228	3,185	3,936	4,524	4,849	5,926	6,622
Saudi Arabia	5,978	5,744	5,950	6,068	6,192	6,340	6,480	6,758	7,048	7,360	7,720	8,411	9,463	10,387	11,644	12,444
Turkey	4,042	10,626	12,974	15,856	11,938	13,967	18,058	23,829	30,751	37,771	49,216	56,459	55,853	62,214	61,004	62,562
United Arab Emirates	2,462	2,542	2,646	2,744	5,690	6,555	7,544	9,037	10,242	11,727	15,999	18,007	16,228	16,509	16,321	17,125
Africa																
Cameroon	323	367	356	302	327	309	569	515	557	601	657	744	775	782	845	836
Egypt	1,397	1,519	1,725	1,691	1,691	1,570	1,256	1,174	1,646	2,039	2,167	2,601	3,065	3,508	3,737	3,955
Kenya	239	251	228	370	395	417	468	485	553	646	756	821	834	863	842	1,004
Morocco	534	1,783	1,914	1,913	1,888	2,133	2,699	3,157	3,531	3,962	4,968	5,530	5,882	5,858	6,463	6,507
Nigeria	1,587	2,475	791	893	922	1,001	1,234	1,860	2,889	3,345	3,876	4,534	4,222	5,324	5,602	6,657
Senegal	210	225	258	244	259	295	365	422	445	489	602	720	704	703	788	818
South Africa	4,927	5,068	4,933	4,936	4,719	4,481	7,139	9,104	10,430	10,758	11,669	11,018	13,107	17,445	19,288	18,645
Tunisia	1,107	1,131	1,236	1,113	1,169	1,313	1,575	1,735	1,787	1,993	2,247	2,493	2,565	2,619	2,711	2,724
Zimbabwe	168	112	48	57	103	63	357	98	35	10	20	18	24	31	42	41
Asia																
Bangladesh	1,962	1,986	2,109	2,143	2,118	2,191	2,334	2,451	2,444	2,465	2,680	2,927	3,334	3,632	3,713	3,682
China	44,858	44,081	43,882	43,427	44,832	46,345	46,590	53,478	64,253	79,309	102,991	131,208	150,587	184,711	228,382	266,748
India	15,020	15,593	17,605	19,658	21,083	22,665	26,651	31,030	37,028	43,089	56,272	66,588	72,514	92,626	107,794	106,529
Indonesia	4,635	1,731	2,249	3,401	3,187	4,158	5,168	5,734	6,420	8,274	9,484	10,876	11,871	15,981	19,067	19,781
Japan	272,530	263,026	300,153	344,304	309,322	295,272	317,669	342,416	352,024	348,065	357,403	410,395	433,993	454,336	485,625	492,335
Malaysia	2,932	2,116	2,233	2,178	2,231	2,367	2,494	2,621	3,529	3,966	4,776	5,528	5,852	6,963	7,868	8,494
Pakistan	1,032	999	1,028	1,088	936	1,082	1,166	1,285	1,622	2,189	2,585	2,715	2,706	2,696	3,024	3,280
Philippines	3,306	3,328	4,261	3,957	3,668	3,924	4,167	4,596	5,328	6,543	8,206	9,990	10,685	12,529	14,496	16,264
Singapore	5,038	4,207	4,152	4,450	4,225	4,449	4,651	4,986	5,703	6,913	9,064	11,269	11,615	14,598	17,808	18,644
South Korea	26,139	17,900	23,013	27,209	25,511	30,125	34,962	39,544	47,697	55,949	62,450	57,381	49,973	62,525	62,310	64,147
Sri Lanka	162	242	242	253	248	381	380	387	445	509	586	673	748	826	978	979
Taiwan	6,205	6,032	6,946	7,878	7,602	7,707	8,175	8,875	9,671	10,804	11,797	12,816	12,631	14,290	15,867	15,897
Thailand	4,358	3,579	4,613	4,953	4,508	5,233	5,970	6,774	7,405	8,661	9,840	10,621	10,181	12,206	13,892	15,051
Vietnam	695	704	692	715	775	846	930	1,051	1,121	1,216	1,428	1,752	1,965	2,116	2,357	2,623

Appendix table 6-11

Value added of business services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	41,883	39,156	43,738	43,676	40,234	45,750	58,555	70,571	78,886	87,772	103,497	113,880	106,837	136,229	162,425	169,554
New Zealand	5,232	4,393	4,715	4,005	4,172	4,966	6,714	8,270	9,563	9,286	10,823	10,587	10,634	13,796	17,983	18,965

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-12

Value added of telecommunications services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	734,419	749,680	778,238	816,015	833,011	877,623	964,439	1,083,334	1,147,285	1,204,453	1,341,421	1,449,194	1,407,700	1,468,085	1,602,888	1,625,780
North America																
Canada	16,763	16,307	17,100	18,197	18,345	18,999	22,522	25,786	29,216	32,685	35,582	39,416	36,464	40,682	43,828	44,132
Mexico	6,606	7,547	9,210	11,047	12,875	13,060	12,802	14,621	17,863	20,718	24,629	24,985	22,174	25,488	26,807	28,294
United States	281,303	299,891	315,003	343,955	353,644	360,479	361,809	387,933	413,598	422,742	453,124	462,967	438,498	437,073	459,995	469,482
Central and South America																
Argentina	6,955	7,950	7,901	7,792	7,554	2,275	2,968	3,867	4,935	6,345	7,493	9,238	8,919	10,513	11,966	12,276
Bolivia	184	222	221	195	189	171	167	188	193	204	204	232	261	275	298	323
Brazil	10,824	10,913	7,359	8,538	12,534	11,424	12,560	15,553	19,690	22,972	28,428	33,766	32,998	37,016	50,578	46,718
Chile	1,530	1,651	1,601	1,452	1,271	1,302	1,687	2,016	2,348	2,751	3,116	3,289	3,380	4,254	4,622	4,898
Colombia	2,667	2,805	2,252	2,111	2,348	2,374	2,247	2,692	3,270	3,666	4,812	5,276	5,448	6,473	7,216	7,852
Costa Rica	544	562	574	636	655	722	789	849	919	1,060	1,231	1,411	1,363	1,731	1,958	2,129
Ecuador	262	358	269	307	636	772	921	1,009	1,276	1,404	1,464	1,066	1,199	1,222	1,377	1,495
Honduras	190	223	241	285	306	294	324	332	313	333	376	428	500	550	620	674
Jamaica	322	357	360	360	403	521	465	476	530	571	612	621	534	549	564	552
Panama	283	304	345	366	385	376	347	365	397	443	510	602	659	762	825	968
Peru	1,295	1,211	1,153	1,179	1,116	1,122	1,199	1,342	1,448	1,797	2,365	2,846	3,183	3,865	4,391	4,967
Uruguay	552	603	632	623	574	371	324	356	460	510	583	732	708	891	1,034	1,111
Venezuela	1,974	2,517	3,116	3,361	3,617	2,867	2,539	2,863	3,661	5,364	7,216	9,366	11,838	7,600	10,514	12,346
Europe																
EU	177,875	188,877	188,207	172,330	177,021	205,007	249,547	287,770	286,489	295,403	329,481	345,229	312,952	299,366	306,359	288,953
Austria	4,475	4,420	4,231	3,449	3,826	4,154	5,189	5,330	5,490	5,627	6,114	6,486	5,947	5,674	5,800	5,350
Belgium	5,508	5,828	5,939	5,247	5,304	6,006	7,535	8,986	9,112	9,393	10,263	11,074	10,502	10,141	10,450	9,747
Bulgaria	317	421	482	522	618	729	953	1,154	1,189	1,206	1,584	1,850	1,650	1,496	1,652	1,513
Czech Republic	1,357	1,577	1,455	1,481	1,729	2,235	2,738	2,983	3,281	3,774	4,449	5,379	4,668	4,438	4,548	4,003
Denmark	3,425	3,476	3,556	3,021	3,060	3,291	4,353	4,814	4,992	5,088	5,567	6,030	5,557	5,009	5,169	5,020
Finland	2,224	2,539	2,927	2,794	3,111	3,673	4,217	4,735	3,774	3,716	4,277	4,575	4,509	4,232	4,370	4,213
France	27,074	27,429	27,874	22,858	23,524	28,503	34,991	40,889	40,834	41,610	46,665	50,546	47,478	45,215	44,982	42,256
Germany	43,458	44,326	39,080	33,239	32,785	37,989	47,664	55,867	49,726	53,118	55,070	57,061	52,589	46,651	48,787	46,302
Greece	3,037	3,141	3,763	3,128	3,378	4,825	5,484	6,223	6,769	7,094	8,161	8,786	8,098	7,608	7,292	6,315
Hungary	1,445	1,557	1,696	1,485	1,659	2,064	2,536	3,004	3,222	3,117	3,674	4,168	3,299	3,072	3,267	3,040
Ireland	1,178	1,213	1,470	2,034	1,516	2,381	3,615	3,540	4,040	3,612	4,180	4,292	3,986	3,931	4,276	4,087
Italy	19,408	20,697	21,825	19,514	22,221	25,608	30,994	35,743	36,831	36,823	40,106	41,602	37,999	36,076	38,246	34,855
Netherlands	7,298	7,987	8,031	7,739	8,271	10,273	13,661	15,208	15,435	15,489	17,117	17,336	15,478	14,430	15,223	13,871
Poland	2,676	3,112	2,968	3,068	4,235	5,169	5,461	7,005	7,461	7,490	8,279	10,313	9,470	10,366	9,919	9,516
Portugal	2,858	2,811	3,077	2,839	3,119	3,480	4,249	4,814	4,934	5,021	5,699	5,980	6,435	6,171	6,171	5,379
Romania	1,043	1,236	1,144	1,189	1,145	996	1,233	1,806	2,434	3,487	5,861	7,503	5,550	5,413	6,063	6,990
Slovakia	528	587	500	499	544	643	861	1,036	1,215	1,297	1,613	1,972	1,927	1,532	1,529	1,534
Spain	13,577	14,429	14,294	12,942	13,270	15,286	19,482	22,726	23,663	24,961	28,456	31,086	28,992	26,503	25,614	22,326
Sweden	4,946	5,084	5,080	4,846	4,384	4,895	6,058	6,402	6,296	6,577	7,212	7,539	6,384	7,119	8,459	8,165
United Kingdom	32,043	37,009	38,815	40,437	39,323	42,807	48,274	55,507	55,789	56,905	65,133	61,650	52,434	54,289	54,545	54,471

Appendix table 6-12

Value added of telecommunications services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	3,047	2,967	3,081	2,528	2,783	3,510	4,205	4,568	4,936	5,035	5,443	5,070	5,238	5,307	5,292	5,320
Russia	9,455	5,607	3,486	4,358	5,140	6,454	8,380	14,251	16,827	20,120	27,363	32,735	28,093	28,376	31,148	31,942
Switzerland	5,170	5,401	5,112	4,492	4,588	6,842	8,050	8,979	9,051	8,984	9,581	11,030	10,831	11,572	14,301	13,582
Ukraine	1,392	1,138	820	801	1,009	1,139	1,451	2,254	2,785	3,122	3,703	4,423	3,152	3,168	3,247	3,365
Middle East																
Bahrain	234	267	272	293	311	345	364	409	437	513	574	664	730	794	898	945
Iran	348	320	260	644	809	1,004	1,313	1,561	2,053	2,590	3,217	4,084	4,404	4,663	5,890	4,728
Israel	4,300	4,372	4,221	4,711	4,576	4,068	4,473	4,723	4,820	4,849	5,563	6,984	6,725	7,379	8,114	8,029
Jordan	271	320	351	402	506	506	530	622	622	726	769	914	1,008	1,144	1,172	1,254
Kuwait	550	594	670	754	837	815	1,124	1,490	1,766	2,796	3,528	4,087	3,990	4,569	4,163	4,365
Qatar	207	241	264	293	353	411	405	583	845	1,071	1,353	2,298	2,651	2,977	3,550	3,913
Saudi Arabia	3,632	3,730	3,880	4,048	4,251	4,442	4,622	4,962	5,346	5,754	6,390	7,338	8,220	8,953	10,015	10,652
Turkey	15,034	15,477	14,971	16,948	13,536	16,896	21,877	27,769	34,578	37,950	47,015	54,193	44,127	50,120	53,609	52,673
United Arab Emirates	1,701	1,896	2,166	2,450	4,155	4,863	5,359	6,583	7,414	8,805	10,808	12,615	13,521	13,182	14,326	15,067
Africa																
Cameroon	284	274	275	266	296	340	215	210	223	227	275	317	318	344	356	349
Egypt	3,771	3,687	3,963	3,783	4,047	3,963	3,632	3,925	5,353	5,449	7,103	8,874	9,707	10,412	11,026	11,607
Kenya	231	212	157	165	274	357	376	388	473	606	733	793	799	833	838	980
Morocco	1,216	1,287	1,326	1,181	1,275	1,414	1,438	1,730	1,911	2,084	2,646	2,934	3,052	3,061	3,319	3,298
Nigeria	73	81	22	24	78	100	125	194	340	1,346	997	1,418	1,867	2,981	4,479	6,436
Senegal	131	139	147	145	183	206	297	409	497	624	767	927	846	814	948	968
South Africa	4,058	4,053	4,202	4,451	4,123	3,681	6,171	7,769	8,648	8,396	8,185	6,962	6,967	8,734	9,578	9,059
Tunisia	1,102	1,159	1,213	1,175	1,264	1,293	1,531	1,841	2,007	2,120	2,422	2,879	2,948	3,016	3,251	3,252
Zimbabwe	318	294	296	348	492	540	309	191	100	62	142	303	445	379	566	535
Asia																
Bangladesh	312	314	317	316	374	436	476	536	666	793	1,001	1,215	1,471	1,643	1,763	1,777
China	17,975	18,912	20,299	28,038	32,828	36,984	42,849	53,630	62,209	73,511	91,301	116,578	126,793	143,389	173,385	198,592
India	5,618	5,973	6,075	6,502	7,422	7,114	8,876	10,875	12,253	12,955	15,979	17,338	18,559	21,492	23,445	23,091
Indonesia	3,881	1,520	2,059	2,168	2,019	3,421	4,591	6,039	7,257	9,690	12,503	14,532	16,442	22,645	26,996	28,007
Japan	91,121	84,576	95,229	101,390	91,413	89,605	96,187	100,042	96,008	89,433	85,910	99,681	111,550	120,214	132,281	129,694
Malaysia	3,129	2,323	2,505	2,686	2,639	2,939	3,239	3,425	3,985	4,947	5,508	6,027	6,712	7,998	9,129	9,559
Pakistan	1,086	1,149	1,148	1,189	1,318	1,446	1,680	1,845	2,031	2,398	2,652	2,612	3,092	3,423	3,951	4,155
Philippines	1,338	1,356	1,754	1,938	2,128	2,543	2,912	3,339	3,880	4,418	5,300	5,887	5,802	6,433	6,955	7,670
Singapore	6,223	5,500	5,925	6,403	6,094	6,035	6,923	8,273	4,908	5,344	6,264	6,963	6,743	7,857	8,291	8,538
South Korea	9,574	6,987	9,319	10,895	12,412	14,184	15,509	15,751	18,582	19,892	20,477	17,153	14,523	17,228	21,347	20,897
Sri Lanka	819	861	889	915	926	948	1,085	1,238	1,493	1,730	2,095	2,777	3,049	3,692	4,315	4,174
Taiwan	7,461	7,664	8,598	10,230	9,797	9,589	9,829	10,247	10,682	10,395	10,562	11,115	10,660	11,552	12,393	12,577
Thailand	2,638	2,062	2,437	2,439	2,417	2,643	2,810	3,181	3,299	3,835	4,685	4,928	5,040	5,679	5,995	6,478
Vietnam	554	553	582	638	688	720	832	1,007	1,205	1,429	1,656	2,123	2,275	2,454	2,621	2,938

Appendix table 6-12

Value added of telecommunications services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	13,700	12,209	12,586	11,645	10,589	11,814	14,733	17,578	17,910	18,366	21,999	22,962	30,820	37,076	42,627	43,814
New Zealand	2,333	1,903	1,816	1,626	1,585	1,876	2,445	2,897	3,275	3,115	3,728	3,987	3,455	4,223	4,355	4,331

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-13

Value added of computer programming and related services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	353,952	401,301	455,395	473,042	498,167	539,270	591,484	664,984	706,511	756,075	851,755	924,948	906,590	945,890	987,708	997,455
North America																
Canada	4,841	5,094	5,622	6,384	6,552	6,851	8,173	9,382	10,822	12,589	13,799	14,545	15,994	19,771	22,908	22,928
Mexico	2,339	2,457	2,889	3,500	3,677	3,628	3,502	3,609	4,053	4,265	4,734	4,749	4,049	4,548	4,648	4,700
United States	137,532	158,143	181,826	178,742	195,199	219,552	227,077	254,103	268,146	287,897	310,956	321,099	320,646	339,186	361,515	376,888
Central and South America																
Argentina	3,565	3,616	3,560	3,560	3,415	1,041	1,163	1,257	1,476	1,745	2,161	2,737	2,746	3,085	3,492	3,673
Bolivia	46	51	60	57	54	48	46	47	46	50	56	65	73	78	85	94
Brazil	7,483	7,565	5,238	7,028	5,796	5,422	6,056	7,657	11,084	12,982	17,420	18,420	19,616	23,687	16,501	15,642
Chile	970	948	852	851	783	760	891	1,133	1,425	1,691	1,949	2,448	2,519	3,239	3,970	4,281
Colombia	1,329	1,212	918	905	852	1,259	1,180	1,421	1,781	1,936	2,431	2,816	2,834	3,551	3,928	4,347
Costa Rica	72	75	80	90	103	107	109	115	120	141	169	199	220	291	334	369
Ecuador	235	221	131	80	121	186	245	306	344	379	412	138	150	181	211	232
Honduras	36	43	46	51	54	60	66	70	77	85	98	109	120	134	143	151
Jamaica	43	57	60	59	63	68	63	69	78	83	92	104	97	116	124	124
Panama	128	138	152	161	166	178	190	201	217	241	273	302	344	396	457	533
Peru	491	484	449	471	499	519	546	589	647	708	811	955	1,047	1,221	1,432	1,640
Uruguay	329	347	339	330	306	189	144	150	190	215	258	353	397	539	648	713
Venezuela	470	587	637	671	743	534	415	451	491	581	701	936	1,213	811	1,118	1,346
Europe																
EU	106,864	127,560	140,009	138,505	150,896	165,658	196,927	228,542	240,092	258,400	304,181	336,540	312,691	297,912	302,801	291,130
Austria	1,377	1,755	2,054	2,021	2,183	2,767	3,122	3,581	3,872	4,154	4,627	5,099	4,776	4,633	5,128	4,769
Belgium	1,885	2,393	2,764	2,622	3,323	3,470	4,157	4,658	4,915	5,334	6,598	7,722	7,254	7,067	7,825	7,407
Bulgaria	30	40	46	44	48	58	74	95	113	130	167	202	214	184	207	190
Czech Republic	585	632	619	630	746	1,106	1,143	1,239	1,686	2,153	2,750	3,743	3,431	3,363	3,763	3,411
Denmark	1,792	1,828	2,012	1,991	2,316	2,631	3,192	3,686	3,476	4,127	5,006	6,458	6,407	6,370	6,950	6,901
Finland	1,183	1,596	1,760	1,674	2,102	2,162	2,620	3,336	3,594	3,899	4,738	5,437	5,108	5,165	5,703	5,591
France	25,202	29,364	32,276	30,328	31,323	33,458	40,068	45,989	46,779	51,604	59,582	69,447	66,475	60,273	61,476	58,458
Germany	22,637	26,298	26,359	25,636	28,659	29,379	32,920	37,708	39,174	40,761	49,094	56,880	53,755	52,783	52,831	51,253
Greece	33	38	57	79	198	589	751	1,084	1,176	1,181	1,295	1,536	1,713	1,563	1,396	1,219
Hungary	322	402	476	511	619	810	951	1,165	1,333	1,550	1,955	2,366	2,159	2,197	2,337	2,230
Ireland	950	1,344	1,396	2,677	2,894	3,084	3,379	3,770	6,870	8,085	9,135	10,047	8,076	7,350	7,550	7,137
Italy	13,418	14,590	15,938	14,987	16,292	20,083	24,074	25,668	26,164	26,791	31,303	34,237	32,423	31,072	30,665	28,301
Netherlands	4,930	6,010	6,974	6,780	7,351	7,323	8,781	10,013	10,972	12,310	15,270	17,453	15,911	14,678	15,626	14,372
Poland	836	1,049	1,003	1,050	1,507	1,754	2,062	2,570	2,691	3,029	3,742	4,686	4,310	4,700	4,423	4,310
Portugal	697	754	818	751	792	955	1,189	1,391	1,504	1,661	1,904	2,114	2,133	2,033	1,737	1,525
Romania	132	169	103	164	181	232	319	382	602	925	1,663	2,078	1,702	1,725	1,926	2,344
Slovakia	181	145	143	150	196	192	256	392	490	654	1,101	1,339	1,306	1,156	1,170	1,203
Spain	4,460	5,085	6,056	5,983	7,199	8,687	11,058	12,680	13,359	14,578	17,238	19,912	18,735	17,160	15,349	13,185
Sweden	4,187	4,842	5,707	5,683	6,078	6,129	7,496	9,473	9,916	10,170	11,825	13,398	11,020	12,455	14,354	14,078
United Kingdom	22,028	29,228	33,447	34,744	36,890	40,789	49,315	59,661	61,405	65,306	75,187	72,385	65,783	61,987	62,384	63,243

Appendix table 6-13

Value added of computer programming and related services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	1,257	1,731	2,068	2,142	2,185	2,533	2,846	3,658	4,392	4,419	5,806	6,488	5,872	5,761	6,611	6,693
Russia	1,459	1,087	804	1,083	1,419	1,409	1,760	1,718	2,619	3,728	5,800	8,653	7,081	8,517	9,665	10,705
Switzerland	3,735	4,038	4,423	4,462	4,940	5,590	5,917	6,810	7,002	7,251	7,704	9,159	9,535	10,499	12,458	12,093
Ukraine	149	130	114	115	189	225	253	354	477	615	1,009	1,315	1,066	1,100	1,201	1,378
Middle East																
Bahrain	55	57	59	60	61	66	68	76	88	100	110	122	125	131	137	143
Iran	620	635	555	678	898	1,140	1,396	1,662	1,951	2,482	3,303	3,832	3,940	4,562	5,395	4,360
Israel	1,364	1,533	1,584	1,930	1,939	1,875	1,849	2,056	2,344	2,545	2,984	3,693	3,788	4,260	4,609	4,618
Jordan	87	91	95	100	105	107	113	121	134	146	156	171	187	209	228	249
Kuwait	24	22	23	32	32	39	44	47	52	54	59	63	58	59	61	65
Qatar	56	62	64	64	65	68	71	136	168	337	482	604	665	727	900	1,007
Saudi Arabia	904	869	900	918	937	959	980	1,022	1,066	1,113	1,168	1,310	1,472	1,627	1,829	1,969
Turkey	611	1,607	1,963	2,399	1,806	2,113	2,732	3,605	4,652	5,714	7,446	8,877	8,732	9,596	9,268	9,373
United Arab Emirates	372	385	400	415	861	992	1,141	1,367	1,549	1,774	2,420	2,773	2,494	2,545	2,520	2,659
Africa																
Cameroon	47	53	52	44	47	45	83	75	81	87	95	110	112	112	120	120
Egypt	211	230	261	256	256	237	190	178	249	308	328	413	484	553	601	640
Kenya	36	38	34	56	60	63	71	73	84	98	114	126	127	132	129	154
Morocco	81	270	290	289	286	323	408	478	534	599	752	843	893	893	978	984
Nigeria	240	374	120	135	140	151	187	281	437	506	586	697	641	805	842	995
Senegal	32	34	39	37	39	45	55	64	67	74	91	110	106	105	117	122
South Africa	216	228	215	205	204	193	323	431	487	514	584	555	647	908	994	958
Tunisia	167	171	187	168	177	199	238	262	270	302	340	381	393	412	426	429
Zimbabwe	25	17	7	9	16	10	54	15	5	2	3	3	3	4	6	6
Asia																
Bangladesh	297	300	319	324	320	331	353	371	370	373	405	449	522	583	603	607
China	2,957	2,858	2,682	2,594	2,779	2,967	3,204	3,660	4,210	4,897	5,974	7,023	7,462	8,187	9,888	11,430
India	2,272	2,359	2,663	2,974	3,190	3,429	4,032	4,694	5,602	6,519	8,513	10,150	11,140	14,248	16,821	16,664
Indonesia	618	231	300	453	446	616	790	886	1,005	1,271	1,441	1,692	1,952	2,681	3,227	3,348
Japan	53,744	59,643	75,722	91,145	87,898	87,535	92,445	95,322	94,932	91,329	93,306	107,141	113,302	119,818	118,664	119,317
Malaysia	444	320	338	329	338	358	377	396	534	600	723	829	878	1,050	1,174	1,267
Pakistan	156	151	156	165	142	164	176	194	245	331	391	411	410	408	458	494
Philippines	500	504	645	599	555	594	630	695	806	990	1,241	1,518	1,584	1,829	2,093	2,374
Singapore	762	636	628	673	639	673	704	754	863	1,046	1,371	1,726	1,747	2,167	2,630	2,754
South Korea	4,657	3,494	4,946	6,432	6,069	7,235	7,842	8,692	10,697	12,702	13,964	12,035	10,620	13,138	14,128	14,628
Sri Lanka	24	35	35	37	36	55	55	56	65	74	85	100	112	124	145	145
Taiwan	1,110	1,273	1,703	2,205	2,298	2,279	2,386	2,562	2,713	3,012	3,499	4,001	4,029	4,634	5,181	5,368
Thailand	659	541	698	749	682	792	903	1,025	1,120	1,310	1,489	1,622	1,534	1,828	2,071	2,242
Vietnam	105	107	105	108	117	128	141	159	170	184	216	269	308	338	378	424

Appendix table 6-13

Value added of computer programming and related services, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	6,336	5,924	6,617	6,607	6,087	6,921	8,858	10,676	11,934	13,278	15,657	17,559	16,200	20,480	24,092	25,145
New Zealand	792	665	713	606	631	751	1,016	1,251	1,447	1,405	1,637	1,611	1,619	2,113	2,747	2,735

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

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Appendix table 6-14

Value added of all manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,534,803	5,382,170	5,528,360	5,646,338	5,331,755	5,462,896	6,073,949	6,858,865	7,345,687	7,897,442	8,883,792	9,541,371	8,693,237	9,697,340	11,027,364	11,073,421
North America																
Canada	108,353	106,932	120,956	132,763	122,942	123,402	137,203	153,357	164,049	175,178	188,627	181,012	142,550	167,776	186,746	190,078
Mexico	96,166	101,471	114,443	132,626	136,567	136,921	128,804	139,618	153,958	175,780	188,645	195,062	151,700	185,889	213,885	217,980
United States	1,318,141	1,391,063	1,451,898	1,479,920	1,408,038	1,431,928	1,451,742	1,566,162	1,656,088	1,724,449	1,780,798	1,701,891	1,603,947	1,693,981	1,793,749	1,876,317
Central and South America																
Argentina	53,409	53,353	48,114	46,901	43,264	20,763	29,142	34,137	39,292	44,104	51,305	63,983	60,426	69,724	84,100	86,665
Bolivia	1,151	1,189	1,126	1,119	1,087	1,030	1,034	1,097	1,111	1,300	1,497	1,860	2,014	2,215	2,461	2,761
Brazil	128,442	117,275	82,447	96,169	81,564	73,471	86,095	109,473	136,912	162,452	200,106	233,979	232,699	297,640	308,136	276,247
Chile	14,996	14,074	13,178	13,772	13,145	12,835	12,627	15,514	17,349	19,688	20,748	20,109	19,421	23,282	27,146	27,265
Colombia	16,679	15,696	13,553	13,915	13,884	13,747	13,475	16,875	20,718	23,169	29,984	33,890	30,519	36,868	42,198	44,965
Costa Rica	2,618	2,972	4,200	3,677	3,243	3,277	3,361	3,661	3,915	4,396	5,028	5,419	4,770	5,771	6,953	7,573
Ecuador	2,485	2,760	2,914	2,918	3,151	3,332	3,677	3,920	4,087	4,436	5,214	6,266	5,951	6,256	7,477	8,145
Honduras	1,056	1,204	1,309	1,476	1,503	1,564	1,628	1,699	1,862	2,071	2,219	2,472	2,389	2,628	3,108	3,275
Jamaica	939	914	889	842	822	819	781	835	867	906	980	1,101	993	1,037	1,181	1,183
Panama	1,078	1,135	1,167	1,100	1,034	974	969	1,023	1,072	1,138	1,226	1,417	1,415	1,440	1,783	1,958
Peru	8,776	8,080	7,200	7,696	7,909	8,234	8,726	10,364	11,856	13,511	15,676	18,780	16,901	20,820	24,512	25,941
Uruguay	3,567	3,598	3,220	2,857	2,649	1,780	1,791	2,040	2,579	2,848	3,215	4,539	4,185	4,809	5,347	5,749
Venezuela	18,136	17,379	17,337	21,706	20,882	15,270	14,299	18,507	21,941	25,519	30,723	44,091	46,919	31,055	42,032	45,625
Europe																
EU	1,584,769	1,630,033	1,584,357	1,463,083	1,439,640	1,520,570	1,797,321	2,044,446	2,097,914	2,221,095	2,561,420	2,691,317	2,204,904	2,291,925	2,562,861	2,358,864
Austria	37,026	37,827	37,851	35,370	34,971	36,852	44,251	50,422	53,335	58,195	68,816	75,662	63,559	64,084	71,940	67,708
Belgium	45,259	45,587	43,512	39,907	38,523	41,105	48,558	56,258	57,514	59,236	66,619	69,455	59,017	59,598	65,155	60,040
Bulgaria	1,434	1,774	1,579	1,597	1,834	2,214	2,902	3,306	4,047	4,540	6,155	6,645	6,454	5,973	7,302	6,785
Czech Republic	14,137	14,416	14,442	13,785	14,800	17,402	20,508	26,260	29,532	34,057	41,759	48,574	40,298	41,356	46,783	42,362
Denmark	24,787	24,894	24,454	22,249	21,900	23,500	27,400	30,252	30,984	32,705	37,000	40,786	33,086	32,316	32,875	31,065
Finland	26,302	29,148	28,823	28,073	28,400	29,717	34,767	39,052	39,749	43,440	52,049	53,025	38,155	37,987	41,322	38,576
France	209,014	215,117	209,054	190,440	185,347	192,338	227,811	251,597	254,993	255,457	287,582	307,402	265,462	252,475	267,161	241,674
Germany	438,818	449,215	431,224	392,551	388,976	407,865	492,305	561,577	570,073	614,534	710,669	738,051	599,527	663,279	768,370	711,188
Greece	13,084	13,326	13,512	12,489	12,163	13,388	16,676	19,242	21,112	22,478	25,166	30,597	30,166	27,710	28,631	25,884
Hungary	9,314	9,775	9,502	9,279	10,299	12,414	15,627	19,533	20,993	22,177	26,216	28,861	23,239	24,555	28,557	26,056
Ireland	22,241	26,226	29,560	28,233	29,675	35,535	39,845	42,152	41,343	42,857	49,695	51,037	48,725	50,078	54,757	51,422
Italy	232,347	236,214	225,994	205,552	204,679	218,050	258,807	292,515	294,982	309,997	359,283	377,417	313,940	306,324	333,536	293,388
Netherlands	56,188	58,312	57,380	53,519	52,555	55,747	67,928	77,744	80,986	83,696	97,970	106,756	89,399	91,783	102,425	93,308
Poland	27,491	29,673	28,091	28,208	28,485	28,840	33,784	42,838	49,567	56,364	70,364	86,486	66,533	78,050	92,462	88,667
Portugal	18,632	18,982	19,128	17,002	17,042	18,289	21,519	23,777	23,550	24,150	27,298	29,419	25,339	25,153	27,237	24,499
Romania	8,540	8,937	6,935	7,850	8,988	10,115	12,180	15,969	21,009	25,780	35,661	40,094	32,527	35,823	42,417	39,518
Slovakia	4,445	4,614	4,481	4,466	4,832	5,046	6,979	9,049	10,244	12,161	16,145	19,794	15,587	14,948	17,390	16,766
Spain	101,797	105,285	104,965	97,801	100,105	107,899	133,710	152,771	160,018	170,426	193,387	211,094	172,492	168,386	183,030	161,800
Sweden	47,944	48,915	49,307	47,750	41,261	44,981	55,273	63,386	64,589	69,062	79,601	75,630	56,695	70,902	82,753	76,045
United Kingdom	245,971	251,798	244,563	226,961	214,805	219,274	236,491	266,744	269,295	279,781	309,986	294,531	224,704	241,144	268,758	262,116

Appendix table 6-14

Value added of all manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	16,800	16,863	16,975	15,705	16,068	18,045	21,042	23,576	26,319	29,807	34,936	36,609	32,575	35,232	41,450	41,850
Russia	66,860	45,276	33,784	44,979	46,966	52,491	61,829	89,920	119,799	151,354	196,445	248,017	157,697	195,425	251,212	260,116
Switzerland	51,071	50,973	48,910	44,059	47,330	51,971	59,302	66,309	68,940	74,145	83,478	98,376	89,285	97,448	116,987	114,855
Ukraine	10,581	9,060	7,372	5,708	6,625	7,582	9,320	12,055	16,950	21,667	28,402	31,276	18,210	19,971	20,883	21,468
Middle East																
Bahrain	966	814	839	939	978	1,020	1,118	1,216	1,628	2,195	2,827	3,583	2,810	3,386	4,329	4,283
Iran	8,398	7,315	6,912	9,276	11,265	13,218	15,638	19,263	23,513	28,146	34,814	41,183	42,681	55,754	62,598	50,249
Israel	16,799	17,028	17,337	19,309	16,941	15,001	15,943	17,010	18,258	20,102	23,782	27,537	25,591	28,060	32,140	31,111
Jordan	829	991	1,024	1,095	1,153	1,341	1,472	1,780	1,935	2,474	3,131	4,012	4,151	4,431	4,909	5,390
Kuwait	4,016	3,038	3,334	2,608	2,214	2,984	3,782	4,941	5,866	5,566	6,344	6,525	5,428	6,626	7,460	7,756
Qatar	939	807	788	966	1,074	1,395	1,800	3,638	4,394	5,664	7,365	12,322	9,223	13,512	17,222	19,013
Saudi Arabia	16,627	15,492	16,747	18,211	18,455	19,460	23,004	25,554	29,522	33,043	36,402	39,433	39,113	46,355	60,536	62,873
Turkey	67,886	64,402	54,280	53,545	37,206	41,200	53,727	68,059	83,372	91,105	108,730	118,269	93,458	114,446	125,968	126,882
United Arab Emirates	6,225	6,532	7,226	9,465	13,755	14,346	15,248	17,018	19,160	21,450	23,278	27,132	23,315	25,126	27,073	28,494
Africa																
Cameroon	1,645	1,881	1,947	1,789	1,860	2,141	1,915	2,819	2,862	2,937	2,795	3,232	3,501	3,545	3,966	3,881
Egypt	16,992	16,059	16,183	15,904	14,880	13,949	11,536	13,609	15,540	17,214	20,314	25,587	29,673	34,559	36,356	37,145
Kenya	1,487	1,515	1,284	1,292	1,270	1,292	1,447	1,610	1,974	2,313	2,830	3,300	3,032	3,182	3,217	3,823
Morocco	6,154	6,342	6,469	6,029	5,606	6,014	7,732	8,974	8,872	9,379	10,121	11,349	13,043	12,837	13,786	13,349
Nigeria	6,584	6,465	1,635	1,652	1,790	1,964	2,227	2,629	3,144	3,509	3,932	4,544	3,901	4,137	5,764	6,999
Senegal	687	719	719	604	728	806	963	1,126	1,140	1,166	1,409	1,648	1,568	1,578	1,775	1,747
South Africa	27,045	23,663	22,417	22,942	20,563	19,419	29,600	37,825	40,727	40,564	43,156	41,279	39,315	46,673	46,282	43,718
Tunisia	3,505	3,676	3,785	3,502	3,652	3,830	4,415	4,920	5,051	5,554	6,553	8,080	7,360	7,259	7,935	7,785
Zimbabwe	1,824	1,192	1,089	991	938	742	863	805	362	1,614	448	637	826	810	1,409	1,319
Asia																
Bangladesh	6,165	6,666	6,679	6,681	6,851	7,222	7,878	8,658	9,140	9,998	11,786	13,689	15,418	17,245	18,668	18,879
China	325,181	332,616	349,609	392,778	425,913	462,527	543,985	630,210	738,687	898,185	1,153,783	1,479,395	1,615,669	1,760,131	2,235,657	2,436,588
India	63,173	60,682	61,291	66,785	66,767	71,125	83,340	100,013	118,292	140,117	177,206	188,098	187,383	227,518	245,064	238,574
Indonesia	70,779	29,212	44,561	45,786	46,615	56,190	66,330	72,083	78,349	100,394	116,908	141,916	142,209	175,907	205,935	213,649
Japan	983,285	868,623	966,802	1,034,091	856,454	807,664	886,340	974,283	978,752	926,621	926,423	996,344	905,545	1,088,234	1,193,190	1,169,761
Malaysia	27,059	19,773	23,306	28,029	26,357	28,559	31,936	36,695	39,543	44,848	50,560	56,689	48,138	60,625	70,139	71,824
Pakistan	10,050	10,199	9,998	9,745	9,820	10,764	12,561	15,491	19,098	22,744	25,804	27,703	25,326	29,165	36,863	38,451
Philippines	21,784	16,937	19,477	19,825	18,811	20,089	20,677	21,882	24,792	28,868	33,971	39,728	35,789	42,802	47,403	51,372
Singapore	21,215	18,540	18,525	23,608	19,574	21,603	22,730	29,460	32,122	37,103	40,501	37,089	37,126	47,275	51,032	49,869
South Korea	123,103	86,751	113,941	136,201	120,656	135,421	149,356	181,594	210,940	234,264	259,823	235,073	209,229	276,594	313,820	305,294
Sri Lanka	2,652	2,756	2,727	2,916	2,829	3,162	3,512	3,867	4,764	5,434	5,985	7,309	7,618	8,922	10,777	10,107
Taiwan	74,138	67,576	71,890	80,710	68,554	75,376	81,808	91,644	97,406	99,855	103,747	99,568	89,520	112,364	118,349	111,566
Thailand	40,113	31,103	35,959	36,139	33,725	38,567	45,339	51,184	56,405	67,275	80,849	89,364	83,293	107,532	111,225	116,608
Vietnam	4,425	4,666	5,075	5,786	6,466	7,218	8,090	9,239	10,916	12,944	15,097	18,533	19,523	20,837	24,010	27,142

Appendix table 6-14

Value added of all manufacturing industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	56,122	48,191	50,226	45,884	41,758	48,011	61,632	70,727	75,407	80,578	94,378	91,529	79,289	100,959	118,498	118,549
New Zealand	10,881	8,649	8,930	8,263	7,965	9,272	11,833	14,449	16,171	15,204	18,066	18,226	14,708	17,762	19,804	20,493

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-15

Value added of semiconductor industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	171,345	162,429	182,899	219,185	159,567	165,778	191,324	229,706	246,043	270,284	291,730	303,883	270,497	337,594	348,575	325,779
North America																
Canada	2,726	2,657	3,705	3,975	2,284	1,953	2,374	2,785	3,141	3,282	3,495	3,626	2,919	3,328	3,610	3,126
Mexico	1,669	2,043	2,494	3,019	3,113	2,612	2,477	2,455	2,699	3,041	3,337	3,355	2,616	3,107	3,505	2,996
United States	46,204	47,046	47,054	56,454	37,017	41,198	43,929	50,379	58,682	59,834	60,175	63,382	59,532	80,435	81,264	79,117
Central and South America																
Argentina	22	16	16	18	7	4	5	8	10	12	13	14	13	16	21	19
Bolivia	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
Brazil	1,009	760	560	658	528	495	380	523	504	935	1,141	1,688	1,204	1,433	1,585	1,068
Chile	1	2	1	3	1	2	2	2	0	2	2	3	2	3	3	3
Colombia	2	2	2	2	2	2	2	2	2	3	3	4	4	4	5	4
Costa Rica	17	13	11	10	11	10	11	13	14	16	19	21	19	22	26	24
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honduras	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Jamaica	3	3	3	3	3	3	3	4	4	4	4	5	4	5	5	4
Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	1	1	1	1	2	1	2	2	2
Uruguay	5	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0
Venezuela	69	111	105	130	131	90	83	111	136	162	200	285	291	190	252	249
Europe																
EU	29,917	31,014	32,964	33,249	27,449	27,728	31,845	38,090	37,486	40,151	46,474	45,018	37,410	35,651	35,653	27,257
Austria	1,133	1,218	1,208	1,212	1,210	1,164	1,308	1,545	1,586	1,790	1,335	1,433	1,184	1,370	1,332	1,094
Belgium	904	798	847	864	712	709	830	851	847	892	944	908	750	819	905	719
Bulgaria	5	5	4	5	8	5	12	13	18	21	36	32	24	26	33	28
Czech Republic	146	176	190	197	207	269	343	393	475	600	665	765	484	455	471	332
Denmark	410	416	462	373	357	439	414	389	396	424	581	520	446	381	400	328
Finland	1,551	2,203	2,642	2,963	2,509	3,113	3,680	3,853	3,924	4,301	5,511	5,054	2,323	2,175	1,497	1,223
France	4,389	4,577	4,644	4,908	4,099	4,259	4,351	4,979	4,604	4,466	4,812	4,893	5,275	3,763	4,596	3,231
Germany	6,292	6,501	7,045	7,227	5,480	6,138	8,112	10,043	9,556	10,454	13,649	12,309	9,655	10,201	12,223	9,532
Greece	77	112	125	144	203	238	253	164	179	194	234	267	154	147	191	140
Hungary	180	200	243	295	353	435	680	956	1,095	1,099	1,034	1,189	1,047	948	1,061	764
Ireland	752	756	1,402	1,310	1,250	995	987	1,177	1,097	1,586	1,384	1,408	1,259	856	720	583
Italy	3,836	3,588	3,271	3,268	3,354	3,355	4,440	5,072	5,130	5,159	5,869	6,055	5,569	5,997	3,249	2,084
Netherlands	846	830	962	1,248	693	454	527	593	641	510	589	532	486	485	551	448
Poland	316	357	382	286	360	308	319	325	394	473	507	624	471	564	641	505
Portugal	247	222	238	222	220	173	206	227	238	225	269	294	237	232	250	195
Romania	61	69	51	48	45	51	49	63	49	56	89	102	63	58	51	45
Slovakia	42	46	13	52	52	56	88	96	129	266	302	660	448	420	476	379
Spain	1,081	1,073	1,031	955	943	783	897	956	984	1,116	1,384	1,509	1,118	1,171	830	400
Sweden	1,827	1,911	1,888	1,477	799	1,012	840	2,423	2,340	2,546	2,669	2,859	3,713	2,884	3,204	2,656
United Kingdom	5,821	5,955	6,316	6,194	4,595	3,772	3,508	3,971	3,803	3,972	4,611	3,604	2,706	2,699	2,972	2,569

Appendix table 6-15

Value added of semiconductor industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	221	215	269	263	217	217	234	257	309	336	440	478	455	463	553	476
Russia	190	109	67	196	205	339	491	601	658	799	1,083	1,144	845	1,013	1,337	1,459
Switzerland	873	879	879	799	869	940	1,087	1,219	1,224	1,269	1,395	1,641	1,378	1,520	1,689	1,490
Ukraine	16	13	10	21	35	37	32	56	55	62	81	104	54	63	77	68
Middle East																
Bahrain	10	8	9	9	10	10	11	12	16	22	28	36	29	38	45	40
Iran	4	3	2	3	4	8	16	13	11	12	12	14	14	16	19	14
Israel	661	696	845	2,226	1,454	896	1,063	913	994	1,216	1,319	1,408	1,781	1,931	1,838	1,993
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kuwait	9	11	11	10	13	17	22	29	31	45	57	56	49	58	84	74
Qatar	1	1	0	1	1	2	3	0	3	3	4	6	5	7	10	9
Saudi Arabia	37	35	37	41	42	44	49	54	62	69	79	89	89	110	142	125
Turkey	21	31	22	24	17	6	22	34	60	46	24	93	46	28	28	24
United Arab Emirates	2	2	2	3	6	6	6	7	8	9	10	12	10	10	12	11
Africa																
Cameroon	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	1
Egypt	3	4	4	3	3	29	15	2	11	5	6	8	8	10	11	10
Kenya	15	15	19	14	14	15	18	22	25	26	25	29	27	28	30	30
Morocco	23	24	30	52	32	31	42	51	54	51	45	42	41	36	35	29
Nigeria	3	3	1	1	1	1	1	1	1	1	1	2	1	1	2	2
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	16	17	14	16	12	13	19	25	27	26	26	22	21	20	21	18
Tunisia	43	49	55	57	71	77	100	108	111	124	148	184	176	202	213	181
Zimbabwe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia																
Bangladesh	10	19	13	14	13	13	14	15	16	18	20	23	27	31	36	31
China	8,424	7,687	9,058	11,903	12,983	12,029	13,426	19,888	26,005	34,891	44,226	55,877	57,110	75,702	95,985	110,205
India	274	289	257	351	378	398	425	420	555	642	817	832	904	1,070	1,156	984
Indonesia	801	180	425	1,205	508	1,032	1,045	1,178	893	1,181	1,756	1,846	1,796	2,152	2,253	2,282
Japan	52,117	44,798	52,540	62,722	40,801	38,561	48,070	54,257	52,311	53,331	54,581	54,877	42,206	48,889	41,022	27,507
Malaysia	5,225	4,126	5,307	4,962	4,279	3,903	4,563	4,426	3,596	4,249	4,510	5,465	4,621	6,037	5,478	5,021
Pakistan	9	9	8	5	5	5	7	9	10	2	2	2	2	2	3	2
Philippines	1,042	1,211	1,310	1,455	1,105	1,331	825	968	880	941	946	1,021	843	1,063	998	898
Singapore	3,624	2,392	2,971	5,868	3,494	3,468	4,053	5,353	5,492	6,978	7,458	6,597	6,242	8,677	8,451	5,959
South Korea	6,739	6,367	9,292	12,085	9,281	11,142	13,053	18,817	20,472	23,007	24,334	21,287	19,212	29,398	27,776	23,691
Sri Lanka	4	7	10	8	8	9	10	12	15	3	2	1	1	2	2	2
Taiwan	8,239	8,755	11,664	16,424	12,304	15,671	19,812	24,645	27,299	32,288	32,019	31,783	27,163	33,051	31,543	27,894
Thailand	688	510	533	667	625	1,141	1,327	1,484	1,634	648	772	875	733	1,060	943	632
Vietnam	26	29	33	10	13	15	19	25	31	39	47	56	57	64	72	71

Appendix table 6-15

Value added of semiconductor industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	259	212	225	191	162	215	251	336	385	407	483	464	457	556	668	581
New Zealand	69	53	56	52	55	59	79	96	106	96	105	102	77	87	108	94

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-16

Value added of computers and office machinery, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	100,937	95,391	92,668	96,597	78,069	72,959	81,912	88,689	106,140	107,982	114,466	119,613	109,418	114,492	121,379	115,178
North America																
Canada	674	781	592	759	411	452	516	564	597	708	787	671	464	633	730	638
Mexico	3,769	4,317	4,535	4,938	4,529	3,767	2,545	1,976	2,245	2,568	2,506	1,727	1,405	1,669	1,882	1,703
United States	36,790	37,461	33,815	35,454	26,530	26,737	26,828	27,964	33,961	36,811	35,065	38,222	36,835	28,490	26,965	24,337
Central and South America																
Argentina	11	10	18	20	15	2	3	3	3	3	3	4	4	4	4	4
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	875	833	881	1,543	1,663	826	811	771	1,144	1,451	1,958	2,384	1,982	2,832	2,869	2,125
Chile	2	2	1	1	1	2	2	2	2	2	2	2	2	2	3	3
Colombia	2	2	2	2	2	2	2	3	5	5	6	7	7	8	9	9
Costa Rica	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honduras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jamaica	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	1	2	3	4	5	4	3	3	3	3	4	4	4	5	6	6
Uruguay	0	1	1	1	0	0	0	0	6	8	9	11	10	11	12	12
Venezuela	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	1
Europe																
EU	17,051	17,676	16,273	13,957	12,000	11,862	13,718	15,756	17,241	16,511	17,973	16,632	11,620	11,112	11,057	10,007
Austria	34	105	107	64	66	81	88	70	108	109	120	118	124	158	148	135
Belgium	132	120	96	86	72	70	86	105	102	106	160	213	249	272	301	270
Bulgaria	11	9	8	8	7	4	3	15	20	18	25	14	11	12	15	14
Czech Republic	105	84	114	161	120	58	153	103	145	170	194	283	406	371	403	308
Denmark	99	109	137	110	111	108	128	117	128	129	118	116	136	116	122	112
Finland	166	177	185	37	21	13	20	25	25	34	40	37	29	27	19	17
France	1,441	1,467	1,245	687	910	999	1,381	1,153	866	709	891	906	608	408	438	373
Germany	5,019	4,824	3,974	3,806	2,945	3,250	4,154	5,092	4,760	4,654	5,753	5,547	2,638	2,984	3,461	3,200
Greece	10	10	11	7	4	5	6	7	5	6	4	4	2	1	0	0
Hungary	332	419	350	190	172	133	313	505	573	379	288	332	258	233	261	188
Ireland	1,295	1,378	2,051	2,149	1,362	1,490	1,252	1,761	2,366	2,218	1,946	1,979	1,770	975	937	944
Italy	904	1,064	1,133	1,038	1,220	733	786	1,119	1,062	1,184	1,299	1,327	872	922	210	85
Netherlands	426	571	450	415	397	311	323	386	373	389	367	333	283	282	321	289
Poland	76	99	144	182	117	104	123	122	230	170	203	238	213	336	316	274
Portugal	41	33	43	34	30	37	44	47	48	45	52	56	45	44	48	41
Romania	43	46	28	27	18	24	7	15	43	52	60	59	32	34	30	30
Slovakia	10	12	10	11	14	13	19	44	32	33	27	19	52	49	55	49
Spain	994	1,075	945	717	688	642	709	624	672	449	483	533	447	361	359	297
Sweden	267	346	314	249	134	170	317	388	313	290	311	301	223	277	307	276
United Kingdom	5,645	5,730	4,926	3,977	3,592	3,618	3,803	4,057	5,371	5,367	5,631	4,215	3,223	3,250	3,308	3,106

Appendix table 6-16

Value added of computers and office machinery, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	84	62	91	24	29	12	28	22	28	17	22	23	19	18	21	20
Russia	911	266	185	311	198	134	85	235	229	333	524	500	386	498	594	763
Switzerland	618	585	473	384	423	277	256	288	305	314	363	485	433	474	568	504
Ukraine	20	9	12	15	17	19	24	26	30	36	46	52	29	35	41	37
Middle East																
Bahrain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iran	16	11	9	16	18	23	18	37	42	34	40	70	71	83	98	76
Israel	84	66	68	71	72	50	53	49	48	56	67	74	74	77	82	78
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kuwait	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1
Qatar	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2
Saudi Arabia	3	3	3	3	3	3	4	4	5	5	6	7	7	8	11	11
Turkey	22	47	29	63	50	15	29	35	32	34	33	73	42	33	33	30
United Arab Emirates	1	1	1	1	2	2	2	2	3	3	3	4	3	3	4	4
Africa																
Cameroon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	27	49	46	37	32	5	4	4	7	31	38	49	51	60	68	70
Kenya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Morocco	0	0	0	0	0	0	0	3	7	5	5	5	6	6	6	6
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	9	9	4	4	3	4	5	7	8	8	8	8	9	9	8	7
Tunisia	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
Zimbabwe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia																
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
China	1,023	1,469	1,639	2,726	3,196	5,225	12,235	14,237	21,821	25,950	28,858	34,761	34,943	43,924	52,274	52,791
India	125	83	121	209	236	292	414	331	430	497	632	644	610	637	689	546
Indonesia	8	3	8	2	2	2	7	6	66	93	107	114	116	134	155	157
Japan	25,397	23,192	23,748	23,759	18,876	12,330	13,099	16,207	16,827	11,686	12,670	11,838	10,116	12,056	11,011	11,205
Malaysia	1,041	570	691	1,488	1,453	1,598	1,968	2,620	2,264	2,050	3,600	2,129	1,616	1,728	1,289	1,138
Pakistan	6	6	6	7	6	7	9	11	13	14	16	16	14	16	20	21
Philippines	297	423	627	631	587	400	513	541	690	688	775	292	178	198	175	217
Singapore	6,593	3,203	3,471	3,501	2,457	2,907	2,428	2,656	3,184	2,672	2,238	2,907	2,992	2,815	3,064	2,617
South Korea	2,605	2,164	3,071	4,251	3,269	3,171	3,083	1,156	1,448	1,644	1,714	1,177	1,099	1,459	1,484	930
Sri Lanka	24	24	63	30	16	17	16	18	20	19	12	9	9	11	13	13
Taiwan	1,433	1,394	1,528	1,697	1,353	1,736	1,953	1,796	1,914	2,205	2,348	2,366	1,908	2,296	3,254	2,710
Thailand	1,217	492	437	507	475	867	1,008	1,127	1,241	1,238	1,694	2,013	2,061	2,784	2,452	1,946
Vietnam	7	18	51	38	13	16	27	32	57	69	87	104	102	129	146	159

Appendix table 6-16

Value added of computers and office machinery, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	159	129	139	118	100	162	179	154	168	169	198	189	163	198	238	234
New Zealand	29	22	23	22	23	25	33	41	45	41	42	37	25	29	36	36

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-17

Value added of communications, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	126,360	119,162	134,270	161,685	121,127	122,018	138,320	164,587	171,416	193,737	197,937	198,939	171,049	178,219	175,091	177,267
North America																
Canada	2,110	2,022	3,030	3,118	1,497	1,302	1,732	1,991	2,247	2,323	2,447	2,469	2,246	2,202	2,219	1,823
Mexico	780	1,011	1,277	1,601	1,633	1,286	1,232	1,157	1,268	1,411	1,520	1,499	1,223	1,452	1,638	1,492
United States	32,549	33,142	33,485	43,771	32,496	27,056	26,528	30,998	33,395	39,566	34,979	33,596	30,062	34,913	28,946	29,860
Central and South America																
Argentina	410	314	266	284	157	52	78	118	148	162	177	193	184	226	291	293
Bolivia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	4,441	3,412	2,773	4,024	3,529	2,636	1,908	3,211	3,647	4,435	4,553	6,738	4,806	5,718	6,326	4,750
Chile	6	5	4	2	2	2	2	3	1	5	5	6	6	7	8	8
Colombia	44	37	26	25	23	26	23	29	13	15	19	22	20	23	27	27
Costa Rica	9	7	3	3	4	4	4	4	5	6	7	8	7	9	10	10
Ecuador	0	0	0	0	1	1	0	1	1	1	1	1	1	1	2	2
Honduras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Jamaica	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	5	5	4	4	3	3	2	4	4	7	10	11	10	12	15	15
Uruguay	3	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Venezuela	4	7	7	8	8	6	5	7	9	10	13	18	18	12	16	18
Europe																
EU	18,340	18,959	21,008	22,024	17,001	17,094	19,241	23,130	22,631	23,748	28,155	25,392	20,919	17,710	17,556	15,198
Austria	875	933	919	955	953	923	1,028	1,168	1,189	1,340	728	727	553	639	622	564
Belgium	580	447	520	577	405	410	477	469	462	485	505	396	356	389	430	374
Bulgaria	5	8	9	10	19	30	36	34	60	24	28	25	19	21	26	24
Czech Republic	83	104	105	113	116	186	221	230	293	379	396	461	268	252	261	204
Denmark	262	248	294	173	149	162	172	137	159	127	167	166	183	156	164	148
Finland	1,150	1,773	2,265	2,594	2,118	2,752	3,247	3,352	3,304	3,610	4,697	4,008	1,602	1,500	1,033	943
France	2,019	2,257	2,246	2,772	2,087	2,352	2,183	2,452	2,174	2,090	2,156	2,181	2,335	1,040	1,453	1,242
Germany	2,776	2,625	3,205	3,693	2,316	2,782	4,024	5,209	4,761	4,890	7,972	5,460	4,283	4,532	4,737	3,729
Greece	37	68	81	100	158	188	181	77	99	92	105	104	63	64	32	23
Hungary	121	127	169	206	271	302	480	688	791	835	685	824	721	652	730	585
Ireland	588	563	1,252	1,087	915	735	578	667	846	1,374	1,139	1,158	1,036	704	593	542
Italy	2,453	2,239	2,012	2,119	2,327	2,201	3,061	3,278	3,239	3,024	3,373	3,516	3,189	2,566	1,745	1,543
Netherlands	747	734	854	1,119	606	375	438	492	534	401	449	384	353	353	401	361
Poland	207	240	288	191	252	216	183	169	192	226	211	307	231	277	315	277
Portugal	200	168	195	189	189	142	170	189	191	174	146	148	120	117	126	107
Romania	90	103	76	71	67	66	64	68	91	91	188	217	132	122	108	107
Slovakia	28	29	4	34	31	34	55	57	76	200	207	499	338	317	359	319
Spain	704	642	595	545	514	332	339	333	362	360	470	509	386	241	250	177
Sweden	1,508	1,576	1,569	1,121	599	764	471	1,952	1,892	2,054	2,092	2,260	3,113	2,418	2,686	2,486
United Kingdom	3,906	4,073	4,351	4,356	2,908	2,145	1,833	2,108	1,914	1,973	2,441	2,041	1,639	1,350	1,487	1,443

Appendix table 6-17

Value added of communications, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	116	105	181	203	155	141	151	152	188	199	270	293	279	284	340	325
Russia	309	177	115	195	203	336	488	576	752	892	1,153	1,386	986	1,308	1,714	1,896
Switzerland	511	546	524	505	585	687	817	1,021	1,104	1,171	1,252	1,547	1,624	1,857	2,342	2,118
Ukraine	98	83	59	45	97	91	123	144	142	161	211	269	140	163	199	197
Middle East																
Bahrain	6	6	6	6	6	7	7	8	11	14	18	23	19	25	29	28
Iran	111	83	100	124	112	143	134	204	154	139	165	109	111	130	154	119
Israel	1,310	1,505	1,565	1,749	961	916	869	1,078	1,269	1,319	1,695	1,906	1,641	1,658	1,894	1,675
Jordan	6	12	9	11	11	11	14	22	31	36	38	50	48	52	59	59
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Qatar	0	0	0	1	1	2	2	0	2	2	3	4	4	5	7	7
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	607	674	871	825	1,011	477	684	809	771	917	641	744	453	578	706	645
United Arab Emirates	1	1	2	2	4	4	5	5	6	6	7	9	7	8	9	9
Africa																
Cameroon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	54	53	48	46	40	71	91	111	133	101	123	159	165	195	220	218
Kenya	9	9	12	9	9	9	11	14	16	16	16	18	17	18	19	21
Morocco	2	2	1	1	1	3	0	0	1	0	1	0	0	0	0	0
Nigeria	2	2	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	210	226	193	211	160	171	256	331	358	346	345	298	277	275	286	265
Tunisia	20	22	22	21	22	23	25	27	27	31	37	46	44	50	53	50
Zimbabwe	3	2	2	2	2	1	2	1	1	3	1	1	2	1	3	2
Asia																
Bangladesh	13	23	16	18	17	16	17	18	21	23	25	29	33	39	45	44
China	7,570	8,131	9,873	12,455	14,320	19,214	23,726	28,992	33,528	42,622	43,227	48,344	36,217	41,764	46,592	58,115
India	698	775	617	502	454	629	616	659	817	944	1,201	1,224	1,330	1,574	1,700	1,618
Indonesia	2,322	535	612	556	368	496	786	815	705	803	1,194	1,256	1,221	1,463	1,532	1,552
Japan	38,050	32,818	39,489	48,782	30,409	29,199	36,843	40,983	38,323	39,308	40,452	39,648	38,565	29,217	23,524	22,468
Malaysia	2,145	1,700	2,193	2,062	1,283	1,763	1,888	2,344	1,618	1,359	1,149	1,542	1,431	2,010	2,272	2,133
Pakistan	225	223	217	137	119	139	178	223	263	46	51	53	45	53	66	66
Philippines	906	1,002	1,123	1,248	959	1,156	671	784	703	807	1,142	1,575	1,543	1,740	2,033	2,171
Singapore	1,101	670	826	624	532	434	222	576	1,250	1,058	413	199	140	139	188	176
South Korea	5,458	5,437	7,823	10,037	7,627	9,253	10,830	15,939	17,141	19,056	19,824	16,821	15,333	18,683	17,451	14,236
Sri Lanka	5	7	13	9	7	8	9	11	14	1	1	1	1	1	1	1
Taiwan	4,440	4,335	4,748	5,258	4,213	5,407	6,063	5,640	5,943	6,858	7,275	7,574	6,971	9,452	11,460	11,035
Thailand	681	514	519	616	577	1,053	1,225	1,370	1,508	2,485	2,550	2,267	1,565	1,590	1,220	604
Vietnam	55	59	68	100	111	142	178	219	248	278	331	400	424	498	591	636

Appendix table 6-17

Value added of communications, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	576	469	508	431	366	513	587	803	938	991	1,177	1,130	866	1,054	1,266	1,222
New Zealand	38	29	30	28	30	32	43	52	58	52	57	55	42	47	58	57

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

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Appendix table 6-18

Value added of pharmaceuticals industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	142,514	141,694	155,225	155,921	163,575	179,072	203,609	220,397	232,208	253,208	270,886	289,694	310,775	328,916	366,986	390,082
North America																
Canada	1,499	1,234	1,531	1,765	2,202	2,671	3,264	3,165	3,343	4,511	3,971	3,826	3,226	3,904	3,962	4,021
Mexico	2,698	3,093	3,775	4,354	4,905	5,426	5,243	5,381	5,845	6,270	6,800	6,934	5,797	6,409	7,237	7,508
United States	34,205	37,101	39,555	40,156	45,637	52,325	54,189	55,186	50,716	56,829	57,946	52,448	71,337	61,731	59,162	59,951
Central and South America																
Argentina	771	677	631	555	604	210	288	332	385	426	499	595	583	655	790	842
Bolivia	19	22	31	20	21	21	25	26	33	30	29	41	48	45	55	63
Brazil	5,597	5,520	4,220	4,008	3,145	3,000	3,282	3,870	5,526	6,934	7,986	9,041	8,532	10,804	12,406	11,759
Chile	327	315	183	282	194	191	182	248	298	343	373	432	408	486	571	629
Colombia	730	702	593	583	633	615	560	733	771	860	1,100	1,244	1,117	1,332	1,534	1,685
Costa Rica	33	37	40	45	52	54	58	64	66	75	90	101	88	106	124	137
Ecuador	61	13	23	144	38	55	39	47	60	58	93	100	94	99	116	130
Honduras	7	7	8	9	9	9	10	10	11	12	12	13	13	15	17	18
Jamaica	19	20	20	20	21	22	21	23	25	27	29	31	28	31	32	34
Panama	8	10	11	12	16	18	18	17	21	22	24	28	27	28	31	35
Peru	191	183	175	167	159	189	196	165	195	259	313	375	363	359	409	465
Uruguay	122	106	112	92	92	67	61	57	69	87	102	131	136	152	189	203
Venezuela	183	213	202	251	252	173	160	213	263	311	384	550	560	365	486	544
Europe																
EU	44,430	45,187	49,177	46,249	49,578	53,878	66,164	72,422	78,434	85,012	95,638	103,147	94,981	95,924	97,953	96,172
Austria	786	834	754	932	625	843	1,206	1,249	1,704	1,786	2,546	2,574	2,525	2,452	2,821	2,886
Belgium	2,025	1,938	2,472	2,333	2,610	2,987	3,635	4,009	4,327	4,669	5,119	5,825	5,764	6,404	6,688	6,433
Bulgaria	95	76	72	78	75	76	94	100	118	124	148	145	108	125	159	173
Czech Republic	186	162	161	169	178	225	272	332	404	450	497	570	480	609	632	571
Denmark	1,380	1,462	1,678	1,651	1,798	1,675	2,340	2,585	3,086	2,942	2,986	3,411	3,336	4,497	4,497	5,026
Finland	280	304	298	248	296	267	321	367	446	522	586	686	688	713	821	839
France	7,389	7,545	7,662	7,571	8,138	8,429	10,603	10,624	11,630	12,488	12,582	13,108	11,677	10,115	8,422	8,511
Germany	9,136	8,701	9,323	8,516	9,074	9,602	13,085	15,720	18,011	19,230	22,641	25,664	22,631	22,385	24,011	22,867
Greece	208	210	181	162	210	237	316	414	384	408	469	564	533	544	566	517
Hungary	462	476	351	430	555	634	918	1,067	1,115	1,253	1,320	1,423	1,282	1,220	1,386	1,378
Ireland	1,218	1,686	2,370	2,007	2,094	3,042	3,050	2,996	2,662	2,698	4,410	4,043	4,589	4,586	4,639	4,221
Italy	6,097	6,256	7,210	6,168	6,312	6,992	8,342	8,980	8,095	8,429	9,377	10,079	9,228	9,056	8,757	8,419
Netherlands	1,486	1,374	1,539	1,430	1,457	1,465	1,636	1,816	2,194	2,099	2,349	2,900	2,843	2,836	3,017	3,053
Poland	501	492	470	474	538	598	709	844	1,085	1,196	1,320	1,750	1,466	1,735	1,758	1,607
Portugal	418	339	344	303	300	343	401	426	434	447	512	629	566	542	556	587
Romania	109	138	104	118	127	147	122	145	211	246	284	392	248	271	353	342
Slovakia	102	52	82	78	83	98	83	71	91	102	119	157	111	133	142	125
Spain	2,839	2,689	2,721	2,556	2,931	2,941	3,758	4,242	4,503	5,085	5,691	6,361	6,052	6,112	6,357	6,256
Sweden	2,468	2,755	3,264	3,041	3,201	4,022	4,939	5,061	5,441	5,863	5,680	5,824	5,487	7,091	8,084	8,414
United Kingdom	7,246	7,698	8,122	7,983	8,977	9,254	10,335	11,375	12,491	14,973	17,002	17,043	15,365	14,496	14,288	13,945

Appendix table 6-18

Value added of pharmaceuticals industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	259	291	304	327	325	407	463	545	578	762	761	879	657	705	732	855
Russia	502	358	246	405	437	496	575	675	887	1,139	1,455	1,845	1,730	2,434	2,793	3,167
Switzerland	4,767	5,248	5,062	4,706	5,379	6,522	7,712	8,989	9,895	11,370	13,327	15,679	15,767	17,289	19,587	22,104
Ukraine	139	143	136	136	151	162	179	170	216	237	306	412	183	247	300	353
Middle East																
Bahrain	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
Iran	127	112	122	161	188	254	363	389	422	508	660	844	860	1,002	1,188	985
Israel	228	243	232	246	264	304	335	397	481	613	678	1,015	846	962	1,100	1,129
Jordan	66	78	76	84	95	101	107	130	159	168	243	317	306	331	377	427
Kuwait	3	2	2	3	3	4	5	6	35	32	40	45	24	29	43	48
Qatar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saudi Arabia	36	34	37	40	41	43	48	53	61	68	78	88	89	109	141	152
Turkey	984	1,280	1,320	1,473	1,062	377	720	856	1,081	670	843	1,097	871	1,041	1,196	1,379
United Arab Emirates	8	9	10	11	25	26	28	31	35	39	46	55	43	46	55	62
Africa																
Cameroon	3	5	3	2	1	4	4	6	6	6	7	12	12	12	13	13
Egypt	342	429	507	509	631	737	582	428	379	525	642	829	860	1,016	1,148	1,221
Kenya	11	12	13	12	15	15	20	22	22	26	21	24	22	24	25	30
Morocco	74	90	83	109	130	152	181	176	295	239	337	401	339	335	386	380
Nigeria	749	763	195	134	150	162	181	224	263	304	322	404	299	358	438	549
Senegal	7	8	8	7	7	6	8	11	10	12	13	14	14	16	19	30
South Africa	465	453	467	495	451	432	632	829	932	619	668	651	705	812	823	811
Tunisia	44	43	47	43	42	28	32	37	42	37	46	52	50	49	50	56
Zimbabwe	5	3	3	3	3	2	2	2	1	5	1	2	2	2	4	4
Asia																
Bangladesh	121	141	127	134	132	156	177	190	195	206	235	293	362	357	410	434
China	5,242	5,342	6,165	7,172	8,343	9,763	12,422	14,204	18,711	22,719	30,113	40,459	48,533	61,595	81,918	98,746
India	1,783	1,851	2,264	1,853	2,091	2,353	2,631	3,260	3,919	4,518	5,967	6,711	7,392	8,429	9,580	9,620
Indonesia	505	191	408	489	661	915	1,145	979	1,190	1,135	1,658	1,756	1,660	2,141	2,788	2,987
Japan	27,458	23,841	30,816	31,076	28,648	28,184	31,759	33,341	32,439	28,412	23,104	23,799	28,530	30,223	37,004	39,139
Malaysia	95	82	68	100	83	104	117	139	120	141	171	186	212	275	418	469
Pakistan	290	286	280	295	256	299	385	480	567	553	612	634	537	634	792	875
Philippines	653	547	615	663	398	423	253	309	333	400	452	580	527	546	675	751
Singapore	1,071	1,299	1,071	1,739	1,561	2,732	3,298	5,343	5,213	6,873	3,041	2,437	3,014	4,232	5,642	6,477
South Korea	3,641	2,521	2,600	3,185	2,965	3,478	3,710	4,194	5,298	6,034	6,633	6,058	5,720	6,942	7,298	7,585
Sri Lanka	4	5	5	4	4	4	5	6	8	52	34	26	25	29	32	27
Taiwan	518	463	506	528	463	484	576	602	677	779	777	762	796	864	896	958
Thailand	187	49	56	59	21	29	33	37	41	184	220	261	242	287	332	379
Vietnam	34	34	45	72	74	87	93	141	152	174	208	270	286	356	472	217

Appendix table 6-18

Value added of pharmaceuticals industry, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	1,128	957	1,001	892	876	854	1,016	1,170	1,411	1,513	1,683	1,668	1,851	2,621	3,124	3,346
New Zealand	62	43	42	40	41	49	56	65	73	69	95	95	73	122	112	121

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-19

Value added of testing, measuring, and control instruments industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	133,993	133,917	135,280	142,465	138,118	146,711	165,398	193,861	210,867	234,050	267,780	290,956	279,331	310,468	336,541	339,882
North America																
Canada	723	841	959	1,149	1,190	1,205	1,346	1,601	1,595	1,696	4,810	4,925	4,488	4,653	4,874	4,739
Mexico	608	857	896	1,363	1,206	1,361	1,125	1,124	1,094	1,216	1,281	1,299	1,240	1,473	1,661	1,612
United States	54,914	55,363	54,080	59,835	57,295	63,386	66,680	79,479	88,171	97,036	104,783	112,589	126,737	136,714	132,230	146,705
Central and South America																
Argentina	181	202	171	161	130	53	83	102	124	132	167	183	179	195	206	201
Bolivia	1	0	1	1	1	1	1	1	1	1	1	1	1	2	2	2
Brazil	1,330	1,309	965	1,203	976	909	898	1,183	1,670	2,013	2,614	4,429	3,729	5,151	6,090	5,356
Chile	52	51	41	44	28	26	29	33	37	33	36	42	39	47	55	57
Colombia	115	112	90	29	34	35	35	42	49	55	70	79	71	85	97	101
Costa Rica	4	3	3	4	3	3	2	2	2	2	3	3	3	3	4	4
Ecuador	0	0	0	0	1	1	1	2	2	2	4	4	4	4	4	5
Honduras	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
Jamaica	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Panama	1	3	2	1	2	2	2	1	2	2	2	2	2	2	2	2
Peru	12	10	8	6	5	2	0	0	0	0	0	0	0	0	0	0
Uruguay	17	11	11	13	9	5	3	5	6	6	7	8	8	10	10	11
Venezuela	66	89	84	105	105	72	67	89	109	130	160	229	233	152	202	234
Europe																
EU	44,937	46,269	46,835	45,600	45,743	48,342	58,259	65,917	69,528	75,048	88,662	89,746	72,124	73,687	85,242	79,263
Austria	764	839	802	696	758	853	1,092	1,327	1,347	1,394	1,947	2,129	1,952	2,028	2,112	1,979
Belgium	430	409	360	355	339	368	475	579	622	686	835	881	662	723	799	724
Bulgaria	10	13	16	12	13	16	20	30	35	45	64	54	40	44	55	52
Czech Republic	317	325	332	279	291	345	455	541	595	688	855	971	746	732	877	837
Denmark	848	932	955	1,044	1,195	1,047	1,404	1,533	1,655	1,868	2,184	1,927	1,660	1,418	1,486	1,381
Finland	606	630	668	659	707	694	864	856	994	1,061	1,213	1,332	1,088	1,018	701	646
France	7,651	7,654	7,639	7,458	7,371	7,548	8,705	10,401	9,846	10,316	11,431	10,943	8,992	6,328	7,769	7,903
Germany	15,035	15,249	15,300	15,592	15,332	15,938	20,400	23,152	24,919	27,663	33,165	34,194	24,875	28,391	33,694	30,919
Greece	26	25	28	26	78	105	185	160	196	226	248	253	140	116	140	133
Hungary	217	193	190	183	204	255	322	390	416	435	499	603	546	494	553	509
Ireland	895	1,020	1,285	1,529	1,832	2,371	2,927	2,636	3,268	3,077	3,962	4,029	3,604	3,945	4,730	4,348
Italy	5,077	5,264	5,278	4,728	5,089	6,104	5,798	6,750	7,303	8,293	9,691	9,740	8,845	8,804	10,892	9,749
Netherlands	1,303	1,360	1,411	1,368	1,436	1,444	1,901	2,039	2,221	2,251	2,529	2,751	2,444	2,441	2,774	2,522
Poland	539	627	792	670	711	674	710	780	958	1,064	1,339	1,846	1,393	1,668	1,897	1,781
Portugal	118	139	133	117	146	177	223	252	251	264	305	327	264	258	278	239
Romania	60	67	48	74	76	98	74	99	178	177	241	284	180	178	164	164
Slovakia	108	107	63	87	69	89	110	127	187	220	310	86	327	307	348	332
Spain	1,097	1,106	1,210	1,152	1,213	1,112	1,412	1,551	1,639	1,833	2,357	2,760	2,258	2,194	2,073	1,690
Sweden	1,894	2,079	2,017	1,463	787	999	2,291	2,464	2,625	2,797	3,058	2,833	2,156	2,675	2,972	2,814
United Kingdom	7,943	8,227	8,309	8,110	8,097	8,104	8,890	10,251	10,273	10,692	12,430	11,802	9,953	9,924	10,929	10,542

Appendix table 6-19

Value added of testing, measuring, and control instruments industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	366	408	481	381	379	522	599	655	789	908	1,111	1,206	1,147	1,167	1,396	1,379
Russia	500	312	242	225	611	876	1,194	1,813	2,110	2,653	3,557	4,620	3,271	4,540	5,721	6,078
Switzerland	5,595	5,703	5,683	5,404	5,953	6,869	8,097	9,162	10,074	11,114	12,687	15,422	13,005	14,649	17,559	17,449
Ukraine	63	46	39	36	44	51	67	86	88	102	140	182	100	120	149	150
Middle East																
Bahrain	0	0	0	0	1	1	1	1	1	1	1	2	1	2	2	2
Iran	43	39	38	42	65	69	97	127	121	132	157	191	194	226	268	211
Israel	1,633	1,759	2,015	2,410	2,341	2,168	2,227	2,228	2,273	2,687	3,242	3,580	3,575	3,726	3,939	3,642
Jordan	3	3	4	4	4	7	8	7	10	9	10	14	13	14	16	17
Kuwait	12	17	19	15	16	16	16	17	63	77	88	108	98	113	135	132
Qatar	1	1	1	2	2	2	2	0	3	4	5	8	7	9	13	14
Saudi Arabia	5	5	5	5	5	6	6	7	8	9	10	12	12	14	19	19
Turkey	89	135	128	236	115	124	188	206	221	275	362	502	425	431	399	506
United Arab Emirates	1	1	1	1	2	2	2	2	2	3	3	4	3	3	4	4
Africa																
Cameroon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	26	17	10	14	16	63	36	10	23	16	20	25	26	31	35	37
Kenya	1	1	2	5	5	6	7	7	6	6	5	6	5	6	6	7
Morocco	14	12	13	7	4	7	9	10	19	35	34	34	42	40	45	43
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	113	83	89	82	71	102	152	189	210	250	256	224	209	223	233	221
Tunisia	4	5	5	5	7	7	9	10	10	11	13	16	16	18	19	18
Zimbabwe	2	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Asia																
Bangladesh	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
China	2,125	2,322	2,395	2,881	3,092	3,386	5,276	7,607	9,485	13,288	16,914	22,742	23,102	29,745	36,717	34,479
India	206	349	391	357	420	387	504	599	704	814	1,036	1,056	1,154	1,151	1,303	1,254
Indonesia	83	52	130	138	43	11	18	31	72	232	343	393	401	464	536	543
Japan	15,016	13,858	15,168	15,961	13,933	11,877	12,827	15,394	14,967	15,731	15,527	17,870	15,138	19,838	23,408	21,209
Malaysia	283	250	209	334	365	326	323	377	362	506	597	578	540	672	730	696
Pakistan	13	13	13	30	26	31	40	49	58	71	79	82	69	82	102	106
Philippines	197	165	341	368	156	165	186	217	354	392	477	601	557	650	711	780
Singapore	566	527	629	734	744	809	866	795	957	1,085	1,381	1,467	1,570	1,709	2,207	2,354
South Korea	2,053	1,257	1,546	1,853	1,655	1,893	2,088	2,563	3,169	3,676	4,261	3,640	3,339	5,504	6,164	6,253
Sri Lanka	1	1	1	1	0	0	0	0	1	9	6	4	4	5	6	7
Taiwan	578	491	494	497	512	589	785	750	712	901	844	829	668	804	1,140	1,057
Thailand	383	98	111	116	109	199	231	258	284	284	358	357	309	458	484	464
Vietnam	6	9	10	23	24	25	34	47	45	53	64	110	174	300	499	547

Appendix table 6-19

Value added of testing, measuring, and control instruments industries, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	1,021	832	896	760	646	684	935	1,011	1,227	1,297	1,539	1,479	1,255	1,526	1,834	1,848
New Zealand	29	22	23	22	23	25	34	42	46	42	49	50	39	45	55	55

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-20

Value added of aircraft and spacecraft, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	87,919	89,652	93,560	86,022	93,297	90,683	92,078	94,627	108,789	117,581	131,191	140,177	136,358	147,614	165,951	177,760
North America																
Canada	3,444	2,980	3,585	4,294	4,281	3,637	3,833	4,219	4,724	5,222	6,199	6,960	5,707	6,113	6,648	6,969
Mexico	136	152	352	298	366	369	286	328	378	412	395	453	342	519	641	737
United States	43,770	47,007	51,535	48,600	53,775	50,333	48,198	48,596	56,586	59,739	68,962	65,654	66,231	65,911	70,420	76,374
Central and South America																
Argentina	22	21	16	13	18	3	5	6	7	7	8	8	7	7	6	6
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	539	670	1,016	1,399	1,762	1,587	1,288	1,757	1,445	1,705	2,054	5,263	6,849	8,120	9,827	10,686
Chile	21	28	28	35	24	5	11	16	10	8	9	10	10	12	14	15
Colombia	72	43	25	35	24	25	19	19	30	34	43	48	44	52	60	65
Costa Rica	2	2	2	2	2	2	1	2	2	2	3	3	3	3	4	4
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honduras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jamaica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Peru	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Europe																
EU	21,414	23,384	24,516	23,413	24,319	24,983	27,136	27,457	32,656	34,808	35,872	39,557	37,008	40,053	45,392	46,390
Austria	37	18	21	15	16	30	11	19	26	35	41	56	55	43	45	42
Belgium	326	360	467	452	484	391	447	549	569	513	573	640	507	463	505	489
Bulgaria	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1
Czech Republic	34	46	70	71	88	76	82	94	106	110	174	205	212	222	256	236
Denmark	14	5	8	11	13	13	11	15	21	21	20	34	10	7	7	6
Finland	141	150	154	110	106	123	122	133	144	138	181	179	160	113	99	104
France	6,204	5,772	5,735	5,461	5,682	5,387	6,599	4,817	7,365	8,360	8,427	9,618	10,023	9,795	9,950	9,873
Germany	4,378	5,024	5,897	5,037	5,721	6,145	6,393	6,861	8,882	7,960	9,191	10,422	8,670	9,801	12,058	12,333
Greece	191	177	218	181	144	213	198	208	267	258	244	332	287	199	200	132
Hungary	14	20	23	17	16	20	28	40	40	58	67	116	195	266	321	286
Ireland	217	222	227	255	230	243	283	302	332	345	408	393	314	293	318	303
Italy	1,685	2,157	1,735	1,759	1,685	1,726	1,591	1,987	1,997	2,438	2,062	2,797	2,647	1,975	2,296	2,212
Netherlands	305	314	311	229	271	284	412	390	451	477	430	586	483	484	569	541
Poland	135	126	118	162	160	161	156	170	210	301	343	467	345	350	469	503
Portugal	19	23	9	9	8	10	13	13	12	12	14	14	8	8	9	9
Romania	18	24	22	17	29	30	54	56	82	103	109	126	90	59	59	62
Slovakia	5	4	4	3	3	5	6	6	7	8	32	50	34	41	51	52
Spain	777	819	839	808	629	912	1,223	1,239	1,316	1,597	1,586	2,191	1,972	1,698	1,845	1,622
Sweden	397	728	655	663	687	646	809	884	1,007	906	1,063	1,136	1,008	1,283	1,654	1,540
United Kingdom	6,516	7,396	8,003	8,153	8,346	8,569	8,699	9,673	9,822	11,165	10,906	10,195	9,989	12,953	14,682	16,045

Appendix table 6-20

Value added of aircraft and spacecraft, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Europe																
Norway	172	36	49	50	97	110	131	179	169	248	217	305	295	317	383	396
Russia	11,759	8,403	5,409	1,422	1,360	1,654	2,060	1,818	1,625	2,035	2,851	3,513	3,356	5,024	6,947	7,519
Switzerland	339	314	290	251	259	298	362	429	445	507	585	710	662	755	949	969
Ukraine	92	76	66	70	74	111	175	225	300	375	582	855	585	974	1,206	1,401
Middle East																
Bahrain	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Iran	0	0	0	0	0	22	23	30	34	42	54	67	68	79	94	79
Israel	504	530	569	643	666	581	628	721	565	337	440	542	532	531	567	562
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Qatar	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	1
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	140	118	87	114	136	62	46	56	120	295	430	568	408	425	680	503
United Arab Emirates	1	1	1	1	2	2	2	3	3	3	4	5	4	4	5	5
Africa																
Cameroon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	2	2	5	4	3	4	4	6	5	6	6	7	7	7	7	9
Morocco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	81	100	39	30	35	58	87	103	115	206	211	196	182	189	181	175
Tunisia	6	6	7	6	7	8	9	10	9	9	11	13	12	15	15	15
Zimbabwe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia																
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
China	746	826	560	547	883	1,373	1,962	2,074	2,817	3,432	3,954	4,983	5,611	6,883	8,475	10,602
India	27	15	192	14	23	36	49	72	66	80	100	99	125	170	201	203
Indonesia	11	6	3	57	17	24	44	34	47	58	59	76	83	109	117	119
Japan	2,711	3,253	3,440	2,846	3,250	3,291	3,455	3,823	3,708	4,534	3,922	5,739	4,159	6,741	7,447	7,799
Malaysia	20	4	10	17	25	40	44	39	77	197	192	236	237	255	279	305
Pakistan	7	7	7	8	7	8	9	10	11	71	79	81	69	81	102	107
Philippines	3	2	1	1	1	1	1	1	2	2	2	2	2	3	3	3
Singapore	774	582	640	675	843	923	878	1,107	1,282	1,491	1,802	2,038	1,791	2,119	2,807	3,169
South Korea	266	292	286	449	453	375	361	410	381	531	719	763	841	791	862	897
Sri Lanka	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taiwan	182	164	156	161	135	153	156	154	161	129	169	201	162	177	202	209
Thailand	3	3	5	6	6	11	13	14	15	15	19	20	15	23	27	30
Vietnam	1	2	2	2	3	2	3	4	4	4	5	6	6	6	6	7

Appendix table 6-20

Value added of aircraft and spacecraft, by region/country/economy: 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania																
Australia	610	584	623	526	407	546	741	838	918	971	1,152	1,106	892	1,085	1,304	1,352
New Zealand	41	37	35	33	36	45	58	68	73	63	81	86	51	59	72	74

EU = European Union.

NOTES: Value added is the amount contributed by a country, firm, or other entity to the value of a good or service and excludes purchases of domestic and imported materials and inputs. Data are not available for EU members Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-1 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Industry Service database.

Science and Engineering Indicators 2014

Appendix table 6-21

Exports and imports of HT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	769,613	858,995	903,638	1,085,854	1,337,113	1,513,448	1,719,354	1,821,601	1,925,858	1,721,839	2,089,488	2,255,904	2,282,106
North America													
NAFTA ROW	153,613	169,979	170,331	157,680	173,726	214,814	254,148	271,054	285,214	261,469	280,523	293,287	311,030
Canada	18,381	21,265	24,550	21,464	23,232	27,196	30,093	32,721	32,408	29,703	28,946	29,299	26,084
Mexico	19,996	29,353	39,655	36,446	42,724	45,572	54,134	60,805	63,141	59,183	73,580	74,907	73,687
United States ROW	146,617	162,149	159,341	146,919	159,826	197,445	231,768	249,283	261,092	239,479	255,068	266,864	286,683
Central and South America													
Argentina	488	553	594	564	592	700	1,048	1,246	1,760	1,642	1,581	1,945	1,400
Brazil	2,217	3,755	5,817	4,952	7,273	8,047	8,722	9,454	10,380	8,323	9,048	8,882	6,979
Central America	514	3,045	1,967	5,262	6,446	7,210	7,861	9,414	9,947	12,514	17,816	21,340	22,597
Chile	72	97	121	116	146	181	201	245	312	384	401	470	467
Colombia	207	220	340	307	326	395	418	480	639	634	633	1,050	756
Peru	49	32	42	70	33	37	40	41	48	59	105	113	102
Venezuela	104	77	112	149	114	130	105	116	118	76	110	67	80
All others	662	826	818	974	1,041	1,527	1,464	1,739	1,873	1,998	2,215	2,330	2,577
Europe													
EU													
EU ROW	143,222	158,767	168,656	205,336	248,149	275,753	298,219	318,858	344,956	304,285	339,023	381,349	377,930
Austria	5,780	5,874	8,379	11,724	13,227	12,910	15,500	17,184	18,484	16,389	18,301	19,992	21,174
Belgium	11,197	13,672	17,300	22,983	27,820	32,514	35,488	38,717	42,940	40,836	44,562	48,279	47,830
Czech Republic	1,078	1,679	3,034	6,061	7,575	9,748	12,683	15,779	19,412	17,115	19,849	23,141	24,037
Denmark	6,586	7,487	8,232	11,442	13,428	16,550	16,225	17,369	17,674	16,388	13,416	15,560	16,682
Finland	6,345	9,423	11,435	12,240	14,000	19,769	19,867	16,723	18,185	10,581	9,363	8,691	7,725
France	55,709	63,098	69,166	74,791	86,198	91,164	109,695	109,163	121,558	109,837	122,011	123,809	115,997
Germany	71,133	86,875	98,694	122,512	156,784	171,986	193,431	206,538	217,152	190,640	208,446	232,251	218,653
Hungary	3,725	7,047	8,466	11,602	17,552	19,713	21,813	26,430	30,027	25,362	29,187	29,468	27,765
Ireland	18,119	26,449	33,096	54,272	62,258	64,619	65,395	65,703	67,427	60,558	59,640	61,324	58,654
Italy	18,242	20,945	23,926	26,099	31,778	34,772	37,437	41,245	42,536	38,385	41,297	48,151	50,955
Netherlands	33,342	40,772	39,544	49,402	65,230	74,607	81,525	76,898	71,370	62,336	71,076	80,240	83,317
Poland	1,247	1,456	2,060	3,292	4,018	4,485	6,855	7,870	12,751	13,632	16,905	15,910	16,333
Slovakia	458	560	787	1,177	2,012	3,231	5,569	8,975	11,181	11,288	12,537	12,079	13,537
Spain	7,765	9,168	10,167	13,842	16,931	19,184	21,238	21,922	23,560	21,247	24,703	24,072	27,225
Sweden	16,665	19,610	16,014	19,629	23,349	24,529	27,724	24,955	27,142	22,769	25,222	28,153	27,543
United Kingdom	73,410	75,701	76,678	72,406	78,074	94,734	129,708	80,502	84,551	76,157	77,985	80,927	92,151
All others	4,037	5,388	7,978	12,077	13,787	14,867	20,697	16,959	20,270	17,670	21,768	26,146	26,530
Other Europe													
Norway	2,009	2,123	2,693	2,595	3,023	3,102	3,815	4,153	4,947	4,422	4,596	4,638	4,258
Russia	1,126	1,606	2,956	4,341	4,447	1,966	2,591	2,776	4,001	3,071	3,173	5,371	5,012
Switzerland	20,277	23,424	24,831	31,541	38,780	42,731	49,476	59,771	70,941	66,515	74,222	91,474	81,044
All others	4,729	1,038	1,462	2,002	2,924	2,880	3,097	4,786	5,625	5,681	6,034	7,276	8,906

Appendix table 6-21

Exports and imports of HT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	5,970	7,991	10,740	9,232	11,238	11,443	13,439	14,495	16,521	17,917	19,721	20,833	22,163
Saudi Arabia	366	376	521	344	638	700	1,041	1,707	3,813	569	769	1,291	1,879
Turkey	763	1,366	1,678	2,562	3,796	4,207	4,513	4,289	4,001	3,622	3,816	4,315	4,770
United Arab Emirates	537	1,118	1,742	2,354	3,286	6,934	3,421	6,370	6,316	2,738	3,651	6,261	6,644
All others	414	538	561	775	1,047	1,067	1,290	1,795	2,128	1,992	2,016	2,523	1,734
Africa													
Egypt	108	116	126	138	172	213	266	293	483	462	499	518	475
Kenya	43	64	49	56	84	61	73	134	248	178	185	205	242
Morocco	492	670	661	902	1,146	1,227	1,445	1,559	1,440	989	1,086	1,240	1,149
Southern Africa	595	782	808	975	1,257	1,715	1,792	2,089	2,133	1,979	1,649	1,918	1,537
Tunisia	122	122	147	197	246	351	587	696	929	856	1,145	1,520	1,484
All others	339	466	298	453	711	871	1,135	923	1,267	866	739	1,001	1,467
Asia													
China ROW	55,506	69,667	94,262	167,996	242,611	302,047	367,220	399,464	441,423	404,097	534,032	591,934	631,693
India	1,720	1,575	2,630	3,588	4,351	5,106	6,469	9,463	12,281	14,423	16,672	21,949	25,564
Indonesia	5,051	6,131	8,362	8,204	9,313	9,650	9,226	9,790	10,374	9,654	10,846	10,690	9,986
Japan	124,234	124,426	115,913	129,070	150,785	147,996	149,812	141,732	143,504	115,063	140,681	142,965	128,082
Malaysia	44,943	50,714	56,109	62,954	71,006	78,626	85,644	83,938	74,913	74,077	86,660	87,531	80,419
Philippines	17,872	24,927	26,208	30,303	32,644	33,593	32,981	33,494	30,546	22,671	31,954	27,128	26,340
Singapore	58,173	53,401	52,298	59,666	71,586	80,009	94,283	89,069	92,378	71,545	103,406	110,277	115,867
South Korea	39,954	50,956	52,633	72,459	94,985	103,315	114,615	122,681	122,764	112,919	138,380	136,208	131,269
Taiwan	45,629	53,898	64,060	81,430	105,593	115,380	140,267	147,225	145,592	127,020	165,607	176,402	176,666
Thailand	19,918	19,751	21,171	26,798	33,972	38,688	44,716	48,171	52,645	47,960	58,600	57,462	56,586
Vietnam	162	166	345	711	769	1,221	2,005	2,896	4,424	5,064	8,320	14,434	17,066
All others	681	661	678	673	815	909	1,425	1,662	1,968	1,145	5,288	1,475	1,365
Australia/Oceania													
Australia	3,745	3,742	4,288	4,243	5,067	5,852	6,584	7,577	8,086	7,725	8,477	9,722	8,658
New Zealand	447	516	437	633	894	927	1,191	1,041	1,194	1,054	1,138	1,173	996
Pacific Islands	36	27	23	33	67	45	41	64	84	182	67	126	112
Imports													
World	769,613	858,995	903,638	1,085,854	1,337,113	1,513,448	1,719,354	1,821,601	1,925,858	1,721,839	2,089,488	2,255,904	2,282,106
North America													
NAFTA ROW	182,783	215,328	223,556	253,166	304,720	330,130	367,982	381,584	397,173	359,518	430,264	462,972	482,834
Canada	34,741	38,964	40,611	36,968	42,686	47,933	52,367	54,655	59,462	52,150	59,296	65,232	69,546
Mexico	16,917	20,899	27,455	28,147	35,009	37,844	47,378	47,529	56,374	49,488	63,067	65,960	71,743
United States ROW	162,505	198,253	208,705	235,201	279,079	299,753	330,084	351,156	352,766	324,777	384,975	409,562	416,968
Central and South America													
Argentina	4,585	5,090	3,510	2,025	3,726	4,793	6,509	7,371	8,377	7,574	10,119	11,651	12,012
Brazil	11,891	10,912	12,819	9,363	13,218	17,075	22,650	22,813	36,199	29,855	38,597	42,076	41,784
Central America	2,736	4,211	4,083	5,142	5,238	6,516	8,182	8,809	9,847	9,983	10,861	13,897	15,495

Appendix table 6-21

Exports and imports of HT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	2,223	1,995	2,479	1,845	2,586	3,772	5,603	5,731	6,452	6,442	7,859	9,759	9,745
Colombia	2,425	1,689	1,895	2,713	2,867	4,685	5,387	6,168	7,786	6,997	8,379	9,502	9,956
Peru	1,071	766	832	972	1,109	1,583	2,169	3,457	3,625	3,227	4,150	4,894	5,086
Venezuela	1,734	2,079	2,356	1,210	2,480	3,987	5,674	6,854	7,791	6,559	6,233	7,474	9,242
All others	4,649	4,512	5,010	4,854	5,880	7,012	8,600	9,155	11,188	9,094	11,816	12,338	12,091
Europe													
EU													
EU ROW	163,529	196,042	192,038	221,215	281,232	311,736	353,305	374,141	400,802	348,005	400,306	418,119	392,574
Austria	8,995	10,791	11,605	13,699	16,961	18,258	20,151	19,919	20,950	19,711	20,211	22,190	22,692
Belgium	16,180	20,326	26,407	36,966	49,551	58,059	62,530	63,760	70,827	67,035	64,768	63,857	65,121
Czech Republic	3,202	3,875	5,350	7,957	10,717	13,301	17,008	20,302	22,579	19,929	25,407	26,518	25,482
Denmark	7,162	7,356	7,905	9,403	11,270	13,837	17,325	14,153	14,233	12,637	12,395	13,584	13,970
Finland	6,476	7,652	7,977	9,805	12,459	15,754	17,494	16,808	16,392	11,831	11,317	10,061	9,993
France	46,928	57,962	60,957	67,784	81,398	89,472	114,251	100,840	110,613	104,070	110,623	121,462	119,641
Germany	63,911	78,732	93,481	107,598	130,171	147,834	174,984	169,492	181,592	165,574	190,177	199,532	191,939
Hungary	3,220	4,901	6,282	10,500	13,793	14,579	16,709	20,153	21,801	18,613	22,480	23,416	22,304
Ireland	12,412	17,211	20,936	18,259	22,713	25,535	25,909	26,011	22,214	17,498	16,455	17,108	15,812
Italy	25,332	30,593	33,111	41,493	49,896	51,111	54,319	55,726	58,263	54,759	66,349	68,270	60,259
Netherlands	42,446	51,519	48,526	61,908	76,682	84,162	95,636	91,667	91,360	77,535	92,087	95,437	97,703
Poland	4,899	5,915	6,909	8,042	10,634	13,727	22,016	22,664	29,706	23,960	28,743	29,619	28,218
Slovakia	1,169	1,167	1,496	2,287	3,338	4,987	7,579	9,907	10,787	9,769	12,258	13,717	13,492
Spain	15,766	22,495	23,724	32,326	38,368	44,982	52,727	52,948	59,985	45,956	47,959	45,668	46,501
Sweden	11,693	12,726	12,277	13,497	17,396	18,106	20,551	20,397	21,156	18,075	21,258	22,167	21,297
United Kingdom	72,659	82,269	73,029	76,454	91,493	98,519	115,719	102,422	102,795	88,466	95,904	101,248	98,015
All others	12,692	16,992	18,367	23,447	30,266	33,143	41,027	41,044	46,815	39,492	39,160	41,110	38,315
Other Europe													
Norway	4,681	4,946	5,642	6,202	7,500	8,130	8,873	9,860	10,321	9,762	10,468	11,762	13,752
Russia	7,326	4,480	7,443	11,778	16,203	20,258	25,235	30,149	36,780	25,148	34,512	41,872	47,796
Switzerland	13,327	17,143	17,104	22,579	25,742	30,474	32,390	34,641	36,465	33,404	36,469	42,251	37,862
All others	8,071	3,543	5,322	6,820	9,216	10,496	12,798	15,582	17,836	13,968	14,654	16,302	14,970
Middle East													
Israel	3,927	6,441	5,997	5,317	7,155	7,957	8,428	8,851	9,201	7,790	8,478	9,666	9,765
Saudi Arabia	5,955	7,340	6,114	6,229	5,959	7,863	9,154	9,688	11,462	12,060	14,656	15,456	17,696
Turkey	5,287	7,224	5,862	8,425	12,455	14,828	17,769	18,662	20,243	17,081	21,474	24,968	22,842
United Arab Emirates	4,484	5,638	7,858	11,746	13,433	23,367	24,263	22,707	24,262	22,807	25,555	32,494	46,497
All others	5,124	5,388	6,661	10,017	12,125	14,101	14,551	18,721	20,909	20,261	20,784	22,696	24,024
Africa													
Egypt	2,656	2,419	2,852	2,325	2,558	3,480	4,005	4,281	4,498	4,725	5,895	5,183	5,752
Kenya	372	378	943	500	767	994	1,449	1,310	1,280	1,379	1,675	1,800	1,884
Morocco	973	1,310	1,284	1,938	2,108	2,357	2,875	2,950	3,034	3,022	3,336	3,338	3,271
Southern Africa	4,683	4,921	5,293	6,335	8,367	9,890	10,685	10,809	11,102	9,331	11,845	13,414	13,405

Appendix table 6-21

Exports and imports of HT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	632	930	852	909	1,098	1,293	1,425	1,812	2,070	2,088	2,344	2,680	2,944
All others	5,286	6,172	7,379	9,607	12,071	15,322	16,871	19,599	28,878	22,036	21,486	24,625	25,979
Asia													
China ROW	58,268	62,371	86,187	137,852	178,426	216,788	258,534	291,504	299,314	284,038	369,304	395,495	392,008
India	4,193	4,693	6,165	9,726	12,988	15,878	23,603	29,632	30,151	31,171	34,272	37,851	42,790
Indonesia	5,390	2,494	3,365	3,914	4,745	4,754	5,183	7,553	13,289	12,440	16,419	17,419	19,145
Japan	56,718	61,831	70,818	77,599	90,410	97,885	104,056	100,709	104,502	93,179	117,344	127,136	136,207
Malaysia	26,156	25,473	27,842	33,957	37,902	39,946	46,276	48,007	42,234	37,293	52,436	49,452	48,450
Philippines	14,908	15,244	16,467	18,404	20,061	19,631	22,809	22,820	21,529	15,912	20,730	17,893	18,082
Singapore	47,637	45,443	47,140	51,746	65,363	73,881	85,799	80,654	81,423	68,623	88,501	89,816	89,580
South Korea	26,162	30,321	33,861	42,589	49,880	54,956	61,200	62,206	63,623	55,013	68,672	75,201	74,432
Taiwan	30,135	36,163	34,399	40,700	49,029	52,156	55,133	52,036	48,110	42,519	56,717	60,044	54,417
Thailand	15,380	12,970	16,338	17,789	20,818	24,282	27,160	27,831	27,487	25,094	31,818	34,943	35,102
Vietnam	1,248	1,113	1,538	2,761	3,846	3,675	4,177	6,106	7,072	8,822	10,560	14,179	15,292
All others	4,481	4,590	4,385	6,212	9,795	10,834	13,541	14,607	15,810	13,871	16,613	22,883	23,137
Australia/Oceania													
Australia	12,340	13,804	13,109	18,278	22,303	24,380	26,389	27,547	31,228	29,668	34,569	40,461	42,599
New Zealand	2,646	2,757	2,745	3,185	3,897	5,040	5,205	5,097	4,987	4,648	5,080	6,312	5,622
Pacific Islands	378	538	501	854	731	829	801	933	1,185	1,019	947	1,062	1,068

EU = European Union; HT = high technology; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: High-technology export goods include aerospace, communications and semiconductors, computers and office machinery, scientific instruments and measuring equipment, and pharmaceuticals. ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

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Appendix table 6-22

U.S. trade in R&D services, by affiliation and by selected region/country/economy: 2011

(Millions of current U.S. dollars)

Affiliation and region/country/economy	Exports	Imports	Trade balance
Total	23,364	22,360	1,004
Unaffiliated	2,954	3,922	-968
Affiliated	20,410	18,438	1,972
U.S. parents from/to their foreign affiliates	11,557	15,312	-3,755
U.S. affiliates from/to their foreign parent groups[a]	8,853	3,127	5,726
All regions/countries/economies	23,364	22,360	1,004
Canada	548	1,945	-1,397
Europe	15,157	10,411	4,746
Belgium-Luxembourg	1,039	903	136
France	336	1,203	-867
Germany	677	992	-315
Ireland	3,741	1,058	2,683
Italy	328	295	33
Netherlands	1,325	1,122	203
Norway	169	88	81
Spain	97	236	-139
Sweden	1,124	174	950
Switzerland	4,458	955	3,503
United Kingdom	1,001	2,440	-1,439
Other	863	944	-81
Latin America and OWH	3,274	1,750	1,524
Central and South America	262	1,586	-1,324
Argentina	18	147	-129
Brazil	40	528	-488
Chile	7	59	-52
Mexico	105	464	-359
Venezuela	12	11	1
Other	82	377	-295
OWH	3,012	165	2,847
Bermuda	2,162	109	2,053
Other	850	55	795
Africa	305	377	-72
South Africa	41	65	-24
Other	264	311	-47
Middle East	368	1,293	-925
Israel	106	1,258	-1,152
Saudi Arabia	33	2	31
Other	228	32	196
Asia and Pacific	3,711	6,583	-2,872
Australia	114	345	-231
China	89	1,287	-1,198
Hong Kong	78	67	11
India	32	2,109	-2,077
Indonesia	55	12	43
Japan	2,413	1,376	1,037
Malaysia	208	373	-165
New Zealand	2	22	-20
Philippines	10	22	-12
Singapore	10	515	-88
South Korea	189	152	37
Taiwan	49	247	-198
Thailand	28	23	5
Other	16	34	-18

Appendix table 6-22

U.S. trade in R&D services, by affiliation and by selected region/country/economy: 2011

(Millions of current U.S. dollars)

Affiliation and region/country/economy	Exports	Imports	Trade balance
International organizations and unallocated	1	*	NA
Addenda			
EU	10,418	9,128	1,290

* = ≤ $500,000; NA = not available.

EU = European Union; OWH = other Western Hemisphere.

[a] In addition to transactions with its foreign parent, a U.S. affiliate's exports and imports include transactions with other members of its foreign parent group. The foreign parent group is defined as (1) the foreign parent; (2) any foreign person, proceeding up the foreign parent's ownership chain, that owns more than 50% of the foreign person below it, up to and including the ultimate beneficial owner; and (3) any foreign person, proceeding down the ownership chain(s) of each of these members, that is owned more than 50% by the person above it.

NOTES: Trade balance is exports minus imports. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: Bureau of Economic Analysis, U.S. International Services, Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons, http://www.bea.gov/international/international_services.htm, accessed 15 January 2013.

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Appendix table 6-23

U.S. trade in research, development, and testing services, by affiliation and by selected region/country/economy: 2006–10

(Millions of current U.S. dollars)

Affiliation and region/country/economy	2006			2007			2008			2009			2010		
	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Total	12,810	9,276	3,534	15,625	13,032	2,593	17,345	16,322	1,023	18,136	16,641	1,495	21,385	18,927	2,458
Unaffiliated	1,664	2,324	-660	2,252	3,260	-1,008	2,848	3,776	-928	2,298	3,670	-1,372	3,016	3,532	-516
Affiliated	11,146	6,953	4,193	13,373	9,772	3,601	14,498	12,546	1,952	15,837	12,971	2,866	18,369	15,395	2,974
U.S. parents from/to their foreign affiliates	4,848	5,182	-334	7,630	7,445	185	7,501	9,312	-1,811	8,751	10,050	-1,299	10,192	12,273	-2,081
U.S. affiliates from/to their foreign parent groups[a]	6,298	1,770	4,528	5,743	2,327	3,416	6,996	3,234	3,762	7,087	2,921	4,166	8,177	3,122	5,055
All regions/countries/economies	12,810	9,276	3,534	15,625	13,032	2,593	17,345	16,322	1,023	18,136	16,641	1,495	21,385	18,927	2,458
Canada	535	867	-332	344	1,307	-963	445	1,574	-1,129	456	1,428	-972	388	1,749	-1,361
Europe	8,089	5,782	2,307	9,125	7,387	1,738	9,426	8,652	774	9,608	8,392	1,216	12,604	9,347	3,257
Belgium-Luxembourg	172	341	-169	256	336	-80	322	334	-12	274	375	-101	256	470	-214
France	*	548	NA	419	760	-341	459	706	-247	341	1,081	-740	330	1,151	-821
Germany	823	790	33	934	994	-60	887	1,062	-175	661	913	-252	687	882	-195
Ireland	1,326	235	1,091	2,120	384	1,736	2,151	391	1,760	2,479	393	2,086	3,462	1,126	2,336
Italy	109	168	-59	142	176	-34	107	249	-142	53	218	-165	77	216	-139
Netherlands	1,201	829	372	1,229	931	298	1,214	1,078	136	1,076	1,008	68	1,206	961	245
Norway	95	41	54	137	34	103	103	52	51	110	46	64	128	78	50
Spain	23	92	-69	44	134	-90	67	181	-114	106	223	-117	131	211	-80
Sweden	951	104	847	1,020	124	896	893	133	760	883	139	744	1,195	160	1,035
Switzerland	1,297	347	950	1,435	331	1,104	1,812	896	916	2,125	768	1,357	3,489	1,003	2,486
United Kingdom	846	1,899	-1,053	776	2,699	-1,923	626	2,904	-2,278	705	2,458	-1,753	791	2,308	-1,517
Other	*	388	NA	612	484	128	784	667	117	795	769	26	852	781	71
Latin America and OWH	1,676	231	1,445	3,376	381	2,995	3,477	469	3,008	4,137	878	3,259	3,742	1,214	2,528
Central and South America	118	209	-91	133	347	-214	221	451	-230	186	846	-660	208	1,057	-849
Argentina	16	39	-23	15	35	-20	21	40	-19	25	82	-57	19	108	-89
Brazil	20	55	-35	35	56	-21	35	68	-33	21	255	-234	47	359	-312
Chile	2	5	-3	1	21	-20	1	9	-8	3	28	-25	4	47	-43
Mexico	49	80	-31	47	187	-140	99	269	-170	74	354	-280	82	389	-307
Venezuela	17	3	14	16	2	14	20	4	16	9	19	-10	10	19	-9
Other	14	27	-13	20	46	-26	45	60	-15	55	109	-54	46	135	-89
OWH	1,558	22	1,536	3,242	34	3,208	3,256	18	3,238	3,950	31	3,919	3,535	157	3,378
Bermuda	754	1	753	2,072	1	2,071	2,155	*	NA	3,021	*	NA	2,696	126	2,570
Other	804	21	783	1,170	33	1,137	1,100	17	1,083	929	31	898	839	31	808
Africa	118	195	-77	201	224	-23	354	281	73	231	265	-34	297	323	-26
South Africa	11	39	-28	20	47	-27	53	57	-4	33	53	-20	48	56	-8
Other	106	156	-50	182	177	5	300	224	76	198	213	-15	249	267	-18
Middle East	107	588	-481	237	775	-538	402	940	-538	357	1,006	-649	397	1,070	-673
Israel	45	557	-512	52	710	-658	137	860	-723	116	959	-843	90	1,029	-939
Saudi Arabia	7	1	6	20	*	NA	62	1	61	19	1	18	27	1	26

Appendix table 6-23

U.S. trade in research, development, and testing services, by affiliation and by selected region/country/economy: 2006–10

(Millions of current U.S. dollars)

Affiliation and region/country/economy	2006			2007			2008			2009			2010		
	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Other	55	30	25	165	*	NA	203	79	124	222	46	176	280	40	240
Asia and Pacific	2,235	1,614	621	2,293	2,956	-663	3,189	4,407	-1,218	3,345	4,672	-1,327	3,955	5,224	-1,269
Australia	60	153	-93	70	222	-152	115	235	-120	113	240	-127	123	292	-169
China	32	92	-60	43	473	-430	56	585	-529	59	765	-706	81	955	-874
Hong Kong	9	38	-29	20	42	-22	20	48	-28	31	45	-14	62	51	11
India	28	427	-399	19	923	-904	18	1,494	-1,476	37	1,356	-1,319	31	1,625	-1,594
Indonesia	17	12	5	62	28	34	61	26	35	48	23	25	34	14	20
Japan	1,795	550	1,245	1,614	773	841	2,171	1,278	893	2,119	1,441	678	2,304	1,303	1,001
Malaysia	9	38	-29	7	103	-96	17	299	-282	39	291	-252	86	404	-318
New Zealand	4	5	-1	4	8	-4	2	13	-11	1	14	-13	20	15	5
Philippines	2	7	-5	5	15	-10	8	23	-15	8	18	-10	9	17	-8
Singapore	189	119	70	332	147	185	492	73	419	638	196	442	962	246	716
South Korea	43	61	-18	51	78	-27	146	76	70	186	110	76	183	106	77
Taiwan	25	53	-28	25	103	-78	34	215	-181	27	140	-113	26	149	-123
Thailand	17	8	9	21	9	12	35	14	21	23	12	11	22	21	1
Other	5	50	-45	19	32	-13	15	27	-12	15	23	-8	12	28	-16
International organizations and unallocated	49	0	49	49	0	49	53	0	53	2	0	2	1	0	1
Addenda															
EU[b]	6,642	5,233	1,409	7,478	6,854	624	7,428	7,501	-73	7,305	7,379	-74	8,932	8,108	824

* = ≤ $500,000; NA = not available.

EU = European Union; OWH = other Western Hemisphere.

[a] In addition to transactions with its foreign parent, a U.S. affiliate's exports and imports include transactions with other members of its foreign parent group. The foreign parent group is defined as (1) the foreign parent; (2) any foreign person, proceeding up the foreign parent's ownership chain, that owns more than 50% of the foreign person below it, up to and including the ultimate beneficial owner; and (3) any foreign person, proceeding down the ownership chain(s) of each of these members, that is owned more than 50% by the person above it.

[b] Data reflect the country composition of the EU for the given year.

NOTES: Trade balance is exports minus imports. Data for 2006–10 include transactions in testing services. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: Bureau of Economic Analysis, U.S. International Services, Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons, http://www.bea.gov/international/international_services.htm, accessed 15 January 2013.

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Appendix table 6-24

Exports and imports of all manufactured products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	3,366,146	3,342,849	4,032,209	4,935,681	6,181,111	7,180,534	8,677,499	10,532,550	13,012,053	9,895,315	12,347,674	15,093,016	14,703,885
North America													
NAFTA ROW	449,567	425,715	444,736	434,606	498,614	621,452	735,621	867,241	985,081	789,853	959,884	1,128,598	1,128,665
Canada	196,906	219,422	235,159	247,016	287,522	337,068	365,717	394,278	437,960	296,491	370,405	429,941	379,553
Mexico	100,981	124,662	152,982	157,731	180,352	201,253	236,696	262,355	283,696	225,141	297,125	348,870	343,428
United States ROW	398,535	380,582	393,811	381,195	431,264	528,774	622,941	721,906	806,541	658,642	792,069	921,065	945,391
Central and South America													
Argentina	23,807	20,255	23,349	25,912	30,421	34,446	42,982	51,735	64,648	50,068	59,352	72,518	62,588
Brazil	47,036	43,176	52,265	64,833	87,039	106,873	125,094	151,388	185,347	138,947	183,824	237,410	205,563
Central America	12,145	14,728	16,696	20,888	23,237	24,388	26,094	29,490	35,573	36,884	42,225	53,246	54,235
Chile	14,214	12,800	15,344	17,697	28,032	35,574	52,120	61,496	61,119	47,247	62,662	74,536	69,013
Colombia	10,269	10,553	12,112	13,024	17,076	21,825	23,841	28,150	39,643	30,485	39,210	60,784	59,795
Peru	6,168	5,271	6,401	8,323	12,204	16,852	22,421	29,044	32,525	27,332	36,031	47,436	40,224
Venezuela	23,901	21,044	27,886	30,351	49,134	77,453	72,834	56,207	145,650	107,451	130,645	177,607	204,324
All others	25,228	19,895	25,215	30,230	40,939	52,916	60,283	66,047	88,860	59,189	70,786	86,377	83,539
Europe													
EU													
EU ROW	716,448	703,985	848,235	1,026,222	1,221,916	1,367,398	1,523,571	1,925,553	2,244,657	1,694,519	2,002,756	2,388,946	2,340,307
Austria	49,008	52,715	58,676	80,351	98,752	106,532	124,627	149,776	161,685	126,761	142,055	164,868	160,547
Belgium	140,478	134,276	144,983	199,666	229,768	271,026	286,555	364,964	408,681	301,826	346,592	421,231	400,253
Czech Republic	20,249	24,208	31,058	46,117	56,134	63,859	80,339	104,884	127,361	100,426	118,186	137,929	146,463
Denmark	36,840	38,129	40,715	52,573	62,598	71,322	79,306	93,324	106,527	83,064	84,271	100,136	98,037
Finland	39,163	40,821	45,206	52,531	63,885	70,489	82,836	99,905	110,394	70,585	76,996	89,612	75,595
France	254,194	267,577	272,237	331,018	383,622	400,216	449,513	523,823	578,932	444,888	488,956	550,053	545,039
Germany	471,360	501,983	530,958	693,980	847,285	912,974	1,038,714	1,252,774	1,373,846	1,043,297	1,185,816	1,380,560	1,307,815
Hungary	18,039	24,051	30,863	40,609	51,248	59,020	70,689	93,561	105,220	77,096	89,362	102,047	95,370
Ireland	45,115	66,766	84,620	109,057	125,452	132,742	135,877	149,522	149,904	136,635	139,646	151,800	146,638
Italy	207,315	203,937	217,495	268,338	319,011	342,399	386,868	462,838	512,651	380,839	415,089	488,458	503,530
Netherlands	149,966	145,722	202,776	240,815	297,288	334,740	390,720	461,940	541,792	403,517	478,616	541,547	502,768
Poland	21,993	24,247	32,102	47,574	59,900	71,142	91,012	112,645	139,186	107,231	128,319	156,637	157,145
Slovakia	8,926	10,066	13,659	21,211	29,720	32,760	41,404	56,969	67,673	53,089	63,647	77,694	88,659
Spain	89,303	95,559	101,098	137,066	163,072	167,132	187,361	232,052	258,218	195,529	224,675	269,214	288,147
Sweden	77,542	79,050	76,679	96,227	119,890	124,071	139,935	168,764	187,785	129,870	159,611	191,014	189,036
United Kingdom	263,149	258,391	264,885	290,595	331,259	369,096	427,590	438,599	472,928	355,366	412,429	481,336	555,829
All others	61,600	62,070	71,487	97,995	125,460	136,217	164,839	193,664	231,754	173,659	209,598	281,797	282,433
Other Europe													
Norway	45,636	39,831	52,553	61,706	82,049	96,924	117,312	127,891	168,685	115,407	127,928	158,840	140,759
Russia	86,079	78,435	124,815	162,099	219,148	277,648	387,215	441,993	601,534	413,825	515,487	685,046	586,327
Switzerland	77,496	80,917	80,647	97,278	116,856	125,159	138,773	175,999	210,036	178,716	224,106	284,095	247,003
All others	26,368	24,589	44,392	51,108	71,323	96,465	138,597	132,138	179,013	119,523	138,525	185,836	192,748

Appendix table 6-24

Exports and imports of all manufactured products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	21,993	26,230	33,674	33,979	40,615	44,693	48,536	56,276	64,579	52,124	62,343	71,851	75,999
Saudi Arabia	58,439	56,696	80,866	97,879	138,738	183,218	221,903	260,274	440,061	236,376	312,738	473,719	492,057
Turkey	23,839	25,631	30,236	46,185	61,687	70,672	90,684	111,637	139,096	103,123	113,806	141,006	153,558
United Arab Emirates	25,066	32,777	46,420	93,977	134,717	143,262	194,641	202,301	295,621	228,927	275,141	341,097	359,286
All others	79,126	91,308	134,382	155,995	197,822	207,195	327,145	402,840	564,256	389,074	443,056	718,831	510,572
Africa													
Egypt	5,825	5,339	7,548	10,827	13,945	18,124	24,813	28,801	39,568	29,597	32,743	39,318	34,212
Kenya	1,695	1,461	1,406	2,209	2,470	3,364	2,932	3,116	4,351	3,769	4,281	4,773	5,541
Morocco	6,007	6,418	6,742	8,089	9,956	11,012	12,392	14,939	19,951	12,632	16,571	20,220	32,244
Southern Africa	31,145	26,514	34,276	38,420	53,659	60,402	67,833	84,729	102,790	74,254	97,164	140,334	108,774
Tunisia	5,564	6,012	6,684	8,624	9,945	10,360	12,665	15,408	20,177	15,152	17,041	18,418	17,903
All others	75,919	66,876	96,551	118,338	153,306	204,877	269,536	318,808	435,214	274,815	376,762	454,801	451,551
Asia													
China ROW	246,117	278,771	355,937	537,591	717,490	875,352	1,067,126	1,323,419	1,538,084	1,293,577	1,661,113	1,922,815	2,042,823
India	37,049	36,752	49,032	69,650	94,426	117,589	150,144	189,811	242,118	208,484	274,347	370,496	437,897
Indonesia	54,758	54,063	62,906	71,399	82,773	96,163	114,259	130,682	158,949	129,944	172,074	216,330	194,593
Japan	413,633	412,106	402,071	464,743	556,405	587,501	636,844	719,317	795,989	593,861	776,867	832,318	758,968
Malaysia	86,496	88,430	97,296	114,347	135,512	155,954	178,085	193,907	225,404	176,722	224,328	259,377	233,373
Philippines	28,510	35,866	37,873	43,810	48,251	50,898	53,664	57,344	55,903	41,125	57,386	56,965	55,404
Singapore	100,633	93,546	96,557	117,405	145,525	172,854	237,892	277,747	327,780	251,925	338,908	413,524	450,411
South Korea	129,059	139,570	162,155	203,892	268,271	303,088	352,167	394,180	458,900	384,958	491,920	596,806	605,157
Taiwan	120,852	126,220	141,103	169,919	211,503	231,716	267,001	288,258	296,048	240,908	313,198	347,621	355,413
Thailand	55,046	56,496	62,591	78,630	98,723	112,894	132,073	159,278	191,037	159,325	204,236	234,498	227,923
Vietnam	6,962	8,588	12,570	18,766	24,410	30,207	37,435	46,032	61,887	56,485	69,853	89,006	99,598
All others	36,046	36,608	52,655	64,120	79,691	91,835	116,175	138,830	211,713	140,873	191,665	245,355	246,157
Australia/Oceania													
Australia	67,183	57,249	70,575	77,038	94,555	113,734	135,035	159,949	209,527	172,684	229,160	294,049	246,038
New Zealand	8,614	7,551	8,235	9,554	11,656	12,659	13,573	15,844	18,569	15,039	18,360	21,419	18,290
Pacific Islands	1,676	1,608	1,527	1,910	2,368	3,091	3,760	5,056	5,693	4,411	4,014	4,167	3,566
Imports													
World	3,366,146	3,342,849	4,032,209	4,935,681	6,181,111	7,180,534	8,677,499	10,532,550	13,012,053	9,895,315	12,347,674	15,093,016	14,703,885
North America													
NAFTA ROW	655,902	763,621	856,891	973,637	1,168,860	1,350,288	1,521,723	1,638,631	1,797,834	1,344,128	1,655,019	1,927,257	1,971,525
Canada	183,707	200,120	207,108	221,034	254,166	301,610	335,613	364,175	395,251	307,017	378,619	441,767	449,883
Mexico	86,561	105,221	124,722	126,344	152,088	172,418	203,990	240,244	272,407	210,167	274,284	329,650	347,373
United States ROW	632,488	757,233	862,277	977,595	1,163,131	1,321,903	1,471,853	1,545,510	1,673,292	1,217,365	1,501,831	1,727,119	1,713,976
Central and South America													
Argentina	26,545	21,717	17,666	12,832	20,771	25,504	33,963	44,849	58,087	39,069	58,330	78,695	78,249
Brazil	58,015	46,420	54,448	46,320	62,066	73,516	93,485	123,868	186,967	133,551	195,729	245,380	234,394
Central America	29,081	32,678	34,276	38,947	44,185	51,224	59,762	77,111	97,451	85,313	97,673	121,492	131,955

Appendix table 6-24

Exports and imports of all manufactured products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	16,910	12,450	15,146	16,720	21,420	30,497	37,378	46,890	63,072	42,886	59,941	76,897	71,615
Colombia	13,580	8,825	10,935	12,836	15,900	20,796	25,459	31,604	41,031	32,750	43,034	55,442	54,916
Peru	7,080	5,695	6,004	7,736	8,773	11,511	14,972	22,102	29,925	21,034	30,152	38,688	39,466
Venezuela	13,533	11,670	15,478	7,771	14,153	20,831	33,539	46,000	42,504	33,086	32,256	42,071	54,683
All others	39,346	40,545	50,772	53,877	60,219	78,445	102,764	97,385	156,552	114,701	137,409	174,155	179,876
Europe													
EU													
EU ROW	697,210	735,558	863,338	1,036,887	1,302,194	1,542,347	1,856,893	2,218,716	2,673,055	1,917,904	2,301,275	2,748,371	2,560,165
Austria	57,042	61,173	64,185	84,154	108,084	117,894	134,987	155,160	173,630	137,169	153,910	182,954	188,618
Belgium	138,940	143,313	157,209	211,584	260,032	305,675	331,209	414,271	470,097	349,816	395,602	479,915	472,135
Czech Republic	25,093	25,795	33,362	46,730	58,873	66,287	84,171	109,670	130,987	98,777	120,394	139,289	136,328
Denmark	39,298	38,188	39,998	50,525	60,882	70,312	83,046	90,091	104,573	77,502	80,054	93,819	92,688
Finland	30,384	31,702	34,794	43,570	53,967	62,575	75,571	88,618	99,650	63,116	72,922	85,633	84,551
France	243,258	265,357	275,707	339,563	408,343	452,741	517,841	600,787	687,690	532,723	588,607	700,223	689,229
Germany	401,310	421,666	439,164	542,388	649,433	712,681	853,836	990,766	1,137,848	877,157	1,009,504	1,192,582	1,168,452
Hungary	20,363	25,022	31,070	44,897	52,615	61,895	76,811	94,791	111,760	78,163	88,160	101,303	101,400
Ireland	39,674	45,275	51,072	56,464	69,075	78,847	84,209	93,365	88,738	63,282	65,239	71,422	69,847
Italy	180,518	190,883	214,898	277,207	334,561	367,849	426,383	485,663	560,441	383,254	455,609	521,144	445,875
Netherlands	160,389	168,354	202,011	240,671	296,061	329,934	380,899	445,343	525,848	397,952	474,225	541,280	550,535
Poland	38,532	40,087	43,566	59,061	75,979	93,650	126,225	160,441	201,679	145,608	169,690	208,409	202,102
Slovakia	10,682	9,994	12,315	18,730	25,559	31,107	40,462	57,118	66,507	51,628	63,075	77,029	75,991
Spain	112,034	134,354	148,078	203,493	252,333	278,376	320,557	385,545	415,128	283,030	319,455	364,455	371,581
Sweden	58,347	59,004	59,722	74,349	93,928	100,137	114,834	141,312	156,858	109,370	137,286	161,075	152,131
United Kingdom	280,252	296,197	304,335	356,133	423,786	473,186	566,759	598,709	620,886	474,993	553,050	646,679	597,733
All others	98,889	104,780	123,116	166,870	221,111	237,539	293,705	341,518	410,617	283,524	315,602	378,146	363,963
Other Europe													
Norway	32,312	29,055	29,626	35,623	44,043	50,181	60,673	75,345	85,238	65,297	75,611	87,656	98,713
Russia	61,988	29,569	44,724	64,596	87,022	108,907	145,068	200,187	255,934	152,460	198,004	274,517	316,643
Switzerland	73,170	77,814	85,730	95,879	109,674	126,089	144,011	176,531	207,484	183,456	210,251	249,619	225,968
All others	49,066	40,053	56,395	74,496	119,986	121,587	140,791	189,352	266,639	166,861	217,873	303,941	237,923
Middle East													
Israel	24,925	28,230	31,738	32,525	41,107	47,464	51,727	63,773	77,731	51,986	66,956	82,082	75,489
Saudi Arabia	26,453	29,957	31,617	36,366	41,147	52,472	61,579	80,636	105,028	83,907	97,366	120,188	132,164
Turkey	43,675	37,306	39,247	65,302	92,899	111,597	144,774	173,818	209,369	147,881	196,647	261,453	241,138
United Arab Emirates	22,937	30,161	38,390	81,999	107,818	104,987	161,857	158,588	200,979	240,051	266,794	198,309	293,172
All others	42,948	37,882	67,811	86,779	106,497	132,110	168,877	184,758	231,825	182,999	227,110	266,727	277,003
Africa													
Egypt	18,150	19,019	18,207	18,429	22,665	30,456	35,656	44,296	59,828	50,701	61,755	70,044	74,364
Kenya	3,187	2,634	3,887	3,904	5,227	7,060	9,579	11,067	14,245	12,400	15,004	13,864	15,860
Morocco	8,520	9,639	10,519	13,389	16,721	18,983	23,463	30,515	39,701	30,388	34,563	37,160	38,593
Southern Africa	28,723	22,226	26,131	33,348	46,523	56,181	71,616	85,290	96,585	69,824	94,367	117,459	115,769

Appendix table 6-24

Exports and imports of all manufactured products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	7,509	8,101	9,010	11,115	13,061	12,981	16,566	18,255	26,004	19,791	23,760	26,657	28,499
All others	51,482	52,520	66,153	84,724	106,973	117,912	145,552	192,192	263,969	225,748	254,521	316,617	328,992
Asia													
China ROW	235,031	216,945	290,044	448,433	579,247	660,204	778,847	962,192	1,129,937	1,012,592	1,394,416	1,735,251	1,645,779
India	36,914	42,077	55,685	83,914	108,407	159,127	173,413	234,316	317,513	269,028	362,311	468,093	503,105
Indonesia	42,270	25,072	34,778	41,567	57,246	72,320	75,702	92,628	141,214	103,816	147,290	195,928	208,283
Japan	283,207	255,597	298,928	333,328	398,107	460,050	525,738	588,105	726,525	507,598	651,968	828,018	789,725
Malaysia	67,089	55,487	62,834	72,334	87,440	102,721	120,872	134,039	149,316	115,414	165,284	182,404	178,098
Philippines	39,114	35,377	37,799	41,340	46,316	48,665	55,460	62,974	71,607	54,577	70,895	79,204	81,820
Singapore	116,924	101,932	106,957	120,099	151,914	181,270	239,791	275,612	340,268	263,511	342,251	430,443	433,608
South Korea	125,959	109,004	136,695	173,871	221,825	258,340	308,416	353,292	437,478	322,327	427,642	537,295	514,229
Taiwan	91,949	98,692	101,564	121,430	164,164	173,361	196,823	191,622	231,546	168,471	302,828	384,298	332,377
Thailand	57,440	45,005	54,596	66,177	85,242	102,713	115,317	132,714	162,856	120,811	167,012	214,307	213,894
Vietnam	9,000	8,811	14,447	22,955	29,364	33,282	48,401	69,109	87,969	76,892	95,956	107,860	115,338
All others	43,334	40,279	47,733	62,548	79,927	98,029	119,375	154,876	198,301	160,679	195,065	256,045	253,804
Australia/Oceania													
Australia	55,518	58,481	58,416	80,076	96,001	110,241	124,519	152,337	194,971	157,811	188,916	243,749	252,620
New Zealand	16,807	12,927	12,921	17,869	22,412	26,139	26,659	31,280	35,790	26,716	30,793	40,233	38,411
Pacific Islands	3,927	4,208	4,930	6,376	6,757	8,920	9,406	13,957	19,757	21,297	21,197	24,483	23,582

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-25

Exports and imports of ICT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	527,434	587,877	617,860	747,214	923,860	1,055,943	1,178,855	1,197,784	1,220,218	1,054,472	1,327,592	1,397,223	1,410,475
North America													
NAFTA ROW	83,191	86,779	84,493	74,987	77,765	101,448	114,093	113,726	115,569	90,913	104,679	107,690	106,855
Canada	11,749	12,626	11,596	8,533	10,009	12,027	12,319	11,731	10,975	8,838	8,456	8,713	8,011
Mexico	16,750	24,710	33,674	28,706	33,867	35,923	43,731	49,210	50,693	47,407	59,314	58,953	57,755
United States ROW	78,659	82,052	78,208	68,611	69,857	91,485	101,658	102,574	103,668	81,338	92,979	94,744	94,347
Central and South America													
Argentina	110	66	70	65	83	101	156	171	151	93	70	78	66
Brazil	1,044	1,314	2,290	2,075	2,075	3,773	4,192	2,780	3,095	2,281	1,979	1,681	1,529
Central America	312	2,794	1,464	4,561	5,728	6,318	6,935	8,234	8,466	10,680	16,080	19,110	20,210
Chile	17	17	26	22	27	46	44	61	84	159	178	204	200
Colombia	8	14	21	24	31	25	44	69	49	77	41	39	38
Peru	5	5	30	55	9	12	14	13	11	21	17	30	27
Venezuela	7	9	15	14	17	13	8	15	23	9	13	15	21
All others	81	74	101	146	180	447	388	417	309	298	315	262	259
Europe													
EU													
EU ROW	64,368	73,911	75,540	82,186	100,122	117,347	116,802	114,282	113,391	84,026	93,432	103,333	105,290
Austria	3,015	3,029	4,510	5,674	5,763	5,552	6,452	6,860	6,695	4,695	5,162	5,585	5,496
Belgium	5,050	5,877	7,650	7,790	9,398	10,682	11,709	9,373	9,960	7,338	7,472	7,542	7,447
Czech Republic	397	705	2,328	4,942	6,048	8,065	10,456	12,756	15,978	13,518	16,357	18,921	19,517
Denmark	2,476	2,615	2,622	3,675	4,087	5,502	6,526	4,213	3,336	2,694	2,978	3,325	3,494
Finland	5,284	8,229	9,982	10,322	11,813	17,070	16,873	13,606	14,368	7,010	5,165	4,354	3,853
France	23,711	26,602	25,207	22,883	26,416	27,094	31,456	25,026	23,869	18,288	20,197	21,762	22,595
Germany	34,408	39,765	45,722	56,827	71,978	78,007	83,023	77,055	71,180	52,659	63,014	67,271	63,889
Hungary	3,129	6,414	7,386	9,841	15,156	17,157	18,340	21,959	24,694	20,381	23,044	21,916	20,810
Ireland	12,650	19,278	21,276	20,154	22,208	22,396	23,768	23,267	20,252	14,039	12,146	11,438	11,674
Italy	8,031	8,881	9,590	8,877	10,340	11,022	10,824	9,637	9,058	6,954	7,691	8,328	8,231
Netherlands	24,342	31,128	28,030	34,165	45,500	53,327	56,480	54,146	48,748	39,869	43,945	45,654	46,274
Poland	761	1,098	1,496	2,529	2,823	2,990	5,048	5,616	9,555	10,256	12,739	10,973	10,892
Slovakia	201	368	568	865	1,603	2,792	4,948	8,141	10,192	10,412	11,389	10,698	11,992
Spain	4,209	4,766	4,918	5,418	6,318	7,717	9,266	6,302	6,495	4,574	5,064	4,178	4,298
Sweden	11,181	13,385	9,487	10,224	13,014	13,341	15,312	12,324	12,689	9,781	11,551	13,785	13,734
United Kingdom	40,847	43,037	46,833	35,803	36,222	51,464	82,935	27,619	25,541	20,981	21,318	20,778	22,906
All others	2,409	3,522	5,455	8,104	8,887	9,566	14,286	9,303	10,648	8,539	11,628	14,112	14,327
Other Europe													
Norway	1,101	1,205	1,167	1,129	1,256	1,337	1,564	1,475	1,849	1,526	1,612	1,469	1,306
Russia	475	465	340	396	592	510	774	786	1,005	1,006	1,225	1,823	1,603
Switzerland	2,162	2,821	2,665	2,333	2,885	3,433	3,455	3,238	3,565	2,971	3,191	3,240	2,797
All others	2,255	276	603	654	1,125	1,315	1,352	1,943	1,921	2,269	2,447	2,844	3,427

Appendix table 6-25

Exports and imports of ICT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	3,699	4,665	6,192	4,895	5,855	5,242	5,748	5,160	6,105	7,400	6,386	5,151	5,519
Saudi Arabia	111	100	72	99	97	173	244	312	180	94	140	398	408
Turkey	538	899	1,221	2,084	3,063	3,505	3,575	2,982	2,638	2,145	2,272	2,470	2,693
United Arab Emirates	335	728	1,341	1,887	2,539	5,963	2,588	5,242	4,538	1,620	2,436	4,012	4,352
All others	132	164	179	222	279	261	242	557	625	452	459	596	430
Africa													
Egypt	17	29	34	27	36	50	56	41	126	76	64	87	92
Kenya	8	30	17	17	14	15	24	38	63	77	76	87	106
Morocco	459	630	613	852	1,092	1,155	1,363	1,430	1,239	830	884	1,008	894
Southern Africa	267	454	409	564	700	660	827	923	935	944	767	854	697
Tunisia	52	56	70	91	128	198	370	427	594	530	747	952	894
All others	65	82	115	114	183	416	549	350	305	263	327	450	577
Asia													
China ROW	43,265	55,960	78,828	147,941	217,649	274,108	334,213	357,949	390,945	359,245	474,531	524,282	557,139
India	684	449	926	852	1,210	1,252	1,697	2,239	3,689	5,632	5,871	7,325	8,439
Indonesia	4,416	5,511	7,695	7,490	8,562	8,780	8,059	8,594	9,110	8,338	9,483	8,984	8,356
Japan	99,293	97,919	86,949	95,660	108,391	106,058	108,162	100,670	100,343	77,474	91,071	85,664	74,182
Malaysia	43,087	48,898	54,081	60,671	68,018	75,292	81,545	79,082	69,717	69,288	79,914	79,909	72,903
Philippines	17,078	24,108	25,241	28,929	31,109	32,063	31,477	31,761	28,779	21,094	30,137	25,187	24,429
Singapore	54,662	49,899	48,049	54,728	66,076	72,137	83,575	76,042	78,519	56,949	84,044	85,908	88,689
South Korea	37,066	47,289	49,977	68,916	88,911	92,667	97,622	101,294	97,001	84,820	102,735	100,121	94,552
Taiwan	42,785	51,072	60,595	73,414	92,733	99,701	119,723	123,295	119,177	108,567	140,303	151,758	150,026
Thailand	18,051	18,466	19,451	24,441	31,176	35,677	41,249	43,829	48,059	43,845	53,287	51,546	50,848
Vietnam	140	113	256	584	617	1,037	1,716	2,523	3,918	4,484	7,619	13,484	15,950
All others	340	259	291	274	354	399	623	468	554	325	4,332	354	357
Australia/Oceania													
Australia	1,896	1,508	1,546	1,427	1,687	1,762	1,747	1,746	1,833	1,440	1,746	2,056	1,817
New Zealand	183	166	180	245	309	310	304	333	331	262	363	316	272
Pacific Islands	13	10	7	18	12	14	11	18	13	98	8	12	12
Imports													
World	527,434	587,877	617,860	747,214	923,860	1,055,943	1,178,855	1,197,784	1,220,218	1,054,472	1,327,592	1,397,223	1,410,475
North America													
NAFTA ROW	141,931	160,917	155,119	174,616	211,167	234,037	257,472	256,009	260,082	234,365	289,559	307,777	322,356
Canada	22,934	25,208	23,774	20,830	24,642	27,659	29,682	29,068	30,096	24,994	30,760	33,647	36,716
Mexico	13,576	16,490	21,480	21,344	26,898	29,084	35,011	32,103	37,469	34,170	45,694	47,621	52,803
United States ROW	129,387	151,828	148,850	163,306	195,594	215,282	236,394	244,628	242,285	221,871	269,177	281,229	286,095
Central and South America													
Argentina	3,102	3,021	2,131	1,014	2,380	3,046	4,496	4,918	5,263	4,658	6,052	7,072	7,353
Brazil	7,675	6,077	6,885	4,901	7,091	10,362	13,051	9,417	18,085	14,418	20,097	22,165	21,703
Central America	1,484	2,633	2,240	3,008	3,103	4,068	5,031	5,247	5,647	4,789	5,225	5,877	6,704

Appendix table 6-25

Exports and imports of ICT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	1,338	1,277	1,203	1,095	1,562	2,435	3,078	3,182	3,546	3,354	4,978	5,886	5,680
Colombia	1,491	905	999	1,557	1,833	3,433	3,680	3,958	4,542	3,310	4,651	5,293	5,764
Peru	747	455	522	646	746	1,128	1,592	1,904	2,711	2,243	2,885	3,571	3,742
Venezuela	1,116	1,261	1,273	508	1,332	2,398	3,800	4,130	4,513	3,175	2,427	3,040	3,710
All others	2,293	2,322	2,488	2,279	2,791	4,024	4,582	4,868	5,614	4,514	6,331	6,714	6,509
Europe													
EU													
EU ROW	104,069	121,040	123,818	147,533	191,046	214,538	238,720	236,072	236,573	187,498	232,868	235,132	217,526
Austria	5,316	6,255	6,589	7,796	9,074	10,723	11,402	10,394	10,177	8,510	8,853	9,119	9,368
Belgium	8,633	10,443	12,770	12,690	15,084	18,638	22,354	17,381	19,084	15,590	13,669	15,803	15,611
Czech Republic	1,713	2,042	3,488	5,071	7,419	9,034	12,627	13,974	15,057	13,139	17,815	18,396	17,596
Denmark	5,148	4,885	5,087	6,018	6,966	9,426	12,376	7,683	6,892	5,694	6,055	6,820	7,010
Finland	4,684	5,520	5,970	7,085	9,396	12,413	13,522	12,560	11,471	7,065	6,787	5,679	5,541
France	26,478	30,281	31,362	32,792	40,704	46,366	64,388	44,523	44,585	37,403	43,348	45,958	43,488
Germany	39,454	48,919	56,861	63,386	77,653	87,610	101,688	87,210	85,446	72,040	89,965	92,812	86,386
Hungary	2,321	3,822	4,939	7,764	10,511	11,465	12,677	15,468	15,853	13,283	16,086	15,944	15,335
Ireland	10,027	13,471	16,985	13,035	14,660	16,135	17,428	16,132	13,007	7,755	5,999	5,793	5,452
Italy	14,328	16,647	18,032	20,411	26,197	26,859	27,598	24,877	24,837	22,361	32,644	30,201	25,922
Netherlands	32,366	39,943	36,642	44,919	55,245	60,245	67,993	61,052	56,834	46,689	56,626	56,310	57,543
Poland	2,705	3,758	4,135	4,668	6,332	9,025	14,945	12,141	16,062	12,638	14,925	14,271	13,396
Slovakia	620	640	869	1,337	1,909	3,061	4,145	6,108	6,815	6,035	8,050	8,249	8,307
Spain	9,148	12,609	12,957	18,027	21,540	26,146	31,678	28,036	31,512	18,092	20,781	18,024	17,429
Sweden	8,149	7,861	7,376	8,145	11,270	12,111	13,795	12,574	12,582	10,451	13,594	13,067	12,040
United Kingdom	43,245	48,995	46,415	47,259	58,377	62,590	76,882	58,610	54,092	42,801	47,573	47,301	45,636
All others	7,464	9,739	10,862	13,032	16,161	19,089	24,122	20,270	22,134	15,914	17,527	18,673	17,608
Other Europe													
Norway	2,842	3,112	3,039	3,631	4,631	4,915	5,455	5,742	5,733	4,963	5,464	6,098	7,232
Russia	4,361	2,304	4,223	7,266	10,302	13,201	14,171	17,027	18,750	10,349	15,469	18,302	20,964
Switzerland	5,042	6,668	6,708	6,901	8,612	11,698	9,849	7,893	8,308	7,914	8,723	9,627	8,764
All others	3,667	1,732	3,097	3,630	5,041	6,119	7,207	8,059	8,391	5,044	6,321	7,293	6,711
Middle East													
Israel	2,126	2,987	3,310	2,775	3,711	4,084	4,195	4,092	4,175	3,837	4,351	5,252	5,600
Saudi Arabia	1,303	1,747	1,963	2,363	2,211	3,525	4,142	4,228	4,391	3,952	4,258	5,677	6,294
Turkey	2,902	4,086	2,776	4,697	7,191	8,513	9,219	9,909	9,339	8,022	9,521	10,478	10,641
United Arab Emirates	2,511	2,979	4,812	7,813	10,088	16,241	13,941	13,033	13,773	12,971	15,412	19,244	27,246
All others	2,317	1,959	2,986	4,014	5,550	7,383	5,960	8,237	8,871	6,435	6,442	7,633	8,406
Africa													
Egypt	811	1,239	1,099	899	980	1,475	1,869	1,808	2,139	1,691	1,990	1,685	2,043
Kenya	110	138	193	190	293	280	385	524	551	551	644	689	762
Morocco	584	870	947	1,119	1,438	1,562	1,782	1,797	1,837	1,653	1,781	1,572	1,681
Southern Africa	2,934	3,207	2,939	3,426	4,755	5,648	6,520	5,912	5,542	4,798	6,471	7,058	7,040

Appendix table 6-25

Exports and imports of ICT products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	298	310	364	472	555	660	822	859	1,067	1,031	1,230	1,438	1,602
All others	2,161	2,703	3,381	4,439	5,916	7,488	8,677	8,867	10,980	9,087	8,358	10,299	11,473
Asia													
China ROW	43,668	48,314	66,656	109,365	138,653	166,761	198,255	219,144	219,841	208,678	266,945	277,061	273,660
India	2,350	2,632	3,689	6,396	8,876	10,459	14,313	15,776	19,020	18,519	22,542	25,012	28,764
Indonesia	3,279	1,770	2,447	2,862	3,587	3,300	3,595	4,757	10,086	8,358	11,075	11,672	12,773
Japan	37,467	41,449	50,248	52,515	61,591	65,705	67,084	63,924	66,479	56,641	75,164	79,647	83,189
Malaysia	22,648	23,098	24,751	31,041	33,939	36,123	40,626	42,281	35,070	30,196	43,195	39,488	38,184
Philippines	12,081	13,857	14,890	16,435	17,482	17,164	19,658	19,532	17,950	13,118	16,908	13,879	13,650
Singapore	40,447	39,195	38,794	43,296	55,027	63,029	72,971	68,042	65,943	54,422	71,567	71,305	70,031
South Korea	17,886	23,188	24,729	31,545	36,151	39,113	42,323	44,319	46,252	39,791	47,471	50,186	49,962
Taiwan	22,283	26,668	26,039	31,680	34,817	36,862	40,184	38,602	36,673	32,458	42,338	44,910	40,399
Thailand	11,336	10,404	13,181	14,137	16,752	18,744	21,033	21,079	20,482	18,172	23,056	24,867	24,498
Vietnam	763	677	925	1,219	2,053	2,124	2,775	3,558	4,350	5,647	6,810	9,652	10,792
All others	2,059	1,980	2,260	2,920	4,557	6,047	7,006	7,203	7,474	5,610	6,974	9,264	9,846
Australia/Oceania													
Australia	7,817	8,577	7,875	9,903	12,699	13,999	15,407	15,944	16,244	15,244	18,568	21,242	23,058
New Zealand	1,464	1,486	1,315	1,769	2,202	2,770	2,616	2,843	2,786	2,256	2,645	3,080	3,055
Pacific Islands	158	239	229	255	309	311	375	339	512	412	393	407	419

EU = European Union; ICT = information and communications technology; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-26

Exports and imports of communications products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	144,343	148,781	181,403	224,990	297,785	363,152	402,690	420,024	439,593	372,622	442,491	487,152	506,516
North America													
NAFTA ROW	20,870	20,000	21,264	16,459	20,648	27,915	32,042	34,246	36,526	31,091	36,292	41,034	42,531
Canada	4,622	6,367	5,736	4,503	5,417	6,753	7,407	6,512	5,741	4,655	4,652	4,485	4,155
Mexico	9,180	13,456	18,438	16,647	21,375	23,816	31,377	37,950	39,503	35,413	41,063	39,116	38,346
United States ROW	18,887	18,318	18,653	13,901	16,801	22,599	24,905	27,875	29,727	25,662	28,768	32,743	34,474
Central and South America													
Argentina	89	51	47	48	63	81	134	137	122	64	54	56	46
Brazil	621	734	1,802	1,653	1,611	3,170	3,560	2,431	2,629	1,822	1,510	1,174	1,081
Central America	265	137	167	107	266	603	458	763	363	270	354	230	240
Chile	11	10	11	9	13	20	20	25	44	65	77	102	99
Colombia	5	10	11	9	11	19	32	58	36	51	30	26	25
Peru	4	4	4	3	4	8	6	8	5	16	11	23	19
Venezuela	3	3	6	6	10	7	4	8	7	3	4	9	13
All others	29	38	52	91	109	147	184	256	165	194	206	145	134
Europe													
EU													
EU ROW	30,031	30,463	33,588	36,428	46,001	59,934	56,619	53,973	53,205	39,716	45,458	52,329	53,689
Austria	1,567	1,515	2,562	3,209	2,654	2,643	3,087	3,413	2,973	2,299	2,212	2,092	2,043
Belgium	2,851	3,166	4,026	3,451	4,047	4,551	5,965	4,248	4,251	3,211	3,786	3,856	3,810
Czech Republic	122	278	1,047	1,721	2,626	2,465	3,170	4,247	5,975	4,529	5,532	6,295	6,565
Denmark	1,419	1,656	1,665	2,375	2,658	4,189	5,103	2,651	2,053	1,516	1,513	1,640	1,773
Finland	4,069	6,907	9,317	9,645	10,743	16,081	15,811	12,657	13,494	6,436	4,485	3,572	3,164
France	8,268	10,582	11,176	10,563	12,350	12,935	15,882	9,615	8,823	7,441	7,837	8,379	8,853
Germany	13,788	15,947	18,363	22,896	28,687	33,367	35,057	30,936	25,201	19,039	22,125	25,162	24,359
Hungary	1,268	2,076	3,139	6,084	10,591	11,696	12,678	15,882	18,814	16,092	18,260	16,774	15,952
Ireland	1,759	2,148	2,980	1,652	1,717	1,966	2,505	2,342	2,619	2,380	3,187	2,848	3,028
Italy	2,811	3,298	4,372	3,341	4,630	5,586	5,516	4,664	4,507	3,348	3,889	3,898	3,933
Netherlands	3,518	5,511	5,750	7,247	11,567	14,034	15,656	17,729	15,990	11,882	12,715	13,916	14,256
Poland	511	786	1,151	2,054	2,255	2,326	4,112	4,644	6,716	6,602	8,336	6,828	6,830
Slovakia	145	129	267	350	716	1,711	3,989	6,910	9,200	9,511	10,279	9,479	10,691
Spain	2,392	2,590	2,819	3,152	3,924	5,132	7,186	4,657	4,837	2,707	2,442	1,895	1,995
Sweden	9,667	12,082	8,184	8,625	11,104	11,313	12,695	9,456	9,786	7,353	8,510	10,171	10,234
United Kingdom	13,465	14,885	18,547	14,929	13,629	27,044	55,518	9,822	9,550	8,797	8,979	9,761	10,953
All others	1,152	1,685	2,660	3,190	3,510	4,105	8,004	3,059	4,014	4,671	7,118	9,124	9,165
Other Europe													
Norway	648	691	741	714	863	906	956	816	1,011	761	859	912	820
Russia	331	205	192	215	306	272	484	438	575	630	896	1,332	1,158
Switzerland	881	966	1,017	921	1,301	1,577	1,392	1,331	1,494	1,165	1,210	1,175	1,080
All others	2,143	185	313	392	692	738	791	1,209	1,086	1,409	1,330	1,743	2,128

Appendix table 6-26

Exports and imports of communications products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	2,274	2,981	3,633	2,800	3,275	3,143	3,476	2,530	3,477	2,704	2,792	2,332	2,441
Saudi Arabia	44	58	46	71	59	96	186	129	121	50	94	272	283
Turkey	505	829	1,159	2,006	2,968	3,387	3,421	2,801	2,436	2,006	2,101	2,181	2,358
United Arab Emirates	173	432	881	1,299	1,752	4,652	1,716	3,669	2,871	705	1,307	2,195	2,272
All others	72	101	122	158	192	175	166	430	476	255	155	283	213
Africa													
Egypt	10	20	15	18	27	43	35	29	32	41	33	39	38
Kenya	3	6	10	8	7	7	10	27	42	30	34	40	48
Morocco	23	16	20	53	55	47	52	71	60	37	24	42	39
Southern Africa	153	207	251	341	433	371	418	512	479	535	339	428	345
Tunisia	45	43	49	50	49	69	193	153	282	301	533	695	667
All others	27	39	39	54	113	348	437	248	227	169	196	374	496
Asia													
China ROW	17,905	21,163	32,681	55,934	84,019	111,066	141,710	157,106	171,378	159,049	198,202	220,408	244,471
India	182	183	239	409	505	627	936	1,381	2,262	4,282	4,117	5,853	6,871
Indonesia	2,547	2,720	3,858	3,832	4,175	4,250	4,008	4,435	4,735	4,647	5,396	5,090	4,468
Japan	24,101	25,864	25,740	32,091	37,644	37,360	36,885	36,288	36,945	26,965	28,316	26,497	24,215
Malaysia	11,680	10,803	14,044	14,630	16,868	21,562	23,029	19,275	19,067	14,137	18,035	17,725	17,242
Philippines	1,699	1,320	1,737	2,128	2,640	2,603	2,441	2,483	2,475	1,717	2,001	2,021	2,051
Singapore	7,619	5,614	5,747	5,501	7,872	8,748	10,833	9,381	8,271	4,444	5,399	6,051	6,540
South Korea	7,906	11,049	17,694	28,506	38,864	41,449	43,692	45,892	49,822	41,081	40,901	40,769	37,224
Taiwan	4,790	5,459	7,417	10,210	13,431	15,244	18,668	21,918	21,233	17,529	23,634	28,644	25,077
Thailand	3,816	3,973	4,391	6,242	9,044	10,509	11,228	11,260	12,187	10,441	13,195	13,905	13,469
Vietnam	96	72	122	215	266	341	517	1,005	1,690	2,435	4,516	9,084	10,824
All others	151	105	115	128	163	245	428	323	404	220	1,350	225	221
Australia/Oceania													
Australia	790	649	764	519	705	700	685	606	627	599	623	779	708
New Zealand	119	114	105	151	188	157	128	125	145	112	189	127	115
Pacific Islands	7	5	4	7	3	6	5	9	6	46	4	5	4
Imports													
World	144,343	148,781	181,403	224,990	297,785	363,152	402,690	420,024	439,593	372,622	442,491	487,152	506,516
North America													
NAFTA ROW	30,427	39,865	51,342	64,785	81,057	99,284	110,593	117,812	124,397	111,219	133,565	138,813	149,690
Canada	6,263	7,647	8,633	8,409	10,078	11,227	12,889	13,247	14,062	12,008	14,779	16,097	17,824
Mexico	4,458	5,399	7,056	6,549	9,135	11,431	16,424	15,738	17,973	16,809	22,522	22,937	25,954
United States ROW	31,525	44,960	57,216	68,419	84,789	101,880	112,927	126,919	130,807	117,040	134,456	135,089	140,356
Central and South America													
Argentina	1,628	1,579	1,090	438	1,474	1,890	2,632	2,872	2,963	2,588	3,594	4,011	4,248
Brazil	3,861	2,952	2,964	1,831	2,894	3,856	4,982	3,574	7,775	5,334	8,314	9,981	9,683
Central America	1,097	1,340	1,236	1,196	1,359	1,736	2,022	2,353	2,539	2,152	2,539	2,853	3,252

Appendix table 6-26

Exports and imports of communications products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	771	778	696	598	948	1,379	1,771	1,722	1,973	1,720	2,794	3,375	3,230
Colombia	910	453	536	936	1,239	2,397	2,483	2,317	2,575	1,670	2,558	2,900	3,228
Peru	433	239	318	397	451	679	983	1,216	1,621	1,137	1,500	1,902	1,920
Venezuela	713	836	824	327	859	1,675	2,792	2,913	3,300	2,099	1,703	2,073	2,519
All others	1,343	1,379	1,442	1,319	1,620	2,245	2,567	2,731	3,242	2,365	3,928	4,177	4,033
Europe													
EU													
EU ROW	27,150	31,160	37,603	49,002	72,151	87,469	99,306	102,387	98,644	80,748	88,014	92,723	87,581
Austria	1,954	2,868	2,513	3,300	4,017	5,318	5,394	5,227	4,957	4,167	4,087	4,253	4,391
Belgium	3,247	4,722	5,774	5,247	5,772	7,792	11,716	7,590	7,415	5,486	5,606	5,654	5,769
Czech Republic	909	910	1,494	1,570	2,289	2,598	4,150	4,349	5,605	4,144	4,764	5,825	5,907
Denmark	2,020	2,192	2,535	3,008	3,245	4,984	7,338	4,044	3,548	2,939	2,977	3,258	3,434
Finland	1,634	2,479	3,026	3,499	4,914	7,050	8,112	7,608	7,449	4,214	3,686	3,166	3,053
France	7,891	9,873	11,853	12,792	16,069	20,465	35,934	19,092	19,782	17,406	18,708	19,380	19,257
Germany	11,358	13,914	19,916	21,640	28,487	33,361	41,513	33,290	31,380	27,588	30,221	33,599	31,979
Hungary	916	1,240	1,778	3,329	5,039	5,129	5,730	8,267	9,208	8,123	9,862	9,597	9,055
Ireland	1,055	2,023	3,285	1,732	2,223	2,651	2,992	2,550	2,592	1,891	1,759	1,626	1,563
Italy	5,068	7,119	7,913	9,376	13,244	14,283	14,730	12,753	11,956	10,830	10,937	10,088	9,321
Netherlands	5,291	7,662	9,559	11,584	15,516	19,062	23,534	22,011	20,821	16,970	18,927	18,465	18,355
Poland	1,454	1,888	1,952	2,038	2,947	4,766	9,661	7,006	9,129	6,257	7,122	6,722	6,444
Slovakia	326	239	363	528	826	1,579	2,675	4,258	4,723	4,317	5,510	5,290	5,487
Spain	3,975	6,423	6,348	9,567	11,347	14,702	18,630	14,489	13,125	9,588	10,541	9,416	9,111
Sweden	3,185	3,416	3,450	3,810	5,591	6,101	7,288	6,427	6,269	5,157	5,752	6,528	6,160
United Kingdom	12,370	14,330	15,053	18,000	23,956	28,481	42,093	26,695	25,385	21,146	23,974	23,695	23,249
All others	3,238	4,639	5,229	6,034	8,074	10,356	13,131	9,689	10,898	8,621	9,327	9,523	8,964
Other Europe													
Norway	1,087	1,278	1,242	1,475	2,016	2,162	2,626	2,865	2,766	2,421	2,685	2,825	3,371
Russia	3,009	1,126	2,321	4,076	6,294	8,248	8,701	10,874	12,499	6,315	9,035	11,039	12,090
Switzerland	1,856	2,361	2,296	2,446	3,143	6,067	4,343	3,371	3,306	3,290	3,459	3,804	3,440
All others	2,961	924	1,302	2,040	2,872	3,547	4,363	4,464	4,980	2,796	3,627	3,994	3,608
Middle East													
Israel	993	1,369	1,320	1,116	1,466	1,630	1,643	1,691	1,827	1,694	1,700	1,954	1,716
Saudi Arabia	982	1,269	1,384	1,739	1,523	2,532	2,815	2,774	2,940	2,516	2,615	3,849	4,277
Turkey	1,432	2,233	1,334	1,997	3,115	3,679	4,168	4,739	4,428	3,817	4,728	5,455	5,507
United Arab Emirates	1,958	1,943	3,306	5,881	7,597	12,601	9,869	8,676	8,547	7,999	9,164	12,238	17,608
All others	1,689	1,255	1,841	2,599	3,710	5,375	4,299	5,795	6,174	4,103	4,092	5,158	5,536
Africa													
Egypt	544	928	702	572	581	957	1,292	1,207	1,403	985	1,229	1,103	1,346
Kenya	59	77	124	116	169	138	235	339	334	319	393	438	490
Morocco	197	306	483	448	647	719	746	818	866	868	817	756	836
Southern Africa	1,593	1,654	1,485	1,643	2,517	3,072	3,652	3,362	3,064	2,627	3,519	3,954	3,911

Appendix table 6-26

Exports and imports of communications products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	160	140	174	282	308	347	354	261	334	366	372	518	567
All others	1,372	1,733	2,246	3,011	4,066	5,310	6,206	5,846	7,368	5,922	5,445	6,846	7,658
Asia													
China ROW	15,189	12,601	17,032	23,285	26,877	29,398	32,743	36,053	38,079	33,150	36,945	40,819	39,581
India	928	931	1,403	3,646	4,989	5,440	7,897	8,934	10,607	10,479	12,123	12,539	13,716
Indonesia	2,060	627	1,089	1,364	1,626	1,593	2,036	2,721	5,532	4,691	6,046	6,244	7,071
Japan	9,911	10,369	13,780	13,820	17,212	19,684	19,211	20,107	22,228	21,428	30,545	34,937	37,030
Malaysia	3,034	2,218	3,146	3,199	3,921	4,145	4,583	4,579	4,800	4,052	6,633	6,364	6,773
Philippines	1,894	1,129	1,708	1,459	1,776	1,759	2,046	2,019	1,973	1,970	2,134	2,128	2,136
Singapore	7,351	5,475	6,105	7,150	10,204	11,468	14,313	13,679	11,554	8,354	9,437	11,452	11,498
South Korea	3,162	3,140	4,310	5,753	7,362	7,721	8,902	8,161	9,131	7,694	9,573	11,647	11,653
Taiwan	2,955	3,160	3,460	3,832	4,367	4,618	4,614	4,348	4,581	3,843	4,672	6,039	5,808
Thailand	2,633	1,538	2,770	2,837	3,535	3,986	4,479	3,708	4,065	3,717	4,594	5,471	5,775
Vietnam	398	270	351	569	720	903	1,345	1,838	2,258	3,150	3,766	4,917	5,193
All others	1,442	1,297	1,339	1,814	3,162	4,338	5,094	4,987	4,958	3,606	4,237	5,803	6,095
Australia/Oceania													
Australia	2,852	3,501	3,448	4,587	6,179	6,844	7,856	7,973	8,049	7,965	8,790	10,057	10,851
New Zealand	569	639	544	727	1,014	1,195	1,123	1,258	1,250	1,052	1,051	1,291	1,263
Pacific Islands	87	132	129	128	149	143	193	156	195	182	191	184	194

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-27

Exports and imports of computer products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	218,730	243,015	243,410	278,348	327,770	367,619	400,613	375,072	381,857	324,418	397,301	409,031	417,640
North America													
NAFTA ROW	37,166	34,608	33,686	25,220	24,391	33,972	36,745	35,321	34,388	27,695	29,986	30,319	30,294
Canada	4,434	3,921	3,775	2,496	2,794	2,995	3,092	3,425	3,227	2,290	2,242	2,144	2,009
Mexico	6,049	9,358	13,297	10,301	10,497	10,260	10,576	9,903	9,711	10,240	16,475	18,076	17,679
United States ROW	35,307	32,429	30,790	22,341	21,481	30,571	32,769	31,651	30,600	24,844	26,835	26,874	26,958
Central and South America													
Argentina	20	15	20	16	18	17	20	30	25	28	14	19	17
Brazil	329	431	333	238	297	459	490	295	359	352	331	330	295
Central America	28	2,438	504	745	590	2,174	2,855	3,240	3,575	5,129	6,099	3,696	4,129
Chile	5	4	14	11	13	23	22	35	38	89	98	93	92
Colombia	2	4	3	15	19	4	6	10	9	10	8	9	8
Peru	1	1	9	51	5	4	5	3	5	4	5	6	7
Venezuela	3	5	8	8	6	6	4	7	15	5	8	5	7
All others	44	24	28	31	53	278	171	132	114	74	77	92	97
Europe													
EU													
EU ROW	20,608	24,014	24,759	25,652	29,310	33,752	34,544	32,711	31,861	25,495	26,376	28,303	29,290
Austria	491	682	888	1,174	1,473	1,272	1,187	1,057	1,050	861	878	1,064	1,045
Belgium	1,630	2,066	2,674	3,647	4,455	5,158	4,770	3,903	4,116	3,213	2,508	2,489	2,508
Czech Republic	175	281	1,060	2,702	2,666	4,847	6,375	7,478	8,501	7,569	8,821	10,428	10,677
Denmark	866	843	775	1,116	1,177	1,057	1,109	1,140	1,029	996	1,277	1,479	1,523
Finland	970	956	399	368	529	668	823	675	585	374	437	488	444
France	9,153	9,311	7,782	6,620	7,440	7,004	7,866	7,779	7,706	5,145	4,831	5,168	5,456
Germany	12,548	14,570	16,130	20,187	26,969	28,619	31,032	26,481	23,970	18,632	19,968	20,814	20,098
Hungary	1,780	4,238	3,901	3,374	4,090	4,956	4,920	5,428	5,318	3,814	4,100	4,384	4,168
Ireland	9,033	15,070	15,515	16,219	17,457	17,229	17,687	16,815	13,201	8,829	6,391	6,462	6,541
Italy	3,412	3,401	2,815	2,631	2,428	2,471	2,189	1,999	1,921	1,669	1,579	2,015	1,985
Netherlands	13,355	18,189	18,819	20,835	24,910	31,681	33,953	28,870	27,286	23,486	25,766	26,423	26,814
Poland	46	69	70	88	149	271	463	521	2,347	3,355	3,962	3,554	3,505
Slovakia	27	196	212	336	671	872	717	826	660	568	696	912	964
Spain	1,257	1,594	1,588	1,710	1,754	1,626	1,405	1,201	960	1,025	988	1,041	1,076
Sweden	951	810	822	1,109	1,353	1,517	1,972	2,109	1,993	1,513	1,652	1,992	1,945
United Kingdom	21,183	21,311	18,909	15,509	15,851	17,250	20,417	12,626	11,032	8,399	8,101	7,186	7,866
All others	278	415	714	1,388	1,589	1,869	2,075	1,780	1,866	1,280	1,281	1,541	1,634
Other Europe													
Norway	423	485	333	336	304	298	352	385	391	362	390	386	352
Russia	64	107	50	67	96	94	133	164	221	191	125	283	268
Switzerland	887	1,358	1,116	808	800	987	867	955	974	826	755	808	709
All others	81	49	211	148	274	315	347	493	542	526	415	412	498

Appendix table 6-27

Exports and imports of computer products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	687	1,021	978	856	1,036	1,145	1,140	1,383	1,342	1,074	1,183	1,118	1,198
Saudi Arabia	63	40	24	23	37	71	51	117	47	37	41	111	112
Turkey	28	58	52	47	68	84	109	135	155	100	115	227	267
United Arab Emirates	151	285	426	556	718	1,131	778	1,394	1,472	862	967	1,586	1,841
All others	56	55	47	53	75	72	65	84	139	179	226	242	172
Africa													
Egypt	6	7	11	7	7	4	13	9	24	23	21	41	47
Kenya	4	19	5	6	5	7	11	9	12	25	38	42	52
Morocco	2	4	37	22	35	24	23	25	35	22	17	19	23
Southern Africa	101	144	111	141	143	164	259	239	239	231	214	222	195
Tunisia	6	5	6	9	31	67	65	125	138	87	62	52	50
All others	31	26	29	44	52	51	98	86	62	57	102	56	62
Asia													
China ROW	17,303	25,379	35,986	75,453	108,647	133,061	154,181	155,806	165,831	150,258	200,297	220,983	229,973
India	389	146	530	236	308	275	375	420	629	608	630	723	843
Indonesia	1,365	2,193	3,060	2,689	3,257	3,409	2,955	2,938	3,128	2,690	2,814	2,570	2,722
Japan	39,340	37,374	29,379	27,195	28,685	27,373	28,035	18,232	17,348	12,869	13,667	12,766	10,498
Malaysia	14,542	20,176	20,854	22,743	25,746	29,195	33,695	32,570	30,905	24,201	26,648	22,030	20,107
Philippines	6,326	9,117	9,575	9,346	8,962	9,198	8,552	7,524	7,002	4,462	5,179	5,689	5,897
Singapore	32,392	28,537	24,818	25,708	27,914	28,767	29,139	19,118	22,801	16,910	20,538	18,681	19,480
South Korea	9,328	13,618	14,698	19,047	22,089	19,136	19,282	19,078	14,118	11,137	14,541	12,664	12,589
Taiwan	24,642	28,527	29,898	28,370	28,655	23,793	23,257	18,502	15,805	12,511	15,750	15,500	15,167
Thailand	10,266	10,097	10,139	11,003	13,574	16,384	19,582	20,581	24,401	21,921	25,015	23,916	24,807
Vietnam	13	14	64	307	272	580	1,063	1,398	2,127	1,854	2,623	2,975	3,646
All others	142	105	106	104	109	100	111	91	81	69	220	81	89
Australia/Oceania													
Australia	1,006	759	673	736	773	830	831	859	906	716	965	1,066	931
New Zealand	46	37	55	59	73	96	105	111	100	87	94	94	81
Pacific Islands	3	3	3	8	7	5	5	6	5	37	3	2	4
Imports													
World	218,730	243,015	243,410	278,348	327,770	367,619	400,613	375,072	381,857	324,418	397,301	409,031	417,640
North America													
NAFTA ROW	72,406	80,275	70,164	81,964	97,174	103,409	113,120	107,930	103,975	96,694	118,441	121,974	125,450
Canada	10,395	10,663	10,717	9,644	10,891	12,165	12,906	12,352	12,208	9,700	11,712	12,879	13,917
Mexico	3,960	4,506	6,277	7,923	9,574	9,333	10,438	10,827	11,859	10,678	13,966	14,587	16,713
United States ROW	66,675	76,207	67,347	74,315	87,089	91,766	99,469	94,409	89,058	85,994	108,329	111,281	111,172
Central and South America													
Argentina	1,182	1,268	870	497	731	926	1,509	1,691	1,962	1,745	2,052	2,539	2,595
Brazil	2,543	1,879	2,244	1,357	1,609	2,866	3,855	4,302	5,408	4,966	6,158	6,182	6,047
Central America	359	480	465	476	562	900	1,061	1,101	1,311	1,164	1,197	1,567	1,703

Appendix table 6-27

Exports and imports of computer products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	547	466	461	428	530	932	1,164	1,352	1,472	1,540	2,071	2,402	2,349
Colombia	555	434	441	596	547	932	1,129	1,553	1,836	1,531	1,981	2,254	2,406
Peru	298	204	196	234	270	422	564	646	1,003	1,012	1,268	1,509	1,676
Venezuela	369	392	413	167	446	677	969	1,144	1,121	973	628	829	1,000
All others	908	862	973	875	1,042	1,550	1,766	1,905	2,136	1,962	2,156	2,309	2,241
Europe													
EU													
EU ROW	57,283	65,648	62,293	69,586	84,425	93,800	105,238	97,140	96,218	74,485	90,056	91,477	86,026
Austria	2,207	2,470	2,626	3,146	3,755	4,159	4,190	3,456	3,509	3,015	3,022	3,202	3,352
Belgium	3,947	4,534	5,284	6,064	7,861	9,207	8,742	7,855	9,374	7,668	5,591	6,527	6,377
Czech Republic	656	884	1,458	2,297	2,930	4,718	6,992	7,823	7,486	6,913	9,540	10,546	9,832
Denmark	2,288	2,214	2,110	2,518	3,177	3,785	3,892	3,027	2,780	2,397	2,654	3,043	3,079
Finland	1,912	2,088	1,880	2,184	2,643	3,163	3,392	3,100	2,885	2,066	2,345	1,836	1,823
France	13,210	13,673	13,256	14,356	17,893	18,948	21,101	18,462	17,728	13,887	14,974	16,389	15,118
Germany	19,946	25,204	25,506	28,971	33,212	37,849	41,479	33,695	31,916	25,442	30,607	31,508	29,474
Hungary	1,024	1,882	1,833	2,181	2,460	2,987	3,930	3,811	3,481	2,327	2,806	2,865	2,902
Ireland	7,110	8,844	8,312	8,399	9,179	10,562	12,605	11,865	8,948	4,769	3,267	3,438	3,183
Italy	6,344	6,961	7,522	8,044	9,308	8,958	9,013	7,987	7,911	6,544	7,707	8,173	7,151
Netherlands	21,602	26,726	23,710	25,467	30,937	33,284	38,709	33,606	32,285	25,994	31,980	31,870	33,190
Poland	921	1,435	1,580	1,629	2,019	2,999	3,689	3,768	5,697	5,281	6,213	5,909	5,450
Slovakia	205	305	339	475	658	808	942	1,297	1,433	1,056	1,188	1,494	1,385
Spain	4,018	4,841	5,209	6,786	8,310	9,549	10,044	8,576	8,059	6,075	7,023	6,432	6,348
Sweden	3,380	3,253	2,931	3,354	4,355	4,710	4,901	4,433	4,349	3,484	4,223	4,130	3,806
United Kingdom	22,855	27,066	23,752	23,102	26,605	27,418	29,178	26,522	23,839	18,073	19,397	18,941	18,335
All others	2,205	3,256	3,300	3,974	4,776	5,311	6,857	5,834	6,215	4,727	4,381	4,311	4,178
Other Europe													
Norway	1,594	1,672	1,596	1,972	2,401	2,516	2,543	2,562	2,615	2,282	2,468	2,990	3,558
Russia	1,187	1,033	1,678	2,591	3,133	4,137	4,836	5,499	5,473	3,502	5,597	6,345	7,833
Switzerland	2,681	3,652	3,600	3,770	4,503	4,651	4,357	3,453	3,674	3,561	3,941	4,355	3,970
All others	579	703	1,600	1,295	1,705	2,052	2,381	3,011	2,775	1,626	1,977	2,250	2,113
Middle East													
Israel	888	1,211	1,289	1,134	1,267	1,550	1,661	1,608	1,415	1,297	1,500	1,560	1,443
Saudi Arabia	307	442	538	578	627	918	1,239	1,315	1,380	1,370	1,529	1,664	1,827
Turkey	879	1,210	740	1,283	2,029	3,268	3,622	4,025	3,755	3,483	3,982	4,116	4,278
United Arab Emirates	504	976	1,387	1,713	2,053	3,174	3,775	4,067	4,818	4,650	5,896	6,747	9,290
All others	501	502	910	1,165	1,493	1,701	1,434	2,140	2,309	2,115	2,071	2,278	2,664
Africa													
Egypt	202	240	304	261	324	413	485	500	595	582	608	455	561
Kenya	46	54	57	55	102	109	126	147	179	193	207	218	237
Morocco	127	196	195	268	327	386	439	447	490	444	504	416	440
Southern Africa	1,159	1,337	1,237	1,533	1,879	2,242	2,495	2,134	2,054	1,794	2,450	2,582	2,624

Appendix table 6-27

Exports and imports of computer products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	103	151	162	148	185	220	260	226	245	251	282	242	280
All others	719	873	1,024	1,243	1,615	1,907	2,160	2,608	3,135	2,672	2,453	2,960	3,283
Asia													
China ROW	10,439	13,286	19,142	28,480	32,606	38,615	42,913	37,673	38,361	32,608	42,342	39,875	39,639
India	964	1,198	1,650	1,861	2,599	3,569	4,580	4,535	5,798	4,942	6,561	7,134	8,189
Indonesia	440	387	550	601	732	796	792	1,088	2,754	2,216	3,173	3,407	3,658
Japan	18,234	19,481	22,675	23,520	26,139	27,174	26,204	22,367	23,104	18,738	23,406	25,001	26,135
Malaysia	4,289	3,561	4,441	6,716	8,609	9,531	9,867	10,325	8,920	7,496	7,646	7,261	7,455
Philippines	2,159	2,260	2,710	2,938	2,925	2,898	2,687	2,655	2,899	2,142	2,446	2,259	2,383
Singapore	15,106	14,195	14,015	13,724	15,730	18,011	17,433	11,198	15,730	12,176	14,873	14,194	14,590
South Korea	3,681	4,875	5,896	6,109	6,543	8,238	8,902	8,758	8,375	7,055	9,530	9,158	9,722
Taiwan	5,209	7,295	7,522	7,318	6,825	6,502	7,162	5,575	5,065	4,458	5,137	4,915	4,741
Thailand	3,557	3,339	4,101	4,649	4,739	6,134	6,913	6,643	6,993	5,872	6,918	7,646	7,595
Vietnam	154	169	280	472	1,058	875	945	968	1,322	1,450	1,723	2,043	2,545
All others	545	595	802	931	1,180	1,449	1,620	1,898	2,131	1,684	2,319	2,942	3,238
Australia/Oceania													
Australia	4,313	4,414	3,865	4,576	5,634	6,335	6,767	7,104	7,296	6,329	8,054	8,966	9,843
New Zealand	829	779	708	949	1,120	1,448	1,364	1,439	1,410	1,106	1,464	1,665	1,675
Pacific Islands	65	96	94	121	151	159	167	166	196	167	177	200	199

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-28

Exports and imports of semiconductor products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	164,361	196,081	193,047	243,876	298,305	325,172	375,552	402,688	398,768	357,432	487,800	501,040	486,319
North America													
NAFTA ROW	25,154	32,171	29,544	33,308	32,726	39,561	45,306	44,159	44,655	32,127	38,401	36,336	34,030
Canada	2,693	2,338	2,085	1,534	1,798	2,278	1,820	1,794	2,007	1,893	1,562	2,084	1,847
Mexico	1,521	1,896	1,939	1,758	1,995	1,847	1,778	1,357	1,479	1,754	1,776	1,761	1,730
United States ROW	24,465	31,304	28,765	32,369	31,575	38,315	43,983	43,048	43,341	30,833	37,377	35,127	32,915
Central and South America													
Argentina	1	1	4	1	1	3	2	4	4	2	2	3	3
Brazil	94	149	155	184	166	144	142	54	106	107	139	177	153
Central America	19	219	793	3,709	4,872	3,541	3,622	4,231	4,528	5,281	9,627	15,183	15,841
Chile	1	2	1	2	1	2	2	2	3	5	2	8	9
Colombia	0	0	7	0	1	2	6	1	4	16	4	4	5
Peru	0	0	17	1	0	1	3	1	2	1	2	1	1
Venezuela	1	1	1	0	0	0	1	0	1	1	0	1	1
All others	8	12	20	24	18	22	34	28	30	29	31	25	27
Europe													
EU													
EU ROW	13,729	19,434	17,193	20,106	24,811	23,661	25,639	27,598	28,325	18,814	21,598	22,701	22,311
Austria	957	831	1,060	1,290	1,636	1,637	2,177	2,391	2,672	1,535	2,072	2,430	2,408
Belgium	569	645	950	692	897	973	975	1,222	1,593	914	1,177	1,197	1,129
Czech Republic	99	146	221	520	757	753	911	1,031	1,501	1,420	2,004	2,199	2,275
Denmark	191	117	182	184	252	256	314	422	254	182	189	206	198
Finland	245	366	266	308	541	321	239	274	289	200	243	294	245
France	6,291	6,709	6,249	5,700	6,625	7,155	7,708	7,632	7,340	5,702	7,528	8,216	8,286
Germany	8,072	9,248	11,229	13,744	16,322	16,021	16,935	19,638	22,009	14,988	20,921	21,296	19,432
Hungary	81	100	346	383	475	505	742	649	562	476	684	758	690
Ireland	1,858	2,060	2,781	2,282	3,034	3,201	3,575	4,110	4,432	2,830	2,569	2,128	2,105
Italy	1,808	2,182	2,403	2,905	3,281	2,965	3,119	2,974	2,631	1,937	2,222	2,414	2,313
Netherlands	7,469	7,428	3,460	6,083	9,023	7,612	6,870	7,547	5,473	4,501	5,464	5,314	5,205
Poland	204	243	274	387	420	393	473	451	492	299	442	591	557
Slovakia	29	43	89	179	215	209	241	405	332	333	414	306	337
Spain	559	582	511	556	640	959	675	444	698	842	1,634	1,242	1,226
Sweden	563	493	480	490	556	511	645	760	910	914	1,389	1,622	1,555
United Kingdom	6,199	6,841	9,377	5,366	6,742	7,169	7,000	5,171	4,959	3,785	4,237	3,831	4,087
All others	980	1,422	2,081	3,526	3,788	3,593	4,208	4,465	4,767	2,588	3,229	3,447	3,529
Other Europe													
Norway	30	28	93	79	88	133	256	274	447	403	363	170	134
Russia	81	153	98	114	189	143	158	184	209	186	205	208	177
Switzerland	395	497	531	604	784	869	1,196	952	1,098	980	1,225	1,257	1,008
All others	31	42	79	113	160	262	214	241	292	334	702	689	801

Appendix table 6-28

Exports and imports of semiconductor products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	738	663	1,581	1,239	1,544	954	1,132	1,247	1,286	3,622	2,411	1,702	1,881
Saudi Arabia	4	2	2	5	1	7	7	66	12	8	5	15	13
Turkey	6	12	10	31	27	34	45	46	47	39	55	61	68
United Arab Emirates	11	11	34	32	68	180	95	179	195	53	162	231	239
All others	5	8	10	11	12	14	11	44	9	19	77	71	45
Africa													
Egypt	0	2	8	2	2	3	7	3	70	12	10	8	7
Kenya	1	5	2	3	2	2	3	2	9	22	4	5	6
Morocco	434	610	556	777	1,002	1,083	1,288	1,334	1,144	771	843	947	832
Southern Africa	13	103	46	82	124	125	150	172	217	178	214	204	157
Tunisia	1	8	14	32	48	62	112	149	175	142	153	205	177
All others	6	17	47	16	19	17	14	16	16	38	30	20	19
Asia													
China ROW	8,057	9,418	10,161	16,554	24,983	29,981	38,322	45,037	53,736	49,939	76,031	82,891	82,695
India	113	120	157	207	397	350	386	438	798	742	1,124	749	725
Indonesia	504	598	777	969	1,130	1,121	1,096	1,221	1,247	1,001	1,274	1,324	1,166
Japan	35,852	34,681	31,830	36,374	42,062	41,324	43,242	46,150	46,050	37,640	49,088	46,401	39,469
Malaysia	16,865	17,919	19,183	23,298	25,404	24,536	24,822	27,237	19,744	30,950	35,231	40,155	35,554
Philippines	9,053	13,671	13,929	17,454	19,507	20,262	20,484	21,753	19,302	14,915	22,957	17,476	16,481
Singapore	14,651	15,749	17,484	23,519	30,290	34,622	43,602	47,543	47,447	35,595	58,108	61,175	62,669
South Korea	19,832	22,622	17,585	21,364	27,958	32,083	34,648	36,324	33,061	32,602	47,293	46,688	44,738
Taiwan	13,353	17,086	23,279	34,834	50,647	60,665	77,798	82,874	82,139	78,527	100,919	107,614	109,782
Thailand	3,968	4,397	4,920	7,196	8,558	8,784	10,439	11,988	11,471	11,483	15,078	13,725	12,572
Vietnam	32	26	70	62	80	116	135	120	101	195	479	1,425	1,480
All others	47	49	70	43	82	54	84	54	69	36	2,762	48	47
Australia/Oceania													
Australia	100	99	109	172	209	232	231	281	300	125	158	211	178
New Zealand	18	15	20	34	48	57	71	97	85	63	80	95	76
Pacific Islands	2	2	0	3	2	3	1	3	2	16	2	4	4
Imports													
World	164,361	196,081	193,047	243,876	298,305	325,172	375,552	402,688	398,768	357,432	487,800	501,040	486,319
North America													
NAFTA ROW	39,097	40,776	33,614	27,868	32,936	31,344	33,759	30,267	31,710	26,452	37,553	46,990	47,216
Canada	6,276	6,899	4,424	2,777	3,672	4,267	3,887	3,469	3,825	3,286	4,269	4,670	4,975
Mexico	5,159	6,584	8,147	6,873	8,189	8,320	8,149	5,539	7,637	6,683	9,206	10,097	10,136
United States ROW	31,187	30,661	24,287	20,571	23,716	21,636	23,998	23,300	22,420	18,836	26,392	34,859	34,567
Central and South America													
Argentina	292	174	172	79	175	230	355	355	338	325	406	521	510
Brazil	1,271	1,245	1,676	1,714	2,588	3,640	4,214	1,540	4,902	4,118	5,625	6,002	5,973
Central America	29	813	539	1,336	1,182	1,432	1,949	1,793	1,797	1,473	1,489	1,456	1,749

Appendix table 6-28

Exports and imports of semiconductor products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	20	33	46	69	84	125	143	107	101	94	113	108	101
Colombia	27	19	22	25	47	104	68	88	132	109	111	139	130
Peru	16	12	8	16	25	26	45	42	87	94	117	160	146
Venezuela	34	33	35	14	27	46	38	74	92	103	97	138	191
All others	43	81	74	86	129	230	249	231	236	188	247	228	234
Europe													
EU													
EU ROW	19,636	24,232	23,922	28,944	34,470	33,269	34,176	36,544	41,711	32,265	54,798	50,932	43,918
Austria	1,155	917	1,450	1,350	1,301	1,246	1,819	1,711	1,711	1,328	1,744	1,664	1,625
Belgium	1,440	1,188	1,712	1,379	1,451	1,639	1,896	1,936	2,294	2,437	2,472	3,621	3,465
Czech Republic	148	247	536	1,204	2,199	1,717	1,485	1,802	1,966	2,082	3,511	2,025	1,857
Denmark	841	478	442	491	544	657	1,145	612	564	359	424	519	496
Finland	1,138	953	1,064	1,402	1,840	2,199	2,018	1,852	1,137	785	756	678	666
France	5,377	6,735	6,253	5,644	6,742	6,954	7,354	6,970	7,074	6,110	9,666	10,189	9,113
Germany	8,151	9,801	11,439	12,775	15,954	16,400	18,696	20,225	22,150	19,009	29,137	27,706	24,932
Hungary	381	699	1,328	2,254	3,012	3,350	3,017	3,390	3,164	2,832	3,417	3,481	3,378
Ireland	1,862	2,604	5,388	2,905	3,258	2,922	1,831	1,717	1,467	1,096	973	729	707
Italy	2,917	2,567	2,597	2,991	3,645	3,618	3,854	4,137	4,970	4,986	13,999	11,940	9,450
Netherlands	5,473	5,555	3,372	7,868	8,792	7,899	5,749	5,435	3,729	3,725	5,720	5,975	5,998
Poland	329	435	603	1,001	1,367	1,260	1,595	1,367	1,236	1,100	1,589	1,640	1,502
Slovakia	89	96	166	334	425	674	528	553	659	662	1,352	1,465	1,435
Spain	1,156	1,345	1,400	1,674	1,883	1,895	3,005	4,971	10,327	2,429	3,217	2,177	1,970
Sweden	1,584	1,192	996	981	1,324	1,300	1,606	1,714	1,965	1,810	3,619	2,410	2,074
United Kingdom	8,019	7,599	7,610	6,157	7,816	6,692	5,611	5,393	4,868	3,582	4,202	4,665	4,052
All others	2,021	1,844	2,333	3,024	3,310	3,422	4,133	4,746	5,020	2,565	3,819	4,839	4,465
Other Europe													
Norway	161	162	201	185	214	237	286	316	352	260	310	283	303
Russia	164	145	224	600	875	816	633	654	778	532	837	918	1,041
Switzerland	505	656	811	685	965	981	1,149	1,069	1,329	1,063	1,323	1,468	1,354
All others	127	104	194	295	464	520	463	584	636	623	717	1,049	990
Middle East													
Israel	245	407	701	525	978	904	891	792	933	847	1,152	1,738	2,441
Saudi Arabia	14	36	41	46	61	75	88	138	71	65	114	164	190
Turkey	590	643	703	1,418	2,047	1,566	1,428	1,144	1,156	721	811	906	856
United Arab Emirates	49	60	119	219	438	466	297	291	408	322	352	259	348
All others	127	203	235	250	347	307	226	302	388	217	279	197	206
Africa													
Egypt	64	71	93	66	75	105	92	101	141	124	153	127	136
Kenya	5	7	12	20	23	32	25	38	38	38	45	32	35
Morocco	259	368	269	403	465	457	597	532	481	341	460	399	405
Southern Africa	181	216	216	251	359	334	373	417	424	377	501	522	505

Appendix table 6-28

Exports and imports of semiconductor products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	35	19	28	41	62	93	208	372	488	415	577	678	755
All others	70	97	111	185	235	271	310	413	476	493	459	493	532
Asia													
China ROW	18,040	22,427	30,482	57,600	79,170	98,748	122,599	145,418	143,401	142,920	187,658	196,366	194,440
India	458	503	637	889	1,288	1,450	1,836	2,306	2,615	3,098	3,858	5,340	6,859
Indonesia	780	756	809	897	1,229	911	767	949	1,799	1,451	1,857	2,021	2,044
Japan	9,322	11,599	13,793	15,174	18,240	18,847	21,669	21,450	21,147	16,475	21,213	19,709	20,024
Malaysia	15,325	17,320	17,164	21,126	21,409	22,447	26,176	27,377	21,351	18,649	28,916	25,862	23,956
Philippines	8,028	10,468	10,472	12,037	12,781	12,507	14,925	14,858	13,078	9,006	12,328	9,492	9,131
Singapore	17,989	19,525	18,673	22,422	29,092	33,550	41,226	43,165	38,659	33,892	47,257	45,659	43,944
South Korea	11,043	15,173	14,524	19,683	22,246	23,155	24,519	27,400	28,746	25,042	28,368	29,381	28,588
Taiwan	14,119	16,213	15,057	20,529	23,625	25,742	28,408	28,678	27,028	24,158	32,528	33,956	29,851
Thailand	5,146	5,526	6,310	6,651	8,478	8,625	9,641	10,728	9,424	8,583	11,544	11,750	11,128
Vietnam	210	238	294	178	276	346	484	751	770	1,047	1,321	2,693	3,055
All others	71	88	119	175	214	260	292	319	386	321	418	518	513
Australia/Oceania													
Australia	652	662	561	740	886	820	784	867	899	950	1,724	2,219	2,364
New Zealand	66	69	63	93	69	127	129	147	126	98	130	124	118
Pacific Islands	7	11	6	7	10	10	15	18	120	64	25	23	25

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

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Appendix table 6-29

Exports and imports of pharmaceutical products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	50,853	62,708	77,813	111,459	133,429	150,273	171,208	208,059	238,669	252,677	276,902	310,471	307,706
North America													
NAFTA ROW	7,288	9,986	13,566	16,859	21,964	24,076	26,886	31,809	36,824	41,449	41,783	40,005	41,830
Canada	938	1,112	1,389	2,352	2,904	3,409	4,655	6,207	6,309	6,604	5,943	5,231	4,785
Mexico	515	667	870	1,027	1,603	1,216	1,222	1,273	1,489	1,620	2,029	2,374	2,427
United States ROW	6,550	9,001	12,617	15,648	20,097	22,239	24,894	29,366	34,027	38,432	38,337	36,734	38,683
Central and South America													
Argentina	312	357	347	308	394	400	503	581	706	782	774	906	806
Brazil	238	297	302	355	437	553	704	872	1,149	1,354	1,670	1,731	1,621
Central America	90	103	142	132	163	252	199	286	456	833	666	938	902
Chile	36	38	54	60	68	84	97	110	134	147	163	179	174
Colombia	168	172	272	239	248	305	312	335	471	465	383	428	373
Peru	29	23	9	11	16	17	16	19	22	28	76	54	53
Venezuela	53	58	77	61	56	55	23	11	42	40	54	33	37
All others	162	139	161	197	208	305	350	360	411	705	791	993	1,163
Europe													
EU													
EU ROW	25,774	31,257	39,219	61,531	71,553	78,656	86,785	103,898	115,331	116,538	126,009	142,200	141,921
Austria	1,464	1,449	2,008	3,362	3,844	4,734	5,797	6,529	7,654	8,138	9,217	9,960	10,040
Belgium	4,358	5,479	7,136	11,983	14,851	17,668	19,301	23,636	26,006	27,387	30,075	33,037	32,477
Czech Republic	198	192	226	302	399	533	776	991	1,167	1,196	1,369	1,543	1,670
Denmark	2,511	3,037	3,851	5,797	6,803	8,326	6,631	9,706	10,681	10,435	7,059	8,324	9,093
Finland	220	292	404	711	879	1,182	1,473	1,452	1,793	1,962	2,173	2,447	2,240
France	8,008	10,010	12,761	18,994	21,959	24,506	26,533	29,765	34,937	35,444	37,020	35,007	36,272
Germany	11,728	14,938	17,092	24,322	35,109	39,793	46,716	58,275	68,083	64,840	67,510	71,460	70,486
Hungary	393	345	486	801	1,035	1,268	1,681	2,318	3,002	2,925	3,466	4,154	3,769
Ireland	3,469	4,834	9,002	29,710	33,894	35,856	34,711	36,581	40,295	39,638	40,564	41,897	38,925
Italy	4,660	5,729	7,469	9,332	12,036	14,094	15,724	18,744	19,279	18,931	20,279	23,351	23,036
Netherlands	3,542	4,071	5,197	7,218	8,902	9,941	11,189	12,813	11,326	12,026	15,674	20,753	22,332
Poland	285	141	159	212	337	560	775	1,017	1,514	1,880	2,308	2,515	2,549
Slovakia	138	111	112	138	183	202	235	310	413	352	451	505	567
Spain	1,560	2,190	2,880	5,314	6,361	7,404	8,027	10,197	11,445	11,888	14,245	13,813	14,548
Sweden	3,002	4,102	4,252	6,614	7,189	7,561	8,946	8,833	9,923	9,349	9,612	9,709	8,939
United Kingdom	9,055	10,566	13,743	20,058	23,168	22,780	25,721	29,696	32,819	32,302	32,276	33,352	37,132
All others	882	971	1,430	2,284	2,836	3,233	3,850	4,764	5,723	5,969	6,680	7,683	7,794
Other Europe													
Norway	211	198	235	373	479	537	677	815	957	1,083	1,146	1,218	1,017
Russia	111	124	143	228	207	215	260	309	342	416	369	517	433
Switzerland	8,074	9,782	10,954	14,890	18,844	21,484	26,260	32,644	39,462	41,122	44,679	53,025	46,248
All others	313	367	390	577	844	790	739	1,094	1,133	1,720	2,270	2,621	3,307

Appendix table 6-29

Exports and imports of pharmaceutical products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	435	593	1,175	1,378	1,718	2,458	3,408	3,805	5,334	5,485	7,771	9,509	9,721
Saudi Arabia	3	24	44	56	43	78	148	378	261	194	279	450	442
Turkey	86	90	124	201	263	346	396	449	621	671	825	917	1,040
United Arab Emirates	25	95	103	124	147	215	196	263	284	298	313	496	538
All others	81	173	229	282	347	431	500	682	857	924	999	1,096	674
Africa													
Egypt	73	63	76	79	94	133	138	201	237	294	336	358	320
Kenya	29	28	27	26	28	34	40	60	91	71	78	87	103
Morocco	9	15	13	15	21	25	28	32	48	37	43	54	53
Southern Africa	73	80	106	127	155	161	167	239	274	324	203	238	195
Tunisia	25	8	8	10	18	16	18	24	28	36	30	33	37
All others	59	21	37	43	57	56	73	100	82	118	104	91	134
Asia													
China ROW	1,739	1,934	2,173	3,124	3,560	4,088	4,831	6,401	8,756	9,381	11,743	12,381	13,480
India	763	894	1,296	2,191	2,464	3,085	3,782	5,778	6,747	7,065	8,940	11,425	13,334
Indonesia	59	92	98	138	143	124	164	224	275	262	372	430	401
Japan	2,192	2,746	3,136	4,297	4,570	4,587	4,055	4,429	4,721	5,599	5,786	5,526	4,840
Malaysia	74	75	82	111	129	145	151	192	187	275	343	297	260
Philippines	29	23	28	22	32	31	34	42	41	49	45	54	56
Singapore	517	745	901	829	1,028	2,689	4,656	5,763	5,552	7,027	9,457	12,556	13,368
South Korea	341	284	327	418	463	535	629	824	1,040	1,198	1,266	1,377	1,412
Taiwan	102	87	88	96	140	186	237	243	289	321	361	458	475
Thailand	105	103	120	144	158	193	224	278	333	317	380	409	382
Vietnam	3	5	13	18	15	29	30	42	52	61	76	86	110
All others	54	65	80	75	110	149	158	212	226	297	273	340	303
Australia/Oceania													
Australia	823	1,037	1,336	1,488	1,954	2,424	2,947	3,604	3,652	3,806	4,037	4,472	3,859
New Zealand	62	72	88	135	174	172	174	210	267	236	260	301	263
Pacific Islands	0	0	2	2	3	4	4	30	19	31	38	93	87
Imports													
World	50,853	62,708	77,813	111,459	133,429	150,273	171,208	208,059	238,669	252,677	276,902	310,471	307,706
North America													
NAFTA ROW	9,507	14,913	20,457	33,984	38,304	42,825	50,237	56,943	64,640	65,765	71,898	77,221	76,833
Canada	2,236	3,169	4,221	5,871	6,618	7,517	8,971	9,686	10,937	11,663	11,604	12,619	13,104
Mexico	737	1,067	1,449	1,892	2,212	2,486	3,093	3,434	3,970	3,892	4,617	4,786	5,036
United States ROW	7,250	11,471	16,097	28,389	32,115	35,609	42,058	48,861	54,732	55,417	60,202	64,152	62,758
Central and South America													
Argentina	564	701	748	581	647	723	861	1,056	1,234	1,270	1,617	1,805	1,948
Brazil	1,328	1,611	1,659	1,755	2,047	2,188	2,792	3,534	4,485	4,685	6,244	6,429	6,314
Central America	564	637	824	980	995	1,266	1,395	1,739	2,019	3,455	3,432	5,326	5,962

Appendix table 6-29

Exports and imports of pharmaceutical products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	201	228	280	302	322	380	513	690	790	655	744	939	901
Colombia	358	350	432	457	500	552	716	800	1,002	1,099	1,225	1,497	1,459
Peru	150	162	184	189	198	227	266	942	416	465	545	564	549
Venezuela	243	318	565	446	630	836	888	1,285	1,731	1,978	2,509	2,795	3,610
All others	658	778	869	847	1,277	1,072	1,248	1,440	1,702	1,656	2,103	2,264	2,097
Europe													
EU													
EU ROW	11,552	14,891	18,772	24,775	32,698	36,112	41,016	51,149	60,529	65,921	69,032	74,395	70,602
Austria	1,685	2,216	2,615	3,273	4,008	3,974	4,622	4,938	5,452	6,579	6,824	7,740	8,139
Belgium	3,387	4,369	8,609	19,775	28,957	33,426	33,345	37,847	40,866	41,815	40,902	35,484	35,733
Czech Republic	678	742	884	1,371	1,626	1,916	2,257	2,846	3,585	3,609	3,725	4,094	3,985
Denmark	752	864	1,065	1,659	2,009	2,296	2,455	3,266	4,101	3,731	3,410	3,567	3,698
Finland	567	642	717	1,239	1,508	1,739	2,130	2,006	2,628	2,357	2,396	2,366	2,407
France	5,425	7,111	8,491	11,592	13,927	15,303	16,271	18,455	20,688	22,640	24,357	25,091	25,080
Germany	6,511	7,707	9,861	18,732	23,508	26,589	30,574	37,642	43,290	43,598	44,985	45,803	47,067
Hungary	454	573	709	1,184	1,383	1,545	2,063	2,234	3,182	2,700	3,249	4,193	4,104
Ireland	992	1,245	1,644	2,340	3,392	4,335	4,136	4,440	5,026	5,328	6,259	7,320	6,890
Italy	4,491	5,866	7,141	10,875	12,868	13,574	14,839	17,553	18,930	19,243	20,242	22,757	20,489
Netherlands	3,501	4,352	4,639	7,252	10,940	12,402	13,996	16,357	19,619	17,752	20,082	21,235	22,342
Poland	1,134	1,314	1,816	2,244	2,557	2,827	3,731	4,702	6,268	5,242	6,137	6,779	6,502
Slovakia	310	278	343	474	654	763	958	1,496	1,565	1,718	1,645	1,959	1,927
Spain	2,579	3,509	4,700	7,414	8,666	9,285	10,324	13,363	17,092	18,360	16,962	17,009	18,390
Sweden	1,264	1,586	1,728	2,365	2,595	2,748	3,209	3,430	3,979	4,032	3,890	4,594	4,447
United Kingdom	5,039	6,684	9,043	12,870	14,764	15,905	17,443	20,544	20,680	21,164	24,174	26,827	25,462
All others	2,480	3,031	3,758	5,739	7,570	8,472	9,966	11,757	14,305	14,177	13,760	14,886	13,889
Other Europe													
Norway	551	547	648	963	1,087	1,140	1,128	1,218	1,241	1,231	1,482	1,676	1,901
Russia	1,644	844	1,796	2,197	2,779	3,988	5,913	6,401	8,749	7,806	11,034	13,129	14,688
Switzerland	3,401	4,993	5,608	9,215	11,003	11,924	14,655	17,672	17,017	16,399	17,310	21,152	18,469
All others	858	815	998	1,498	1,991	2,399	3,049	4,155	5,043	4,779	4,984	5,773	4,705
Middle East													
Israel	445	545	612	754	845	889	1,036	1,170	1,334	1,343	1,479	1,598	1,491
Saudi Arabia	766	930	972	1,319	1,483	1,603	1,863	2,127	2,533	2,886	3,344	3,847	4,069
Turkey	705	996	1,192	2,036	2,716	2,873	3,171	3,830	4,892	4,634	4,737	5,098	4,706
United Arab Emirates	196	235	304	418	496	560	734	1,004	1,140	1,257	1,445	1,698	2,359
All others	1,045	1,196	1,521	1,959	2,206	2,384	2,644	3,432	4,065	4,505	4,979	5,748	5,553
Africa													
Egypt	343	420	481	500	546	623	692	912	1,108	1,363	1,431	1,508	1,751
Kenya	97	93	102	135	152	180	250	256	315	307	371	511	558
Morocco	141	146	160	221	256	287	343	412	473	516	549	613	626
Southern Africa	569	646	720	819	1,012	1,304	1,738	2,209	2,139	1,824	2,399	2,382	2,432

Appendix table 6-29

Exports and imports of pharmaceutical products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	184	188	193	233	275	278	276	344	409	453	486	576	592
All others	1,568	1,734	2,024	2,792	3,384	3,636	4,057	5,327	6,082	6,410	6,695	7,524	7,947
Asia													
China ROW	1,806	1,543	1,615	2,046	2,253	2,668	3,105	4,344	5,828	6,664	8,202	10,941	10,867
India	417	443	531	796	955	1,107	1,503	1,858	2,273	2,459	3,130	3,493	3,772
Indonesia	243	156	209	321	293	295	371	467	521	598	725	781	814
Japan	3,791	4,344	4,716	5,607	6,540	7,311	7,917	8,472	9,750	13,385	15,402	18,178	19,483
Malaysia	334	289	361	500	601	634	743	875	966	1,067	1,145	1,329	1,382
Philippines	338	352	391	494	535	553	614	722	840	875	968	1,053	1,125
Singapore	544	546	686	842	910	1,427	1,517	1,763	1,737	1,721	2,073	2,584	2,670
South Korea	664	629	972	1,342	1,549	1,885	2,472	2,982	3,361	3,417	4,361	4,397	3,987
Taiwan	678	813	911	1,083	1,327	1,371	1,532	1,705	1,859	2,009	2,320	2,639	2,394
Thailand	521	452	553	648	744	910	1,102	1,218	1,484	1,634	1,772	2,019	2,116
Vietnam	334	283	328	406	460	543	641	802	986	1,170	1,307	1,585	1,638
All others	746	767	959	1,289	1,526	1,870	2,142	2,659	3,131	3,490	4,046	4,563	4,599
Australia/Oceania													
Australia	1,472	1,903	2,127	3,300	4,154	4,819	4,906	5,534	5,869	6,492	7,308	8,473	8,520
New Zealand	414	370	336	515	601	794	740	799	886	825	900	961	872
Pacific Islands	80	84	101	148	185	195	212	245	302	282	300	300	294

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

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Appendix table 6-30

Exports and imports of aircraft products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	84,825	94,981	80,978	77,028	87,951	92,492	121,942	141,141	162,693	150,463	153,940	170,735	183,251
North America													
NAFTA ROW	38,960	47,554	42,554	37,618	39,950	48,138	66,027	74,791	80,366	80,979	78,111	85,299	99,981
Canada	3,766	5,072	8,722	8,004	7,224	8,146	8,993	10,475	10,395	10,259	10,107	10,375	8,676
Mexico	47	100	72	83	56	52	98	259	571	466	587	783	824
United States ROW	37,923	46,265	39,978	35,969	38,049	45,987	62,081	70,812	75,802	75,811	72,521	80,262	96,279
Central and South America													
Argentina	15	68	67	115	4	63	236	315	677	583	561	770	361
Brazil	686	1,855	2,910	2,239	4,420	3,311	3,273	5,210	5,433	4,074	4,720	4,631	3,059
Central America	8	18	13	10	11	21	9	11	41	49	3	48	46
Chile	7	33	32	22	28	32	24	41	49	29	21	19	20
Colombia	8	13	28	16	5	21	6	6	30	26	149	517	284
Peru	9	0	1	0	5	1	4	1	1	1	1	6	4
Venezuela	37	0	5	50	21	32	41	77	23	1	29	2	0
All others	38	179	70	39	71	153	88	215	279	88	119	55	27
Europe													
EU													
EU ROW	28,586	28,039	24,435	24,768	30,077	29,599	37,769	41,580	50,819	47,404	54,088	58,222	51,390
Austria	216	334	682	978	1,522	381	865	932	789	665	761	833	2,030
Belgium	492	600	740	805	541	662	790	1,181	1,393	1,052	1,282	1,265	1,579
Czech Republic	224	465	62	141	201	219	340	690	622	739	351	318	389
Denmark	213	479	189	138	322	247	402	301	253	209	223	276	359
Finland	33	59	115	56	45	161	55	80	188	114	402	121	63
France	17,990	20,466	24,503	24,618	28,227	29,726	40,283	41,170	48,211	44,052	51,801	51,858	41,104
Germany	8,686	13,504	15,402	16,005	18,514	19,245	23,723	25,710	29,487	32,973	30,317	36,811	29,438
Hungary	2	2	5	58	244	22	27	33	45	57	23	105	78
Ireland	189	248	197	138	506	273	809	465	509	1,031	691	1,348	1,026
Italy	1,230	2,118	2,190	1,795	2,210	2,000	2,336	2,982	3,536	3,712	3,847	5,365	8,288
Netherlands	696	456	618	691	1,093	710	1,076	957	1,090	965	1,112	1,350	1,915
Poland	49	65	213	105	142	137	154	177	263	249	331	457	924
Slovakia	17	18	18	22	21	8	58	68	38	49	37	23	31
Spain	814	933	1,111	1,252	2,216	1,979	1,551	2,570	2,685	2,500	2,906	3,410	5,531
Sweden	874	380	388	476	454	816	477	375	883	581	771	927	1,083
United Kingdom	13,810	12,913	6,431	6,133	7,059	8,331	8,541	9,885	12,386	10,621	10,724	11,087	14,380
All others	107	223	359	553	720	555	680	544	1,022	692	668	671	610
Other Europe													
Norway	79	50	619	347	315	194	388	344	311	253	274	257	335
Russia	265	576	1,854	3,170	2,988	594	753	782	1,435	690	502	660	735
Switzerland	517	705	577	1,683	2,025	1,300	1,479	2,014	2,554	2,159	1,516	1,717	2,691
All others	1,966	186	185	206	203	218	414	907	1,458	701	369	662	855

Appendix table 6-30

Exports and imports of aircraft products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	812	1,218	1,494	1,478	1,487	1,552	1,683	2,541	2,105	2,509	2,469	2,427	2,925
Saudi Arabia	5	34	260	96	376	321	529	850	3,257	193	227	221	819
Turkey	78	296	242	158	300	150	291	533	350	422	270	376	398
United Arab Emirates	60	72	93	46	242	244	222	265	881	188	110	530	462
All others	59	73	47	118	199	188	345	318	401	385	300	413	346
Africa													
Egypt	3	2	1	14	21	1	36	8	33	6	26	2	2
Kenya	3	0	1	2	37	2	2	20	78	3	14	7	5
Morocco	7	4	17	8	5	8	13	47	92	68	114	137	166
Southern Africa	138	129	155	82	163	647	528	584	500	232	283	345	263
Tunisia	1	1	16	4	3	6	16	7	10	15	51	163	211
All others	111	217	42	174	255	255	390	282	621	297	112	232	504
Asia													
China ROW	320	372	457	337	398	481	618	769	1,209	867	1,176	1,577	3,350
India	95	25	94	70	68	76	128	403	690	571	458	1,413	1,794
Indonesia	39	59	35	47	65	106	214	132	104	198	104	273	234
Japan	1,380	1,698	1,790	1,142	1,404	1,680	2,216	2,806	2,779	2,782	2,765	3,634	4,496
Malaysia	500	483	157	137	218	270	344	615	586	703	523	800	1,059
Philippines	36	18	37	158	208	132	114	89	88	79	70	77	62
Singapore	445	320	666	786	640	1,019	1,495	1,707	2,166	1,940	2,219	2,464	3,314
South Korea	457	300	463	438	313	316	452	541	555	548	737	681	840
Taiwan	31	50	73	123	106	126	135	160	161	134	143	193	263
Thailand	555	20	24	190	171	104	155	386	346	208	338	531	589
Vietnam	4	3	1	1	2	6	18	14	13	27	35	47	90
All others	49	176	100	93	98	106	335	581	757	99	73	224	182
Australia/Oceania													
Australia	375	342	357	370	328	382	369	421	521	608	560	774	865
New Zealand	106	165	38	61	156	161	395	108	193	162	100	126	71
Pacific Islands	18	12	11	10	46	22	16	8	43	12	4	11	3
Imports													
World	84,825	94,981	80,978	77,028	87,951	92,492	121,942	141,141	162,693	150,463	153,940	170,735	183,251
North America													
NAFTA ROW	9,791	13,229	18,118	12,611	17,166	12,996	15,290	19,015	18,916	15,315	17,256	19,241	21,552
Canada	4,187	3,945	5,327	3,307	3,563	4,421	4,775	6,398	8,642	6,774	6,918	7,598	8,124
Mexico	271	399	733	866	1,262	1,332	2,264	2,184	2,856	1,761	2,417	2,702	2,329
United States ROW	8,110	12,767	18,275	14,875	17,720	13,290	13,397	17,187	13,820	12,337	13,025	15,063	16,897
Central and South America													
Argentina	237	731	121	94	283	450	385	465	719	690	1,177	1,099	1,029
Brazil	1,114	1,695	2,500	1,262	2,203	2,131	3,830	5,770	8,189	6,329	6,615	7,657	8,011
Central America	200	409	442	548	515	369	864	837	1,048	756	1,013	1,353	1,386

Appendix table 6-30

Exports and imports of aircraft products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	294	155	676	115	302	445	1,415	1,190	1,364	1,698	1,243	1,890	2,156
Colombia	257	208	189	382	144	194	341	623	1,264	1,662	1,318	1,314	1,335
Peru	24	26	19	19	26	35	70	67	60	112	197	197	185
Venezuela	110	238	114	90	122	151	161	377	185	320	122	160	224
All others	985	746	858	862	718	603	1,254	1,038	2,034	1,308	1,608	1,280	1,276
Europe													
EU													
EU ROW	23,006	31,833	19,331	17,557	20,714	18,702	23,268	30,423	40,192	39,062	34,522	37,148	38,941
Austria	466	651	668	525	1,387	899	1,150	1,340	1,683	1,478	928	1,146	921
Belgium	1,179	2,116	1,559	911	915	962	1,028	1,504	2,417	1,680	1,864	2,973	3,975
Czech Republic	211	443	184	243	265	763	323	748	745	478	588	487	426
Denmark	315	615	681	541	877	492	574	986	788	986	558	537	664
Finland	487	564	380	477	412	352	467	666	556	983	612	331	328
France	8,321	12,792	13,050	13,789	15,388	15,564	20,124	23,230	29,383	29,952	27,141	32,731	34,334
Germany	7,168	10,211	13,461	11,115	12,353	14,993	20,919	20,196	25,780	26,467	28,662	28,787	27,339
Hungary	31	14	47	539	785	212	183	248	289	478	431	711	467
Ireland	456	1,427	1,145	1,412	3,136	3,161	2,572	3,730	2,317	2,767	2,514	2,118	1,687
Italy	1,412	2,427	1,894	3,088	2,740	1,879	2,288	2,644	2,933	3,031	2,576	3,007	3,210
Netherlands	1,857	1,779	1,669	2,876	2,593	1,845	2,542	2,615	2,578	2,685	2,379	2,637	2,207
Poland	287	86	132	165	424	245	617	1,212	1,384	648	734	1,014	1,408
Slovakia	17	53	23	48	75	37	337	485	141	62	94	32	23
Spain	900	2,704	2,388	2,063	2,587	3,169	3,230	3,580	3,318	2,778	3,032	2,744	2,659
Sweden	513	1,316	1,111	756	987	502	565	829	955	684	570	792	1,387
United Kingdom	15,954	18,019	8,409	6,651	6,926	7,828	8,500	9,480	13,566	12,452	11,504	13,234	13,928
All others	493	1,842	1,316	1,555	2,824	1,675	2,244	3,470	3,942	4,311	2,495	1,869	1,417
Other Europe													
Norway	368	348	1,075	460	395	560	388	672	1,033	1,378	1,296	1,342	1,555
Russia	178	611	133	585	986	614	1,628	1,676	3,037	3,032	2,349	3,175	3,962
Switzerland	2,051	2,359	1,501	2,531	1,592	1,936	2,315	2,689	3,920	2,925	3,432	2,722	2,465
All others	2,882	407	475	554	714	455	689	930	1,460	2,033	1,021	667	1,322
Middle East													
Israel	669	1,821	1,126	802	1,408	1,650	1,644	1,970	2,079	1,242	1,137	935	1,060
Saudi Arabia	2,682	3,672	2,141	1,314	942	1,336	1,537	1,365	2,265	2,717	4,395	2,816	3,844
Turkey	623	1,160	1,058	446	753	1,146	2,729	1,658	2,723	1,708	3,693	4,998	3,228
United Arab Emirates	758	1,496	1,475	2,009	1,115	4,703	7,455	6,053	6,081	5,802	5,539	7,812	11,815
All others	658	1,252	645	2,112	2,007	1,798	3,143	3,481	3,706	5,150	4,834	4,169	4,384
Africa													
Egypt	1,076	320	898	569	550	837	879	862	395	768	1,526	1,111	875
Kenya	122	100	600	119	242	467	729	408	310	400	526	428	366
Morocco	125	157	37	407	177	271	473	436	314	468	591	717	500
Southern Africa	458	364	880	1,151	1,428	1,605	878	926	1,529	1,104	1,077	1,698	1,674

Appendix table 6-30

Exports and imports of aircraft products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	13	282	134	28	49	123	54	282	210	246	241	273	314
All others	721	915	1,011	984	983	2,271	1,953	2,464	8,411	3,237	3,118	3,220	2,689
Asia													
China ROW	4,615	4,416	6,958	5,681	6,072	9,664	13,637	15,499	13,507	13,767	16,472	19,797	19,150
India	509	604	708	981	1,137	1,701	4,613	8,102	4,214	5,413	2,707	2,395	2,710
Indonesia	1,187	207	226	228	240	369	398	1,298	1,103	2,096	2,626	2,346	2,651
Japan	4,703	4,929	3,079	5,331	5,577	5,741	6,967	7,959	7,325	6,185	5,984	5,838	9,117
Malaysia	1,477	549	765	402	890	770	1,756	1,505	2,008	2,240	2,279	2,830	2,781
Philippines	1,568	92	119	224	376	354	876	796	1,090	573	1,105	1,093	1,476
Singapore	2,580	2,103	3,875	3,455	3,384	3,832	4,615	4,023	6,303	6,178	6,731	6,640	7,677
South Korea	2,532	2,176	3,044	2,181	2,241	2,462	4,134	3,776	2,988	2,749	3,237	4,804	4,682
Taiwan	2,382	2,204	1,860	1,448	1,906	3,490	2,274	2,524	1,658	1,098	1,827	1,993	1,790
Thailand	1,998	1,013	1,250	1,229	1,039	1,986	1,808	1,992	1,302	1,247	1,514	1,645	1,788
Vietnam	14	15	73	776	919	547	140	979	611	835	889	1,090	867
All others	795	1,217	411	986	2,403	1,385	2,555	2,431	2,646	2,281	2,657	4,129	3,727
Australia/Oceania													
Australia	1,139	1,455	1,236	2,760	2,649	2,345	2,538	2,099	4,575	3,658	3,721	4,972	5,043
New Zealand	399	566	755	454	562	855	1,214	750	522	830	713	1,349	849
Pacific Islands	70	141	99	369	117	216	92	114	177	140	67	153	156

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-31

Exports and imports of measuring, testing, and control instrument products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	106,501	113,429	126,987	150,153	191,873	214,741	247,349	274,617	304,278	264,226	331,054	377,474	380,674
North America													
NAFTA ROW	24,175	25,661	29,719	28,216	34,047	41,152	47,142	50,728	52,454	48,127	55,950	60,293	62,364
Canada	1,928	2,454	2,844	2,575	3,096	3,614	4,125	4,308	4,730	4,002	4,439	4,979	4,612
Mexico	2,684	3,876	5,039	6,630	7,197	8,381	9,083	10,063	10,389	9,690	11,651	12,796	12,681
United States ROW	23,485	24,831	28,538	26,691	31,822	37,734	43,135	46,530	47,595	43,899	51,232	55,124	57,373
Central and South America													
Argentina	51	62	109	76	111	137	153	180	227	183	176	191	167
Brazil	249	289	314	283	342	410	553	592	703	614	679	839	770
Central America	104	130	349	558	544	620	719	883	984	951	1,066	1,244	1,439
Chile	11	9	9	13	23	20	36	33	44	50	40	68	73
Colombia	23	20	20	27	41	44	55	70	89	67	59	66	61
Peru	5	4	2	4	4	6	6	8	13	9	10	23	18
Venezuela	7	9	15	23	21	31	32	13	29	26	15	19	22
All others	381	435	486	592	581	622	637	747	873	907	990	1,019	1,129
Europe													
EU													
EU ROW	24,494	25,560	29,463	36,851	46,397	50,150	56,863	59,098	65,414	56,316	65,494	77,594	79,329
Austria	1,085	1,061	1,179	1,710	2,098	2,243	2,386	2,863	3,346	2,891	3,162	3,614	3,608
Belgium	1,296	1,716	1,775	2,406	3,030	3,502	3,688	4,527	5,580	5,059	5,732	6,435	6,327
Czech Republic	259	316	417	676	927	930	1,111	1,342	1,645	1,662	1,773	2,359	2,461
Denmark	1,386	1,357	1,570	1,832	2,216	2,474	2,666	3,149	3,404	3,050	3,155	3,635	3,736
Finland	809	843	934	1,150	1,263	1,356	1,466	1,585	1,836	1,495	1,622	1,769	1,568
France	6,000	6,020	6,696	8,296	9,596	9,838	11,422	13,202	14,541	12,053	12,992	15,181	16,026
Germany	16,311	18,668	20,478	25,357	31,183	34,942	39,969	45,497	48,403	40,168	47,605	56,710	54,840
Hungary	200	286	589	902	1,116	1,266	1,765	2,119	2,287	1,998	2,654	3,293	3,108
Ireland	1,811	2,089	2,621	4,270	5,649	6,094	6,107	5,391	6,371	5,850	6,239	6,641	7,028
Italy	4,321	4,217	4,677	6,095	7,192	7,656	8,553	9,882	10,662	8,789	9,480	11,107	11,400
Netherlands	4,762	5,117	5,699	7,327	9,735	10,629	12,780	8,982	10,206	9,476	10,345	12,483	12,795
Poland	152	152	192	446	716	798	878	1,060	1,419	1,247	1,527	1,965	1,969
Slovakia	102	63	89	151	205	228	328	457	539	476	659	853	947
Spain	1,182	1,279	1,258	1,859	2,036	2,084	2,395	2,853	2,935	2,285	2,488	2,671	2,848
Sweden	1,608	1,743	1,887	2,315	2,693	2,811	2,989	3,423	3,647	3,058	3,288	3,732	3,787
United Kingdom	9,698	9,185	9,670	10,412	11,625	12,159	12,511	13,303	13,805	12,252	13,667	15,710	17,733
All others	640	673	735	1,135	1,344	1,513	1,880	2,348	2,876	2,470	2,792	3,680	3,800
Other Europe													
Norway	618	671	673	746	974	1,034	1,185	1,519	1,829	1,561	1,566	1,694	1,601
Russia	275	441	618	548	660	647	804	900	1,220	960	1,076	2,372	2,242
Switzerland	9,523	10,116	10,636	12,637	15,026	16,514	18,282	21,875	25,360	20,263	24,836	33,491	29,308
All others	195	210	283	565	752	557	593	842	1,112	992	948	1,150	1,318

Appendix table 6-31

Exports and imports of measuring, testing, and control instrument products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Israel	1,025	1,515	1,879	1,480	2,178	2,190	2,600	2,989	2,977	2,523	3,096	3,746	3,998
Saudi Arabia	247	217	145	93	122	128	121	167	115	88	124	221	210
Turkey	61	81	92	119	170	206	251	325	392	384	449	552	639
United Arab Emirates	118	223	205	297	358	512	416	599	613	632	792	1,224	1,292
All others	142	128	107	152	223	187	203	238	245	232	258	419	284
Africa													
Egypt	15	23	15	18	21	28	36	43	86	86	72	72	61
Kenya	3	5	5	10	6	10	7	16	16	26	17	24	29
Morocco	16	21	18	28	27	38	42	50	61	54	44	41	35
Southern Africa	117	118	138	202	238	247	269	343	425	479	396	480	382
Tunisia	45	57	53	92	97	130	183	238	297	275	317	372	342
All others	103	146	104	121	216	143	123	190	260	188	197	228	252
Asia													
China ROW	10,182	11,401	12,804	16,594	21,005	23,370	27,558	34,344	40,514	34,604	46,582	53,694	57,724
India	178	208	314	475	609	693	862	1,043	1,155	1,154	1,403	1,785	1,998
Indonesia	538	469	534	529	543	640	788	840	884	857	887	1,002	995
Japan	21,369	22,063	24,038	27,971	36,420	35,671	35,380	33,826	35,662	29,209	41,059	48,140	44,564
Malaysia	1,282	1,258	1,789	2,036	2,641	2,919	3,604	4,050	4,423	3,811	5,880	6,525	6,197
Philippines	729	777	902	1,194	1,295	1,366	1,356	1,602	1,638	1,450	1,702	1,810	1,794
Singapore	2,549	2,438	2,682	3,324	3,842	4,164	4,557	5,557	6,140	5,629	7,686	9,348	10,496
South Korea	2,089	3,083	1,865	2,687	5,297	9,797	15,912	20,022	24,168	26,353	33,642	34,030	34,466
Taiwan	2,712	2,690	3,304	7,797	12,614	15,367	20,173	23,527	25,965	17,999	24,799	23,993	25,901
Thailand	1,207	1,162	1,576	2,023	2,466	2,714	3,087	3,678	3,907	3,590	4,596	4,977	4,768
Vietnam	16	46	76	107	135	149	240	318	441	492	590	817	916
All others	237	161	207	230	253	255	309	401	432	424	610	556	523
Australia/Oceania													
Australia	651	855	1,049	957	1,099	1,284	1,522	1,806	2,079	1,871	2,134	2,419	2,117
New Zealand	96	112	131	192	255	283	319	389	402	394	414	430	391
Pacific Islands	5	4	2	3	6	5	9	8	8	40	17	10	9
Imports													
World	106,501	113,429	126,987	150,153	191,873	214,741	247,349	274,617	304,278	264,226	331,054	377,474	380,674
North America													
NAFTA ROW	21,554	26,269	29,863	31,955	38,084	40,272	44,983	49,617	53,535	44,073	51,552	58,733	62,092
Canada	5,384	6,642	7,289	6,960	7,864	8,336	8,939	9,502	9,787	8,719	10,014	11,368	11,601
Mexico	2,333	2,942	3,792	4,045	4,638	4,941	7,010	9,808	12,079	9,665	10,338	10,852	11,575
United States ROW	17,758	22,186	25,483	28,631	33,651	35,572	38,236	40,480	41,929	35,153	42,571	49,119	51,218
Central and South America													
Argentina	682	636	510	335	415	574	767	933	1,161	956	1,273	1,675	1,682
Brazil	1,775	1,528	1,775	1,445	1,877	2,394	2,977	4,092	5,440	4,423	5,641	5,826	5,756
Central America	488	532	577	606	624	814	892	986	1,133	983	1,191	1,341	1,442

Appendix table 6-31

Exports and imports of measuring, testing, and control instrument products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Chile	391	335	320	333	399	513	598	669	753	735	895	1,045	1,008
Colombia	319	226	275	317	391	506	650	788	977	926	1,185	1,398	1,398
Peru	150	123	108	117	139	192	242	544	437	406	523	562	611
Venezuela	266	261	403	166	396	602	826	1,061	1,362	1,086	1,176	1,479	1,697
All others	713	666	795	866	1,094	1,313	1,516	1,809	1,839	1,616	1,775	2,080	2,209
Europe													
EU													
EU ROW	24,902	28,278	30,118	31,349	36,774	42,384	50,301	56,497	63,508	55,524	63,883	71,445	65,505
Austria	1,528	1,669	1,732	2,106	2,492	2,662	2,977	3,247	3,637	3,144	3,606	4,185	4,264
Belgium	2,981	3,398	3,470	3,590	4,595	5,034	5,803	7,027	8,460	7,950	8,334	9,597	9,802
Czech Republic	600	648	793	1,271	1,407	1,588	1,802	2,735	3,192	2,703	3,279	3,541	3,475
Denmark	947	992	1,072	1,185	1,418	1,624	1,920	2,218	2,452	2,227	2,372	2,660	2,597
Finland	739	926	911	1,004	1,144	1,251	1,375	1,576	1,737	1,426	1,522	1,684	1,718
France	6,704	7,777	8,053	9,611	11,380	12,239	13,469	14,631	15,957	14,075	15,777	17,682	16,739
Germany	10,779	11,895	13,298	14,365	16,656	18,642	21,803	24,444	27,076	23,468	26,565	32,130	31,147
Hungary	414	492	587	1,012	1,115	1,357	1,786	2,203	2,477	2,152	2,714	2,569	2,398
Ireland	937	1,068	1,162	1,472	1,524	1,904	1,773	1,709	1,864	1,648	1,683	1,877	1,783
Italy	5,100	5,653	6,044	7,119	8,090	8,799	9,593	10,653	11,563	10,124	10,886	12,305	10,638
Netherlands	4,722	5,445	5,576	6,861	7,904	9,670	11,104	11,643	12,328	10,409	13,000	15,255	15,612
Poland	773	757	827	965	1,321	1,631	2,723	4,608	5,992	5,432	6,947	7,555	6,911
Slovakia	223	196	261	427	700	1,126	2,139	1,818	2,266	1,954	2,469	3,477	3,235
Spain	3,139	3,674	3,678	4,823	5,576	6,382	7,495	7,969	8,062	6,727	7,183	7,891	8,023
Sweden	1,767	1,962	2,062	2,231	2,544	2,745	2,982	3,564	3,640	2,907	3,205	3,714	3,423
United Kingdom	8,422	8,571	9,162	9,673	11,425	12,196	12,894	13,789	14,457	12,050	12,653	13,886	12,989
All others	2,255	2,380	2,431	3,122	3,711	3,908	4,695	5,546	6,434	5,091	5,378	5,682	5,402
Other Europe													
Norway	920	939	881	1,148	1,387	1,516	1,903	2,229	2,314	2,191	2,225	2,646	3,064
Russia	1,144	721	1,291	1,730	2,136	2,456	3,524	5,045	6,243	3,962	5,660	7,267	8,183
Switzerland	2,833	3,123	3,287	3,932	4,535	4,916	5,571	6,387	7,220	6,165	7,004	8,750	8,164
All others	663	590	752	1,139	1,469	1,523	1,853	2,437	2,942	2,112	2,329	2,569	2,232
Middle East													
Israel	686	1,088	949	987	1,191	1,333	1,553	1,619	1,612	1,368	1,510	1,881	1,614
Saudi Arabia	1,204	991	1,038	1,233	1,323	1,400	1,613	1,968	2,272	2,505	2,659	3,116	3,490
Turkey	1,056	982	835	1,245	1,794	2,297	2,651	3,265	3,289	2,717	3,524	4,394	4,267
United Arab Emirates	1,019	929	1,267	1,506	1,733	1,863	2,133	2,618	3,269	2,777	3,159	3,739	5,077
All others	1,105	981	1,510	1,933	2,362	2,537	2,804	3,572	4,268	4,172	4,529	5,146	5,681
Africa													
Egypt	426	440	374	357	482	546	565	699	856	903	948	879	1,084
Kenya	43	46	48	56	80	66	85	122	103	121	135	172	197
Morocco	123	137	140	191	237	236	278	305	409	385	415	436	464
Southern Africa	722	704	754	938	1,173	1,333	1,548	1,762	1,892	1,605	1,897	2,277	2,260

Appendix table 6-31

Exports and imports of measuring, testing, and control instrument products, by region/country/economy: Selected years, 1997–2012

(Millions of current dollars)

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Tunisia	136	150	161	176	218	232	273	327	384	358	387	393	436
All others	836	820	963	1,392	1,788	1,927	2,184	2,940	3,405	3,302	3,314	3,582	3,871
Asia													
China ROW	8,180	8,098	10,957	20,760	31,447	37,696	43,537	52,517	60,138	54,929	77,685	87,695	88,331
India	917	1,014	1,237	1,553	2,020	2,612	3,174	3,896	4,645	4,780	5,893	6,952	7,544
Indonesia	680	362	483	502	625	790	819	1,031	1,579	1,388	1,993	2,620	2,908
Japan	10,757	11,109	12,775	14,146	16,702	19,129	22,088	20,354	20,949	16,967	20,794	23,473	24,418
Malaysia	1,698	1,537	1,965	2,014	2,472	2,419	3,150	3,345	4,190	3,790	5,818	5,805	6,103
Philippines	921	943	1,066	1,250	1,668	1,560	1,661	1,769	1,650	1,346	1,749	1,867	1,831
Singapore	4,066	3,599	3,785	4,153	6,042	5,592	6,696	6,825	7,439	6,302	8,130	9,287	9,202
South Korea	5,080	4,328	5,116	7,522	9,940	11,496	12,271	11,129	11,023	9,055	13,603	15,814	15,801
Taiwan	4,792	6,478	5,589	6,490	10,979	10,433	11,143	9,205	7,919	6,953	10,232	10,503	9,834
Thailand	1,525	1,101	1,354	1,775	2,284	2,642	3,217	3,542	4,219	4,041	5,475	6,411	6,700
Vietnam	137	138	213	360	413	461	621	766	1,125	1,169	1,554	1,852	1,995
All others	881	625	755	1,017	1,308	1,533	1,838	2,314	2,559	2,490	2,936	4,927	4,965
Australia/Oceania													
Australia	1,912	1,869	1,871	2,315	2,800	3,217	3,538	3,970	4,540	4,275	4,973	5,774	5,979
New Zealand	368	335	339	448	533	621	635	705	793	737	823	922	845
Pacific Islands	69	74	73	83	121	107	123	235	194	184	187	201	199

EU = European Union; NAFTA = North American Free Trade Agreement; ROW = rest of the world.

NOTES: ROW is trade between a named region/country/economy and the rest of the world. Data are not available for EU member Luxembourg. China includes Hong Kong. Detail may not add to total because of rounding. See appendix table 6-32 for a full list of countries/economies in each region.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

Science and Engineering Indicators 2014

Appendix table 6-32

Regions and countries/economies in world trade data

- North America
  - Canada
  - Mexico
  - United States
- Central and South America
  - Argentina
  - Brazil
  - Central America
    - Belize
    - Costa Rica
    - El Salvador
    - Guatemala
    - Honduras
    - Nicaragua
    - Panama
  - Chile
  - Colombia
  - Peru
  - Venezuela
  - All others
    - Anguilla
    - Antigua and Barbuda
    - Aruba
    - Bahamas, The
    - Barbados
    - Bermuda
    - Bonaire
    - Bolivia
    - Cayman Islands
    - Cuba
    - Curacao
    - Dominica
    - Dominican Republic
    - Ecuador
    - Falkland Islands (Islas Malvinas)
    - French Guiana
    - Grenada
    - Guadeloupe
    - Guyana
    - Haiti
    - Jamaica
    - Martinique
    - Montserrat
- Europe
  - EU
    - Austria
    - Belgium
    - Czech Republic
    - Denmark
      - Denmark
      - Faroe Islands
    - Finland
    - France
    - Germany
    - Hungary
    - Ireland
    - Italy
      - Italy
      - San Marino
      - Vatican City
    - Netherlands
    - Poland
    - Slovakia
    - Spain
    - Sweden
    - United Kingdom
    - All others
      - Bulgaria
      - Cyprus
      - Estonia
      - Greece
      - Latvia
      - Lithuania
      - Malta
      - Portugal
      - Romania
      - Slovenia
  - Other Europe
    - Norway
    - Russia
    - Switzerland
    - All others
      - Albania
      - Andorra
      - Belarus
      - Bosnia and Herzegovina
- Middle East
  - Israel
  - Saudi Arabia
  - Turkey
  - United Arab Emirates
  - All others
    - Bahrain
    - Gaza Strip
    - Iran
    - Iraq
    - Jordan
    - Lebanon
    - Kuwait
    - Oman
    - Qatar
    - Syria
    - Yemen
- Africa
  - Egypt
  - Kenya
  - Morocco
  - Southern Africa
    - Botswana
    - Lesotho
    - Namibia
    - South Africa
  - Tunisia
  - All others
    - Algeria
    - Angola
    - Benin
    - Burkina Faso
    - Burundi
    - Cameroon
    - Cape Verde
    - Central African Republic
    - Chad
    - Comoros
    - Congo, Democratic Republic of the
    - Congo, Republic of the
    - Côte d'Ivoire
    - Djibouti
    - Equatorial Guinea
- Africa
  - All others (continued)
    - Mali
    - Mauritania
    - Mauritius
    - Mayotte
    - Mozambique
    - Niger
    - Nigeria
    - Reunion
    - Rwanda
    - Saint Helena, Ascension, and Tristan da Cunha
    - São Tomé and Príncipe
    - Senegal
    - Seychelles
    - Sierra Leone
    - Somalia
    - Sudan
    - Swaziland
    - Tanzania
    - Togo
    - Uganda
    - Western Sahara
    - Zambia
    - Zimbabwe
- Asia
  - China
    - China
    - Hong Kong
    - Macau
  - India
  - Indonesia
    - Indonesia
    - Timor-Leste
  - Japan
  - Malaysia
  - Philippines
  - Singapore
  - South Korea
  - Taiwan
  - Thailand
  - Vietnam
- Asia
  - All others (continued)
    - Kazakhstan
    - Kyrgyzstan
    - Laos
    - Maldives
    - Mongolia
    - Nepal
    - North Korea
    - Pakistan
    - Papua New Guinea
    - Sri Lanka
    - Tajikistan
    - Turkmenistan
    - Uzbekistan
- Australia/Oceania
  - Australia
    - Australia
    - Christmas Island
    - Cocos (Keeling) Islands
    - Heard Island and McDonald Islands
    - Norfolk Island
  - New Zealand
    - Cook Islands
    - New Zealand
    - Niue
    - Tokelau
  - Pacific Islands
    - American Samoa
    - Fiji
    - French Polynesia
    - Guam
    - Kiribati
    - Marshall Islands
    - Micronesia, Federated States of
    - Nauru
    - New Caledonia
    - Northern Mariana Islands
    - Palau
    - Pitcairn Islands
    - Samoa
    - Solomon Islands
    - Tonga

Appendix table 6-32

Regions and countries/economies in world trade data

Paraguay	Croatia	Eritrea	All others	Tuvalu
Saint Kitts and Nevis	Gibraltar	Ethiopia	Afghanistan	Vanuatu
Saint Lucia	Greenland	Gabon	Armenia	Wallis and Futuna
Saint Maarten	Iceland	Gambia, The	Azerbaijan	
Saint Martin	Macedonia	Ghana	Bangladesh	
Saint Vincent and the Grenadines	Moldova	Guinea	Bhutan	
Suriname	Montenegro	Guinea-Bissau	British Indian Ocean Territory	
Trinidad and Tobago	Serbia	Liberia	Brunei	
Turks and Caicos Islands	Saint Pierre and Miquelon	Libya	Burma	
Uruguay	Ukraine	Madagascar	Cambodia	
Virgin Islands (British)		Malawi	Georgia	

EU = European Union.

NOTE: Data are not available for EU member Luxembourg.

SOURCE: IHS Global Insight, special tabulations (2013) of the World Trade Service database.

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Appendix table 6-33

U.S. trade in AT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	227,395	199,628	178,566	180,208	201,561	216,824	247,071	264,875	270,131	244,708	272,694	286,779	304,465
North America													
Canada	18,790	15,242	17,450	18,108	21,310	24,592	24,546	27,720	28,830	23,992	27,538	30,650	28,733
Mexico	11,108	9,514	12,579	13,550	16,502	16,669	18,626	17,202	19,585	20,601	27,149	31,925	33,347
Central and South America													
Argentina	1,193	825	223	439	698	947	1,012	1,338	1,466	1,443	1,622	1,914	2,092
Brazil	4,985	4,935	3,942	3,205	4,626	5,221	6,799	8,823	10,846	9,671	10,948	11,637	12,540
Chile	801	681	599	578	637	991	1,590	1,524	1,613	2,318	1,713	2,187	3,244
Colombia	475	508	742	661	756	911	1,122	1,489	1,793	1,652	1,889	2,109	2,936
Costa Rica	415	458	1,064	1,287	1,144	1,240	1,535	1,458	1,855	1,421	1,272	1,258	1,668
Peru	278	206	290	301	329	376	528	575	809	849	1,058	1,137	1,235
Venezuela	698	613	580	344	872	1,081	1,467	1,529	1,744	1,636	1,489	1,868	1,974
All others	2,235	1,888	2,404	2,410	2,816	3,216	3,537	4,132	4,464	4,222	5,051	3,077	1,484
Europe													
EU	60,472	54,352	49,732	50,611	56,090	58,255	63,676	73,495	75,240	70,023	66,180	66,924	66,574
Belgium	2,022	1,851	1,656	1,568	1,879	2,331	2,509	2,988	3,505	3,077	3,215	4,042	3,493
Czech Republic	327	276	334	268	345	450	483	535	493	342	507	612	717
France	8,644	8,153	8,512	6,654	9,096	9,287	9,543	11,285	10,864	11,514	10,621	10,433	11,233
Germany	11,625	11,380	9,347	9,293	9,518	10,914	13,056	16,535	17,212	16,867	16,602	13,349	12,914
Hungary	105	147	235	456	646	383	400	418	484	475	462	501	516
Ireland	3,593	3,237	2,823	3,278	3,143	3,709	3,326	3,208	3,162	3,477	2,798	2,479	2,415
Italy	2,798	2,448	3,120	3,090	2,969	2,628	2,814	2,666	2,939	2,567	2,718	2,810	3,167
Netherlands	8,453	6,798	7,253	8,397	9,136	9,702	10,131	10,748	11,907	9,379	9,413	9,765	8,915
Poland	247	201	179	189	228	335	828	1,552	1,261	782	876	993	1,393
Portugal	340	571	229	195	480	551	846	1,472	1,611	384	340	430	324
Spain	2,206	1,425	1,143	1,427	1,553	1,674	1,612	2,011	2,266	1,582	1,759	1,466	1,415
Sweden	2,105	1,300	1,212	1,205	1,035	1,129	1,474	1,520	1,561	1,887	1,506	1,637	1,710
United Kingdom	15,121	13,440	10,572	10,766	12,177	12,157	13,013	13,674	14,155	12,993	12,094	13,966	13,540
All others	2,887	3,126	3,115	3,824	3,883	3,005	3,642	4,882	3,818	4,699	3,268	4,399	4,763
Other Europe													
Norway	566	526	456	407	387	524	623	853	951	951	1,145	1,353	1,257
Russia	426	353	430	367	472	502	868	1,337	1,184	835	949	1,554	2,566
Switzerland	1,754	1,381	1,142	1,027	1,311	1,380	1,487	1,548	2,217	1,694	1,787	1,610	2,213
Ukraine	21	30	29	33	38	66	85	105	150	219	175	114	207
All others	102	95	117	40	116	172	55	182	137	85	92	94	129
Middle East													
Iran	1	2	2	12	13	23	28	28	36	42	38	29	24
Iraq	0	6	1	17	174	259	329	503	471	468	325	428	555
Israel	2,476	2,408	2,025	1,846	2,825	2,715	3,006	3,277	3,371	2,408	2,229	2,782	3,482
Saudi Arabia	2,106	1,698	590	680	509	693	767	779	1,374	1,807	1,612	1,454	2,642
Turkey	1,570	984	1,247	602	565	872	1,592	1,197	1,931	1,663	3,049	3,550	2,529

Appendix table 6-33

U.S. trade in AT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United Arab Emirates	526	536	1,296	1,060	633	3,564	4,662	3,534	3,792	4,524	3,329	5,551	10,051
Africa													
Algeria	372	491	245	36	217	399	246	138	146	103	281	568	371
Angola	20	17	32	58	37	63	573	219	440	126	117	427	123
Congo, Democratic Republic of the	20	8	3	5	4	8	10	11	14	9	11	47	7
Egypt	1,063	1,122	800	318	627	474	839	813	622	878	1,359	664	653
Ethiopia	18	6	8	214	152	237	20	32	86	85	502	494	1,090
Kenya	24	442	134	75	187	405	156	260	151	230	111	118	188
Morocco	181	35	313	154	154	157	265	181	240	417	378	511	289
Nigeria	45	69	124	107	145	250	207	251	194	310	234	275	262
South Africa	875	858	570	642	621	676	778	818	1,011	780	754	765	983
Tanzania	5	6	7	6	60	17	18	18	13	23	31	33	51
Tunisia	135	63	19	16	21	40	24	32	39	49	30	29	30
Uganda	6	8	6	7	7	9	9	20	34	75	45	33	49
All others	142	255	130	349	305	527	265	247	379	305	304	451	547
Asia													
Afghanistan	0	0	64	15	36	60	172	166	138	297	617	626	659
Bangladesh	18	25	24	16	27	52	37	43	46	35	49	367	47
Burma	3	1	1	1	3	1	2	2	2	9	11	5	30
Cambodia	1	2	1	1	1	3	3	6	4	6	8	6	5
China	9,529	11,006	13,068	13,421	15,669	18,315	23,062	25,966	24,850	25,374	29,649	30,105	32,396
India	981	1,070	1,255	1,311	1,688	2,090	2,958	5,468	3,660	4,023	3,166	2,804	3,255
Indonesia	205	197	198	208	250	395	306	620	780	1,209	1,990	1,474	1,744
Japan	19,745	16,394	16,853	16,923	17,465	16,988	18,420	18,540	17,475	14,208	15,566	15,711	19,454
Kazakhstan	26	26	360	37	53	104	93	75	187	69	55	67	104
Laos	0	1	1	2	3	6	3	1	5	4	2	5	6
Malaysia	6,757	5,474	7,235	7,803	7,556	7,082	8,432	7,094	7,992	6,203	8,459	8,040	7,088
Nepal	8	4	6	5	10	10	5	11	11	13	12	16	18
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	77	62	109	153	799	252	804	750	695	325	500	538	305
Philippines	5,365	4,761	4,965	5,851	4,854	4,422	4,915	4,545	4,461	2,698	3,552	3,353	3,442
Singapore	7,810	8,231	8,138	8,398	10,104	9,872	11,557	11,398	11,567	8,176	10,893	10,211	9,535
South Korea	13,120	9,199	9,600	9,540	10,173	11,252	13,943	12,193	10,157	8,100	11,035	11,307	12,879
Sri Lanka	34	32	55	37	33	29	37	39	83	72	23	54	41
Taiwan	11,323	7,868	9,176	8,203	9,801	9,626	10,035	11,680	9,864	7,023	10,485	8,809	8,613
Thailand	3,327	2,698	1,717	2,309	2,541	3,119	3,644	3,358	2,864	2,290	2,949	2,867	3,177
Vietnam	34	42	58	786	417	454	204	180	350	349	379	483	920

Appendix table 6-33

U.S. trade in AT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania	4,063	3,583	5,297	4,573	3,712	4,210	5,279	4,939	5,002	4,790	5,008	6,420	6,079
Australia	3,284	2,636	4,708	4,032	3,094	3,295	4,073	4,057	4,404	4,329	4,163	5,085	5,341
New Zealand	779	947	589	541	618	915	1,206	882	598	461	845	1,335	739
Imports													
World	222,082	195,177	195,150	207,031	238,276	259,742	290,760	326,809	331,152	300,892	354,465	386,434	395,984
North America													
Canada	22,405	17,302	13,704	13,700	13,827	15,652	14,873	17,767	16,625	14,232	12,846	13,564	13,965
Mexico	14,815	16,423	16,196	17,961	22,142	23,991	30,881	38,631	40,326	39,748	48,746	47,782	49,627
Central and South America													
Argentina	11	14	18	10	17	14	16	11	13	15	12	19	16
Brazil	1,935	2,927	2,948	2,704	2,792	2,599	1,730	2,034	2,570	920	795	1,056	1,030
Chile	2	3	4	4	6	4	8	11	13	4	12	7	8
Colombia	5	9	4	2	3	6	11	19	10	11	10	14	12
Costa Rica	1,224	726	919	1,207	1,104	1,129	1,175	1,257	1,389	3,431	6,045	7,140	8,611
Peru	1	2	2	1	2	1	1	1	2	3	3	4	4
Venezuela	5	2	3	2	3	4	10	2	2	2	1	3	3
All others	385	383	371	474	491	629	500	497	465	409	539	525	560
Europe													
EU	44,143	47,019	47,812	49,420	51,122	53,680	58,699	65,695	68,762	60,457	65,804	75,500	74,028
Belgium	978	1,368	1,298	989	1,517	1,096	1,981	2,208	2,891	4,255	3,792	3,316	2,130
Czech Republic	105	164	220	288	340	404	423	410	448	318	334	438	574
France	9,624	10,434	9,645	9,182	8,659	8,468	9,778	12,262	12,073	10,376	10,638	11,202	11,471
Germany	9,130	9,537	8,089	8,010	9,580	11,034	11,428	11,861	11,584	10,414	10,116	12,688	13,631
Hungary	1,261	886	1,085	1,288	1,247	1,393	1,178	1,254	1,427	1,019	911	924	825
Ireland	6,805	8,924	12,624	14,497	13,431	14,058	14,216	16,146	17,605	14,443	17,505	21,701	18,875
Italy	1,938	1,674	1,843	1,734	1,974	2,200	2,165	2,410	2,862	2,635	2,949	3,362	3,922
Netherlands	1,680	1,515	1,767	2,028	2,120	2,235	2,832	3,572	3,143	2,505	3,102	4,497	4,288
Poland	49	38	42	46	74	94	312	301	291	293	533	923	1,249
Portugal	223	252	312	429	536	668	798	422	193	66	86	204	128
Spain	233	256	368	752	701	552	594	780	1,053	903	1,001	977	947
Sweden	1,244	1,127	1,510	1,343	1,466	1,891	1,267	1,383	1,539	1,194	2,033	1,314	1,433
United Kingdom	9,416	9,256	7,146	6,842	7,414	7,262	9,428	9,994	10,758	9,282	9,518	10,102	10,861
All others	1,460	1,587	1,864	1,994	2,056	2,323	2,295	2,692	2,897	2,753	3,286	3,836	3,675
Other Europe													
Norway	259	333	313	280	372	349	444	507	653	518	615	505	451
Russia	1,045	1,012	831	1,054	920	945	999	1,055	998	1,003	1,249	1,223	1,128
Switzerland	1,409	1,566	1,376	1,799	1,784	2,652	2,663	2,375	3,007	2,794	3,528	5,237	5,575
Ukraine	76	53	12	37	45	7	68	74	45	9	12	40	113
All others	11	16	19	25	34	38	52	45	45	39	47	53	57

Appendix table 6-33

U.S. trade in AT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Iran	0	0	0	0	0	4	1	0	0	0	0	0	0
Iraq	2,585	2,230	0	0	2	1	1	0	0	0	1	0	0
Israel	2,584	2,229	2,077	2,009	2,284	2,297	2,818	3,272	3,167	4,603	2,732	2,798	3,026
Saudi Arabia	6	5	3	1	4	6	2	1	6	1	2	5	6
Turkey	99	109	83	83	107	136	160	205	232	277	306	341	417
United Arab Emirates	2	10	4	6	10	14	37	15	9	7	10	15	17
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Democratic Republic of the	0	0	0	0	0	0	1	0	0	0	0	0	0
Egypt	0	0	1	3	3	1	2	1	1	1	1	1	1
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	7	5	4	6	3	2	4	2	6	4	3	3	2
Morocco	141	83	98	89	103	92	100	96	94	54	95	111	101
Nigeria	0	0	0	0	0	1	0	0	3	1	0	0	0
South Africa	28	23	25	25	30	30	26	31	38	37	41	46	42
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	1	1	2	4	4	8	6	8	16	46
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	12	7	13	9	9	5	8	12	17	6	8	7	6
Asia													
Afghanistan	0	0	0	1	0	1	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	1	1	2	3
Burma	1	0	0	0	0	0	0	0	0	0	1	0	0
Cambodia	0	0	0	0	0	1	1	0	0	0	0	0	0
China	14,203	14,424	21,292	30,404	46,823	60,289	73,521	88,802	92,170	90,289	116,452	130,114	141,915
India	146	200	199	253	319	456	693	709	1,062	1,000	1,440	1,544	1,521
Indonesia	1,318	1,399	1,259	1,076	1,123	1,104	917	1,125	1,343	1,360	1,448	1,331	1,032
Japan	37,352	27,880	23,688	22,388	23,877	24,576	25,853	28,093	26,713	19,879	23,273	25,617	25,051
Kazakhstan	29	45	75	0	0	0	0	1	0	54	53	77	86
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	16,252	14,052	15,151	16,382	18,231	22,618	25,098	22,311	20,099	14,900	15,248	14,104	14,539
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	1	0	0	0	0	0	0	0	0
Pakistan	25	23	28	26	31	32	33	43	56	54	51	61	69
Philippines	8,055	5,907	5,843	4,920	3,806	3,694	3,745	3,634	3,305	2,629	2,913	3,116	3,538
Singapore	13,658	10,081	10,062	10,385	10,878	9,253	9,804	9,654	8,194	6,565	7,700	8,118	8,248
South Korea	18,706	13,756	13,822	14,378	17,977	13,980	13,647	14,852	16,392	15,236	17,436	17,544	13,950
Sri Lanka	6	4	11	8	6	5	7	7	5	3	2	2	2
Taiwan	17,642	13,816	13,331	12,031	12,808	12,264	14,063	14,762	13,784	12,120	15,441	18,704	15,139

Appendix table 6-33

U.S. trade in AT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Thailand	3,666	2,899	3,062	3,291	4,599	6,412	7,209	7,735	8,054	6,723	7,828	7,936	9,464
Vietnam	0	0	8	10	12	30	83	283	414	479	600	733	1,209
Australia/Oceania													
Australia	398	428	384	380	418	532	609	859	817	805	870	1,187	1,124
New Zealand	53	69	72	92	116	129	143	160	164	152	180	171	165

AT = advanced technology; EU = European Union.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-34

U.S. trade in ICT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	64,196	53,437	53,289	53,115	59,010	63,769	68,928	74,582	77,331	66,663	77,686	89,432	91,394
North America													
Canada	9,187	7,248	9,084	9,580	10,502	11,632	11,726	13,654	14,209	11,716	14,217	16,467	15,108
Mexico	5,035	4,414	6,051	6,831	8,554	8,241	9,385	9,411	11,009	11,550	15,730	21,133	21,526
Central and South America													
Argentina	884	548	140	295	402	559	664	902	991	794	992	1,125	1,073
Brazil	2,206	1,739	1,390	1,115	1,290	1,800	2,246	2,798	3,304	3,009	3,580	3,311	3,439
Chile	517	389	431	376	427	534	643	809	897	871	1,106	1,419	1,525
Colombia	337	377	436	454	558	611	696	955	1,169	935	1,190	1,340	1,786
Costa Rica	120	161	148	191	195	200	282	296	314	384	352	445	419
Peru	203	164	228	254	260	278	413	436	632	591	713	830	902
Venezuela	480	422	385	218	661	766	1,150	1,057	1,210	1,086	1,000	1,317	1,389
All others	1,372	1,442	1,686	1,580	2,030	2,239	2,451	2,922	3,053	2,786	3,367	3,768	4,096
Europe													
EU	20,513	17,296	14,967	14,693	15,181	15,901	16,291	17,285	16,488	12,164	12,728	13,328	13,457
Belgium	568	566	345	304	362	501	473	716	780	498	562	645	613
Czech Republic	89	94	128	114	102	181	249	172	178	116	150	253	308
France	1,694	1,404	1,372	1,275	1,241	1,213	1,238	1,358	1,392	967	1,039	991	1,254
Germany	3,465	3,207	2,531	2,534	2,455	2,583	2,824	3,204	2,616	2,016	1,925	1,962	2,085
Hungary	63	54	83	78	99	132	224	224	235	218	263	277	322
Ireland	1,937	1,619	1,326	1,262	1,114	1,184	1,183	1,139	1,104	821	514	554	569
Italy	730	696	459	510	576	531	530	569	546	436	503	498	463
Netherlands	4,887	3,815	3,721	3,451	3,710	4,372	4,133	4,637	4,783	3,506	3,918	3,933	3,734
Poland	164	114	110	102	101	156	140	155	171	127	202	192	230
Portugal	64	65	37	30	36	45	53	52	46	37	47	40	27
Spain	395	299	314	575	473	320	292	318	354	255	281	301	230
Sweden	295	242	233	271	204	230	281	318	326	243	240	313	335
United Kingdom	5,301	4,208	3,541	3,503	3,971	3,597	3,693	3,329	3,125	2,336	2,454	2,546	2,611
All others	859	913	770	686	739	857	977	1,093	834	588	630	811	646
Other Europe													
Norway	100	85	81	84	95	120	150	153	199	98	119	127	136
Russia	130	155	159	190	231	217	241	321	224	150	187	241	474
Switzerland	414	383	203	181	193	238	289	224	206	153	199	234	249
Ukraine	16	20	14	11	15	13	19	30	26	15	17	27	28
All others	15	14	9	15	14	19	12	18	47	13	9	10	10
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	1	0	0
Iraq	0	0	1	9	97	105	77	122	163	240	75	113	110
Israel	770	602	464	441	495	532	493	540	551	472	557	638	618
Saudi Arabia	148	122	132	118	129	156	221	205	255	308	257	366	378

Appendix table 6-34

U.S. trade in ICT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turkey	173	96	88	78	103	121	154	196	228	154	234	248	227
United Arab Emirates	151	129	151	171	196	263	392	682	682	699	1,026	1,289	1,973
Africa													
Algeria	0	220	15	8	164	180	184	99	89	26	21	51	284
Angola	7	8	10	16	21	7	21	16	23	13	19	20	34
Congo, Democratic Republic of the	2	1	2	4	2	7	3	7	7	4	4	8	4
Egypt	130	136	91	97	107	101	263	154	126	112	120	93	120
Ethiopia	3	2	2	11	3	6	6	7	11	8	7	7	13
Kenya	8	7	12	9	13	13	21	39	29	21	21	27	41
Morocco	20	12	9	11	16	17	26	24	31	31	42	26	19
Nigeria	24	39	62	79	67	88	108	90	96	62	59	71	89
South Africa	189	142	126	158	204	219	270	290	311	189	215	246	229
Tanzania	3	5	4	4	6	7	7	1	1	15	15	18	15
Tunisia	8	7	5	5	7	5	9	8	11	17	5	8	6
Uganda	6	0	4	5	4	4	5	12	15	18	17	13	17
All others	65	91	69	76	83	96	100	103	127	123	99	134	161
Asia													
Afghanistan	0	0	63	7	20	18	27	47	43	100	194	150	160
Bangladesh	7	15	9	5	12	28	17	14	13	8	9	10	12
Burma	0	0	0	0	0	0	0	2	0	0	1	0	2
Cambodia	1	1	0	1	1	2	1	1	3	4	3	3	3
China	3,625	3,894	3,583	3,493	3,795	4,646	5,531	5,838	6,269	6,169	7,074	7,637	7,986
India	483	426	628	650	824	911	994	1,119	1,034	953	931	894	768
Indonesia	40	64	64	93	84	142	86	114	118	184	98	118	96
Japan	6,488	5,248	4,371	4,002	4,149	3,787	4,107	3,945	3,306	2,611	2,514	3,085	3,496
Kazakhstan	13	17	201	13	14	24	56	34	50	18	25	23	26
Laos	0	0	1	2	2	4	3	0	2	1	1	1	1
Malaysia	771	710	960	780	819	1,132	1,062	1,005	1,031	884	1,077	960	917
Nepal	1	1	4	2	7	7	1	3	3	2	3	4	2
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	21	19	41	33	58	64	73	121	143	50	79	137	72
Philippines	280	218	175	168	172	203	257	264	396	363	437	438	556
Singapore	2,100	1,607	1,711	1,972	1,946	2,178	2,039	2,057	2,266	1,896	2,082	2,179	1,990
South Korea	3,063	1,643	1,732	1,344	1,227	1,412	1,462	1,478	1,517	1,134	1,230	1,300	1,021
Sri Lanka	27	19	40	30	12	18	22	18	18	7	9	10	10
Taiwan	1,485	1,215	1,179	1,057	1,231	1,039	1,089	1,235	1,028	718	833	1,055	1,247
Thailand	484	464	519	623	754	1,066	1,042	1,010	1,043	715	762	624	673
Vietnam	16	20	27	31	35	51	54	99	218	150	154	157	231
Australia/Oceania	1,764	1,167	1,118	1,094	1,196	1,395	1,623	1,885	1,569	1,363	1,349	1,600	1,594
Australia	1,501	1,036	982	965	1,069	1,243	1,489	1,731	1,414	1,241	1,254	1,484	1,483

Appendix table 6-34

U.S. trade in ICT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand	263	131	136	129	127	152	134	154	155	122	95	115	112
Imports													
World	111,180	95,159	100,660	110,089	132,544	147,178	160,784	179,575	181,775	169,807	205,080	212,111	219,470
North America													
Canada	12,564	6,472	4,492	3,863	4,322	5,093	5,136	5,430	5,249	4,029	3,628	3,326	2,888
Mexico	11,332	13,190	12,513	13,834	16,277	15,222	16,380	19,690	20,600	21,591	28,992	28,720	30,424
Central and South America													
Argentina	2	2	8	3	2	4	3	3	4	5	2	3	2
Brazil	405	944	1,080	1,002	384	760	546	285	211	182	103	72	100
Chile	0	1	4	3	4	3	6	5	5	2	9	4	5
Colombia	4	1	2	1	1	3	5	14	7	6	6	5	4
Costa Rica	843	111	114	112	135	282	354	432	444	2,612	2,839	214	141
Peru	0	1	1	0	0	1	1	0	0	2	1	1	2
Venezuela	4	1	1	1	0	1	1	1	0	1	1	1	2
All others	11	14	10	29	93	242	134	143	92	45	26		
Europe													
EU	9,184	7,760	8,265	7,788	7,491	8,193	7,270	7,067	7,724	6,216	6,955	6,864	7,012
Belgium	176	146	124	97	116	102	141	207	225	206	256	285	282
Czech Republic	38	74	125	154	168	208	169	100	61	49	60	116	157
France	900	618	793	587	385	429	322	371	330	330	371	410	392
Germany	876	863	968	1,163	1,093	1,077	1,230	1,430	1,544	1,169	1,284	1,464	1,721
Hungary	1,208	825	587	611	843	1,109	864	1,013	1,272	901	651	680	665
Ireland	1,644	1,499	1,938	1,270	1,055	1,268	1,474	1,194	1,147	1,140	573	381	336
Italy	468	458	481	406	405	311	266	285	317	300	407	339	324
Netherlands	198	141	131	146	140	137	147	208	222	150	175	176	203
Poland	21	8	9	9	8	12	16	19	35	57	104	219	350
Portugal	19	4	89	103	4	2	2	4	46	34	54	84	77
Spain	71	70	62	357	246	92	48	62	63	49	41	52	59
Sweden	760	666	1,092	900	895	1,310	675	525	779	504	1,247	613	580
United Kingdom	2,605	1,930	1,288	1,385	1,532	1,276	1,125	1,068	1,164	856	837	884	913
All others	200	414	578	600	369	481	358	501	520	471	895	1,147	940
Other Europe													
Norway	125	140	118	121	149	158	205	244	361	254	350	199	198
Russia	4	5	5	2	3	4	3	3	7	5	4	5	6
Switzerland	199	150	66	57	71	89	83	87	129	111	115	140	128
Ukraine	0	1	1	2	1	1	0	8	3	2	5	2	68
All others	1	2	1	0	0	1	3	2	3	2	2	2	2
Middle East													
Iran	0	0	0	0	0	0	1	0	0	0	0	0	0
Iraq	0	0	0	0	0	0	0	0	0	0	1	0	0
Israel	1,042	836	567	501	540	623	769	1,161	999	927	987	928	833

Appendix table 6-34

U.S. trade in ICT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saudi Arabia	1	0	1	0	0	0	0	0	0	1	1	1	1
Turkey	5	0	4	5	9	8	3	7	8	13	19	15	13
United Arab Emirates	2	3	3	4	6	12	34	10	5	3	6	9	14
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	0	0	1	2	2	0	0	0	0	0	0	0	0
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	1	4	1	5	2	1	3	1	4	3	2	2	1
Morocco	0	0	1	0	0	0	1	0	0	0	0	0	2
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	4	5	3	7	8	5	7	8	10	5	6	12	11
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	0	0	0	1	0	4	2	3	4	4
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	3	5	4	6	7	3	5	11	13	4	4	4	4
Asia													
Afghanistan	0	0	0	0	0	1	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma	1	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	1	0	0	0	0	0	0
China	9,960	10,707	17,166	26,881	42,168	54,230	64,971	78,479	80,991	79,551	102,967	115,006	127,377
India	41	35	32	43	43	127	239	192	365	358	557	477	376
Indonesia	891	1,060	979	865	79	53	28	33	31	1,179	1,208	1,092	794
Japan	18,891	13,791	12,932	12,073	12,076	11,816	11,691	13,022	12,559	9,170	9,374	8,804	8,420
Kazakhstan	0	0	0	0	0	0	0	0	0	0	0	2	0
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	9,593	9,188	10,564	12,510	14,260	207	21,403	18,957	16,605	12,337	10,467	7,744	7,954
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	1	0	0	0	0	0	1	0	1	0	0	0	0
Philippines	2,501	2,337	2,576	2,024	1,366	1,277	106	1,437	1,289	981	1,167	1,143	1,492
Singapore	9,604	7,636	7,537	7,332	7,527	6,737	6,599	6,464	5,366	4,142	4,507	3,868	3,502
South Korea	10,351	9,176	9,553	10,147	12,742	9,557	8,958	10,629	12,553	12,026	13,085	12,552	8,954
Sri Lanka	5	4	6	8	6	5	6	6	5	3	2	1	1
Taiwan	5,652	9,585	9,620	8,173	8,075	7,578	8,338	8,548	8,179	8,175	10,884	13,880	9,959
Thailand	71	1,904	2,336	2,573	3,759	5,380	5,469	409	455	5,382	6,230	6,322	7,737
Vietnam	0	0	6	1	7	25	75	171	309	363	433	474	833

Appendix table 6-34

U.S. trade in ICT products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania	78	78	85	95	125	87	99	144	125	111	127	157	146
Australia	68	60	67	67	96	65	69	108	91	86	96	114	102
New Zealand	10	18	18	28	29	22	30	36	34	25	31	43	44

EU = European Union; ICT = information and communications technology.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-35

U.S. trade in aerospace products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	51,030	54,295	53,228	49,831	54,737	64,141	75,964	84,108	84,633	83,951	80,703	88,998	104,877
North America													
Canada	3,203	3,460	3,050	3,013	4,068	5,531	5,316	6,858	7,277	5,729	5,376	5,917	5,351
Mexico	381	668	610	757	1,058	1,124	1,817	1,209	1,518	1,642	1,588	1,820	2,809
Central and South America													
Argentina	116	111	41	57	173	206	133	180	159	307	243	295	511
Brazil	1,470	2,207	1,473	1,138	2,305	2,233	3,244	4,525	5,563	4,674	4,422	5,454	6,176
Chile	176	199	53	80	82	277	735	499	513	1,242	359	508	1,377
Colombia	61	43	203	93	83	109	194	237	257	382	269	305	737
Costa Rica	18	12	24	11	31	44	67	37	81	22	83	14	166
Peru	37	13	33	14	29	46	55	42	50	79	116	108	137
Venezuela	56	62	100	72	99	132	114	186	111	245	140	119	121
All others	595	178	439	569	460	512	542	590	779	854	911	1,001	1,170
Europe													
EU	22,614	21,286	19,833	20,214	23,132	22,944	24,731	29,859	30,444	29,823	26,163	29,016	29,585
Belgium	607	567	378	231	266	363	490	518	803	663	757	1,092	425
Czech Republic	188	110	113	54	107	140	87	187	176	106	187	224	247
France	4,287	4,870	5,448	3,737	6,158	6,389	6,416	7,694	7,284	8,646	7,221	7,116	7,989
Germany	4,413	4,207	2,909	2,680	2,942	3,711	4,359	5,246	5,680	5,513	5,408	5,686	5,715
Hungary	11	54	29	298	459	124	34	42	55	67	34	60	45
Ireland	717	762	849	1,020	1,087	1,561	1,201	1,433	1,389	1,896	1,714	1,445	1,246
Italy	795	707	1,678	1,616	1,369	1,032	1,116	993	1,145	1,037	779	869	1,048
Netherlands	1,757	1,251	1,429	2,475	2,134	1,330	1,909	1,746	1,943	1,818	1,518	1,877	1,443
Poland	19	33	27	21	40	72	537	1,083	863	343	459	606	982
Portugal	104	99	139	106	391	444	557	505	735	210	190	339	252
Spain	1,340	641	448	439	669	842	700	911	969	572	615	502	669
Sweden	1,326	577	481	441	319	371	337	310	381	316	236	444	552
United Kingdom	6,092	6,143	4,424	4,748	4,932	5,345	5,482	6,627	7,176	6,096	5,975	6,982	6,794
All others	958	1,266	1,481	2,348	2,260	1,222	1,506	2,564	1,844	2,538	1,070	1,762	2,174
Other Europe													
Norway	203	13	37	13	93	161	426	704	547	415	274	937	847
Russia	778	505	483	341	618	680	677	673	1,091	603	699	736	1,483
Switzerland	1	3	3	8	7	32	45	47	82	168	132	512	761
Ukraine	81	76	97	13	93	137	32	147	77	58	59	58	145
All others	0	0	0	0	0	1	0	0	0	0	0	61	99
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq	0	0	0	5	39	106	173	316	251	153	173	128	353
Israel	846	1,144	944	804	1,424	1,429	1,562	1,632	1,552	996	874	745	831

Appendix table 6-35

U.S. trade in aerospace products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saudi Arabia	1,839	1,410	320	388	227	344	329	344	781	1,067	899	511	1,597
Turkey	1,244	765	1,020	390	309	527	1,174	729	1,407	1,226	2,451	2,894	1,901
United Arab Emirates	271	292	1,029	753	290	3,145	4,086	2,627	2,781	3,399	1,798	3,651	7,165
Africa													
Algeria	0	264	225	19	40	190	37	14	29	56	231	488	52
Angola	7	5	18	38	12	44	541	177	393	82	73	386	51
Congo, Democratic Republic of the	0	0	0	0	1	0	6	1	5	2	5	0	2
Egypt	852	897	634	163	316	228	412	454	274	582	1,116	466	376
Ethiopia	14	0	6	201	148	231	13	23	73	74	492	484	1,071
Kenya	10	431	117	59	159	374	128	210	104	199	74	65	132
Morocco	150	17	294	134	127	131	220	133	183	346	284	448	245
Nigeria	18	21	52	18	68	147	74	128	56	217	134	167	138
South Africa	579	588	302	327	290	291	319	324	451	330	288	263	475
Tanzania	1	1	3	1	54	7	10	0	0	6	7	9	15
Tunisia	122	53	10	9	10	29	8	15	17	10	10	8	8
Uganda	0	1	0	1	1	4	3	5	11	50	16	7	27
All others	50	145	37	228	180	343	86	81	192	95	96	186	175
Asia													
Afghanistan	0	0	0	2	11	24	132	96	72	127	311	333	353
Bangladesh	4	5	5	5	5	8	7	19	19	11	12	330	12
Burma	0	0	0	0	0	0	0	0	0	0	0	0	26
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	2,034	2,933	3,732	2,593	2,076	4,214	5,450	6,528	5,177	7,619	7,245	8,919	10,968
India	296	352	333	327	426	660	1,347	3,604	1,792	2,236	1,261	727	1,307
Indonesia	49	50	72	51	98	187	144	395	540	909	1,727	1,180	1,478
Japan	4,054	3,579	4,870	5,719	5,228	5,573	5,954	6,464	6,658	5,513	5,288	5,038	8,093
Kazakhstan	0	0	154	3	2	55	6	16	111	14	13	20	52
Laos	0	0	0	0	0	2	0	0	2	2	0	4	1
Malaysia	337	685	954	257	673	413	760	543	376	613	901	1,031	1,208
Nepal	5	1	1	1	1	2	3	6	5	9	5	6	12
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	42	30	53	101	708	142	629	518	360	153	220	209	154
Philippines	112	52	67	66	128	66	63	76	156	262	304	185	450
Singapore	1,257	3,993	3,297	3,100	3,275	3,728	4,299	3,706	3,900	2,970	3,871	3,925	4,026
South Korea	2,105	2,784	2,449	1,684	1,826	2,114	3,561	3,356	2,583	1,937	2,567	2,616	3,481
Sri Lanka	3	3	7	2	13	4	4	4	47	52	3	28	16
Taiwan	1,603	1,593	1,095	1,265	1,447	2,175	1,450	1,516	1,177	808	1,343	878	889
Thailand	567	572	173	622	198	236	884	633	252	229	284	365	760
Vietnam	2	4	4	718	336	349	78	16	33	100	49	45	34

Appendix table 6-35

U.S. trade in aerospace products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania													
Australia	1,215	981	3,126	2,377	1,246	1,158	1,534	1,214	1,722	1,793	1,628	1,997	2,191
New Zealand	450	750	391	336	409	669	988	630	326	218	611	1,077	504
Imports													
World	25,733	30,511	25,005	22,766	23,610	25,360	27,594	33,823	34,999	29,895	29,275	34,863	39,132
North America													
Canada	6,082	7,706	6,805	7,232	6,591	7,166	6,317	8,065	7,779	6,685	6,041	6,850	7,617
Mexico	108	136	312	202	191	186	188	342	526	450	677	1,124	1,424
Central and South America													
Argentina	1	1	1	0	0	1	1	0	0	1	1	1	0
Brazil	1,466	1,936	1,848	1,682	2,384	1,807	1,151	1,703	2,290	673	633	893	832
Chile	1	1	0	0	0	1	1	5	6	1	2	2	1
Colombia	0	0	1	0	1	0	3	3	0	2	2	3	1
Costa Rica	0	0	0	0	0	0	0	1	1	0	1	2	1
Peru	0	0	0	0	0	0	0	0	0	0	1	3	1
Venezuela	0	0	0	0	0	1	0	1	0	0	0	1	0
All others	3	3	3	2	1	2	1	6	11	3	2	2	3
Europe													
EU	15,141	17,152	13,103	10,741	11,197	12,349	14,937	17,484	18,137	16,268	15,711	18,457	20,244
Belgium	110	128	92	79	80	115	127	147	240	261	263	448	404
Czech Republic	10	27	39	70	94	103	158	206	250	152	135	177	231
France	7,021	7,730	6,234	5,069	5,094	4,943	6,791	8,964	8,793	7,480	7,355	8,260	9,130
Germany	3,266	3,663	2,338	1,699	1,833	2,835	2,542	2,382	2,798	3,059	2,150	2,957	3,095
Hungary	2	1	1	1	1	0	2	23	35	18	36	27	13
Ireland	48	52	55	44	61	82	90	99	110	50	26	57	40
Italy	421	494	432	386	461	625	680	865	918	816	1,072	1,206	1,526
Netherlands	161	169	154	149	171	191	206	214	237	248	272	340	391
Poland	15	21	20	26	53	54	252	202	158	169	358	559	645
Portugal	5	0	2	1	0	13	0	5	0	6	9	9	10
Spain	49	56	83	47	123	69	131	170	136	166	186	169	196
Sweden	143	150	127	114	140	106	111	246	253	160	220	224	248
United Kingdom	3,806	4,572	3,446	2,967	2,915	3,035	3,609	3,716	3,955	3,482	3,409	3,763	4,024
All others	85	88	79	88	165	177	232	245	247	201	220	260	291
Other Europe													
Norway	73	132	126	91	136	73	80	88	116	116	105	95	112
Russia	63	59	25	96	38	40	72	109	83	83	129	195	194
Switzerland	53	47	87	60	55	217	241	229	350	267	233	226	234
Ukraine	74	50	7	32	40	1	1	62	36	4	3	37	41
All others	0	0	0	0	0	0	0	0	0	0	0	0	2
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix table 6-35

U.S. trade in aerospace products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Iraq	0	0	0	0	0	0	0	0	0	0	0	0	0
Israel	473	567	554	548	622	713	920	1,212	1,309	746	742	671	926
Saudi Arabia	5	1	2	0	2	5	0	0	5	1	1	0	1
Turkey	85	2	72	73	91	120	147	189	214	253	271	283	336
United Arab Emirates	0	6	0	0	1	0	1	2	1	1	1	2	1
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo (Kinshasa)	0	0	0	0	0	0	1	0	0	0	0	0	0
Egypt	0	0	0	0	0	1	0	1	0	0	0	0	0
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	0	0	0	0	0	0	0	0	2	0	0	0	0
Morocco	0	0	0	0	2	1	0	0	0	1	0	7	9
Nigeria	0	0	0	0	0	0	0	0	2	0	0	0	0
South Africa	1	1	2	4	6	2	2	3	4	4	6	8	6
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	0	1	2	3	3	4	3	5	6	36
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	2	0	0	1	0	1	1	0	0	0	0	0	0
Asia													
Afghanistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	77	103	115	133	183	176	261	354	408	413	508	631	702
India	5	5	5	9	11	9	13	15	42	31	31	58	82
Indonesia	1	2	1	2	5	5	8	6	6	9	12	4	3
Japan	1,530	1,818	1,380	1,290	1,405	1,685	2,236	2,794	2,562	2,842	2,989	3,781	4,722
Kazakhstan	0	0	0	0	0	0	0	0	0	0	0	0	0
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	1	2	9	16	19	31	28	40	31	42	63	80	99
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	1	0	0	1	1	1	1	1	1	2	2
Philippines	17	27	12	12	14	16	0	8	8	8	11	9	11
Singapore	93	124	128	121	142	172	179	237	318	245	260	241	250
South Korea	194	302	212	198	233	354	445	497	367	388	480	609	584
Sri Lanka	0	0	5	0	0	0	0	0	0	0	0	0	0
Taiwan	39	76	52	80	111	92	114	153	175	168	180	220	261
Thailand	9	13	5	6	12	9	13	8	6	16	3	8	5
Vietnam	0	0	0	0	0	0	0	0	0	0	0	24	52

Appendix table 6-35

U.S. trade in aerospace products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania													
Australia	111	146	128	126	107	124	136	174	171	160	159	323	331
New Zealand	2	2	3	8	10	10	13	10	4	2	7	6	3

EU = European Union.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-36

U.S. trade in electronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	45,928	34,035	42,747	46,576	48,323	47,559	53,464	50,809	50,910	37,298	45,946	43,284	41,228
North America													
Canada	3,593	2,005	2,473	2,455	3,264	3,856	3,385	2,867	2,798	2,306	2,680	2,660	2,696
Mexico	4,478	3,397	4,801	4,758	5,467	5,629	5,659	4,808	4,787	4,725	7,202	6,203	5,840
Central and South America													
Argentina	32	17	9	17	34	35	55	69	76	92	97	143	128
Brazil	670	516	650	635	672	693	692	653	896	917	1,367	1,480	1,531
Chile	27	19	30	33	34	53	55	50	33	30	31	29	33
Colombia	7	8	6	6	8	22	18	35	43	34	36	35	41
Costa Rica	219	244	838	1,016	848	869	1,047	1,029	1,353	894	676	668	952
Peru	9	3	3	5	7	6	6	9	18	43	45	65	50
Venezuela	13	16	8	8	17	32	21	34	80	44	23	40	91
All others	47	37	68	71	89	177	192	182	153	127	216	159	163
Europe													
EU	5,517	4,787	5,298	4,975	4,795	4,401	5,472	5,426	4,875	2,903	2,993	2,870	2,409
Belgium	76	53	56	52	73	80	76	106	162	62	61	70	75
Czech Republic	15	16	57	41	39	49	45	23	17	15	14	17	16
France	953	661	592	531	368	307	335	316	358	306	378	507	343
Germany	985	1,086	1,489	1,503	1,277	1,338	1,967	1,820	1,507	744	871	844	661
Hungary	13	18	95	49	58	98	108	97	136	132	95	88	80
Ireland	437	349	317	556	491	366	415	230	223	196	205	120	145
Italy	444	261	308	268	305	265	392	303	295	178	243	165	149
Netherlands	354	348	557	419	331	389	338	301	243	241	208	232	260
Poland	10	7	11	18	33	29	31	29	18	17	25	22	20
Portugal	131	357	21	23	12	13	179	852	765	73	3	4	3
Spain	63	48	77	65	71	73	98	91	61	48	62	39	36
Sweden	153	114	146	112	108	107	237	257	162	282	206	139	99
United Kingdom	1,475	1,109	1,207	1,050	1,353	1,044	969	693	621	471	460	465	393
All others	408	362	364	288	276	243	282	309	306	137	160	156	122
Other Europe													
Norway	43	40	18	24	24	19	20	21	28	15	15	18	19
Russia	13	13	32	53	39	29	38	38	49	38	47	63	70
Switzerland	116	66	60	52	68	71	59	118	205	176	203	180	158
Ukraine	1	2	2	3	2	2	2	4	4	1	2	3	2
All others	1	1	2	2	1	6	2	1	1	2	2	3	2
Middle East													
Iran	0	0	0	0	0	0	0	0	0	2	0	1	0
Iraq	0	1	0	0	3	7	5	5	7	5	2	3	1
Israel	386	272	256	241	453	349	351	267	297	175	218	634	1,452
Saudi Arabia	5	9	5	9	10	11	13	17	23	25	23	29	28

Appendix table 6-36

U.S. trade in electronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turkey	22	17	18	20	24	23	26	34	29	22	26	32	32
United Arab Emirates	27	15	22	25	39	22	38	50	68	76	41	50	34
Africa													
Algeria	0	1	0	0	0	14	11	3	4	1	1	4	1
Angola	0	0	0	0	0	1	1	0	2	1	1	1	2
Congo, Democratic Republic of the	0	0	0	0	1	0	0	0	0	0	1	1	0
Egypt	5	11	7	3	3	9	10	6	6	5	6	2	3
Ethiopia	0	0	0	1	0	0	0	0	1	1	0	0	0
Kenya	3	2	1	1	1	11	1	2	3	1	1	1	1
Morocco	6	1	1	2	1	1	11	12	9	5	13	13	9
Nigeria	0	1	1	1	2	1	1	6	3	2	2	3	4
South Africa	17	17	17	18	14	14	16	21	14	20	19	19	18
Tanzania	0	0	0	0	0	0	0	16	9	0	0	0	1
Tunisia	1	0	0	1	0	1	1	1	1	4	2	2	2
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	3	2	4	8	8	42	41	20	6	3	4	5	5
Asia													
Afghanistan	0	0	0	1	2	4	1	3	3	5	11	19	7
Bangladesh	0	0	1	0	0	0	0	0	0	1	0	0	0
Burma	2	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	2,637	2,278	3,977	5,302	6,953	6,977	8,995	9,723	9,515	7,866	9,285	7,373	6,570
India	48	52	70	82	90	118	139	134	172	170	173	162	169
Indonesia	79	53	37	29	42	36	34	62	52	49	74	55	28
Japan	3,299	2,545	2,780	2,392	2,230	1,714	2,032	1,736	1,584	1,166	1,274	1,279	1,282
Kazakhstan	0	0	1	0	1	1	2	1	3	1	1	3	3
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	5,063	3,633	4,926	6,434	5,573	5,085	5,906	5,039	6,107	4,363	5,909	5,446	4,404
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	1	1	1	1	2	2	2	2	3	3	2	1	3
Philippines	4,680	4,316	4,581	5,446	4,245	3,915	4,306	3,974	3,659	1,845	2,483	2,421	2,215
Singapore	3,075	1,828	2,216	2,389	3,137	2,847	3,629	4,243	3,925	2,119	2,948	2,282	1,862
South Korea	5,541	3,110	3,929	4,787	4,702	4,845	5,237	3,870	3,294	2,685	2,677	3,546	4,064
Sri Lanka	0	6	2	1	1	0	4	4	5	4	4	6	4
Taiwan	4,006	3,048	4,563	4,205	3,872	3,902	4,315	4,657	5,257	3,103	3,323	3,444	2,862
Thailand	2,118	1,537	902	902	1,365	1,546	1,438	1,400	1,247	1,063	1,538	1,470	1,261
Vietnam	5	2	9	10	20	15	26	12	31	21	74	184	540

Appendix table 6-36

U.S. trade in electronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania													
Australia	80	77	98	122	125	115	116	123	141	96	121	126	129
New Zealand	9	8	11	13	12	10	11	10	10	8	12	11	9
Imports													
World	48,822	30,883	26,592	25,136	27,454	26,582	27,995	27,038	25,621	20,901	27,771	34,040	33,939
North America												2,278	2,623
Canada	2,369	1,972	1,252	1,223	1,411	1,835	1,262	1,173	1,105	1,093	994	1,291	1,474
Mexico	1,662	1,185	1,117	1,088	1,110	992	1,132	1,170	1,023	858	1,007	987	1,148
Central and South America												6,195	7,716
Argentina	0	0	0	0	0	0	0	0	1	0	0	0	0
Brazil	18	9	3	3	3	5	7	8	13	5	16	24	26
Chile	0	0	0	0	0	0	0	1	0	0	0	0	0
Colombia	1	7	0	0	0	2	0	0	0	1	0	1	2
Costa Rica	203	328	452	629	493	331	247	202	209	117	2,487	6,166	7,686
Peru	0	0	0	0	0	0	0	0	1	0	0	0	0
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	2	1	1	2	2	2	6	5	4	3	4	3	2
Europe													
EU	3,833	3,204	3,076	3,179	3,049	3,034	3,120	3,333	3,209	1,891	2,304	2,691	2,533
Belgium	47	52	53	34	50	34	39	48	51	39	32	42	36
Czech Republic	25	11	14	12	9	5	3	5	6	13	16	18	22
France	570	530	478	557	527	513	406	360	220	155	192	265	262
Germany	1,004	1,035	1,026	950	777	797	875	861	793	502	676	992	876
Hungary	22	20	28	34	34	32	38	47	42	42	67	66	68
Ireland	261	167	103	127	111	134	178	501	513	73	74	28	20
Italy	420	196	375	328	358	338	334	279	505	370	408	446	420
Netherlands	87	82	44	57	53	35	25	28	29	27	22	23	25
Poland	5	3	6	4	4	16	27	51	67	21	17	14	9
Portugal	195	49	217	319	236	381	436	85	123	13	2	2	3
Spain	15	11	11	18	15	13	11	7	10	10	15	22	16
Sweden	113	72	63	48	55	44	45	52	43	34	44	37	46
United Kingdom	601	456	377	354	406	539	535	449	436	318	311	264	251
All others	469	371	281	337	356	269	254	332	371	274	429	471	480
Other Europe													
Norway	6	5	5	2	5	14	6	8	8	9	18	32	14
Russia	10	5	3	2	3	3	4	3	13	5	9	5	3
Switzerland	92	109	83	97	170	162	115	98	177	96	76	95	85
Ukraine	0	0	0	0	0	0	1	0	1	1	1	0	1
All others	0	1	0	0	1	0	0	0	0	3	4	5	3

Appendix table 6-36

U.S. trade in electronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq	0	0	0	0	0	0	0	0	0	0	0	0	0
Israel	503	231	299	322	356	278	410	153	82	2,105	184	128	219
Saudi Arabia	0	0	0	1	0	1	0	1	0	0	0	0	0
Turkey	0	1	0	0	0	0	0	0	0	0	0	1	0
United Arab Emirates	0	1	0	0	0	1	0	0	0	0	0	1	0
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	5	1	2	0	0	0	0	0	0	0	0	0	0
Morocco	141	1	96	88	101	91	99	3	2	53	92	102	91
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	2	1	1	1	1	1	1	1	2	1	1	3	3
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	0	0	0	0	0	0	0	0	4	4
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	1	1	7	1	1	1	1	1	0	0	2	1	1
Asia													
Afghanistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	2,109	1,392	1,291	1,173	1,703	2,130	2,488	2,494	2,132	1,741	2,820	3,290	3,149
India	19	29	20	15	35	45	73	64	96	60	76	83	88
Indonesia	266	196	163	144	871	871	714	877	1,109	123	173	159	134
Japan	7,773	4,240	2,649	2,332	2,800	2,586	2,948	3,021	2,937	2,054	2,861	2,865	2,560
Kazakhstan	0	0	0	0	0	0	0	1	0	0	0	0	0
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	6,163	4,448	4,146	3,479	3,557	18,770	3,027	2,725	2,854	2,077	3,796	4,757	4,098
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Philippines	5,492	3,469	3,186	2,808	2,338	2,303	1,258	2,025	1,744	1,362	1,576	1,606	1,554
Singapore	3,368	1,769	1,300	1,302	1,495	1,539	1,981	1,846	1,473	1,039	1,685	1,919	1,739
South Korea	7,713	3,637	3,574	3,462	4,082	3,166	3,096	2,579	2,696	2,256	3,035	3,202	2,867
Sri Lanka	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix table 6-36

U.S. trade in electronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Taiwan	195	3,730	3,266	3,187	3,934	3,854	4,539	4,597	4,463	3,151	3,590	3,687	3,599
Thailand	2,146	811	584	575	616	648	911	6,019	6,426	775	934	887	801
Vietnam	0	0	1	7	3	3	3	4	4	4	3	15	30
Australia/Oceania													
Australia	12	15	9	11	13	14	10	13	17	16	16	20	19
New Zealand	2	3	4	5	6	5	3	3	2	1	3	4	2

EU = European Union.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-37

U.S. trade in life sciences products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	11,413	12,123	11,828	12,994	14,537	16,506	18,759	21,580	25,172	25,260	27,834	29,194	31,621
North America													
Canada	873	908	1,060	1,172	1,319	1,433	1,619	1,855	2,027	1,930	2,122	2,380	2,614
Mexico	364	329	372	379	436	501	575	666	814	791	799	896	1,082
Central and South America												2,202	2,196
Argentina	81	66	20	38	54	83	98	116	147	154	184	191	194
Brazil	297	280	252	194	234	328	406	537	686	671	819	847	894
Chile	46	47	48	46	62	79	92	89	105	107	121	156	172
Colombia	42	47	54	48	69	96	117	139	165	163	227	257	225
Costa Rica	13	14	21	54	49	60	65	55	49	74	104	75	63
Peru	14	14	12	14	19	23	31	56	66	56	65	71	73
Venezuela	49	68	61	29	60	100	120	152	223	168	240	284	224
All others	88	112	104	97	120	148	169	215	237	241	281	320	350
Europe													
EU	4,988	5,489	5,238	5,731	6,306	7,040	8,129	9,278	10,830	10,785	11,016	11,162	11,842
Belgium	307	268	268	319	363	450	564	846	1,005	1,156	1,228	1,303	1,410
Czech Republic	13	17	18	23	33	40	43	57	62	62	62	67	91
France	603	633	658	684	741	746	855	947	977	887	1,041	990	974
Germany	1,188	1,310	1,374	1,638	1,641	1,768	2,043	2,296	2,479	2,497	2,607	2,513	2,602
Hungary	11	11	15	19	20	19	19	30	29	36	41	46	45
Ireland	209	318	180	157	209	221	293	225	268	376	223	182	214
Italy	342	365	388	354	423	516	510	510	556	547	728	792	1,182
Netherlands	837	859	851	876	996	1,184	1,430	1,692	2,600	2,441	2,159	2,570	2,379
Poland	28	24	18	25	31	48	49	71	88	83	111	100	82
Portugal	32	43	22	22	32	35	37	39	40	33	38	36	24
Spain	239	320	181	247	235	252	311	361	381	359	449	288	195
Sweden	197	231	238	278	301	345	442	509	537	673	636	606	572
United Kingdom	740	829	786	814	953	1,060	1,126	1,134	1,302	1,076	1,083	1,091	1,483
All others	241	262	241	275	328	356	408	560	507	560	610	568	578
Other Europe													
Norway	45	47	50	62	53	66	104	151	139	145	133	188	186
Russia	36	52	51	66	52	50	75	137	228	131	191	255	329
Switzerland	217	253	246	266	249	261	309	367	536	540	517	481	441
Ukraine	2	3	8	5	10	6	12	15	22	22	17	16	20
All others	4	2	7	6	6	7	6	13	9	11	20	9	7
Middle East													
Iran	0	0	1	3	6	12	9	13	19	20	19	18	22
Iraq	0	5	0	1	18	23	24	38	27	54	51	48	50
Israel	94	87	95	110	120	99	119	124	134	135	153	163	155
Saudi Arabia	68	104	95	119	103	122	131	137	185	264	224	233	309

Appendix table 6-37

U.S. trade in life sciences products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turkey	68	49	42	54	86	136	141	161	174	183	204	185	206
United Arab Emirates	39	35	42	60	45	61	83	110	144	175	150	170	156
Africa													
Algeria	1	3	4	6	10	10	5	18	16	14	21	16	26
Angola	1	1	1	2	2	5	6	16	12	16	12	9	19
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	1	0	1	0	0
Egypt	40	53	32	21	29	32	31	41	70	58	54	49	55
Ethiopia	0	1	0	1	0	0	1	0	1	2	2	1	4
Kenya	2	1	3	2	6	5	4	6	5	5	5	7	8
Morocco	2	3	2	4	6	4	6	8	12	18	15	16	11
Nigeria	1	4	6	3	3	6	10	12	18	15	19	16	16
South Africa	49	47	59	64	79	110	119	133	137	152	139	174	167
Tanzania	0	0	0	0	1	2	0	0	0	1	5	3	5
Tunisia	4	2	2	2	2	5	5	6	5	14	11	8	8
Uganda	0	0	0	1	2	1	1	2	1	1	1	8	3
All others	9	8	8	16	10	20	19	24	25	21	44	32	43
Asia													
Afghanistan	0	0	0	0	1	10	10	12	9	40	56	72	36
Bangladesh	4	2	3	3	7	13	10	7	11	13	17	18	17
Burma	1	0	0	1	0	0	1	0	1	1	2	4	2
Cambodia	0	1	0	0	0	0	1	1	1	1	1	2	1
China	532	653	714	952	1,023	1,170	1,240	1,441	1,781	2,021	2,435	2,835	3,272
India	98	134	144	164	250	262	298	381	437	448	511	567	614
Indonesia	17	17	12	11	9	17	23	28	44	41	58	71	80
Japan	1,917	1,918	1,710	1,793	2,072	2,195	2,358	2,480	2,819	2,676	3,392	3,341	3,748
Kazakhstan	6	7	3	1	2	6	15	17	15	12	12	17	15
Laos	0	0	0	0	0	0	0	0	0	1	0	0	0
Malaysia	45	63	61	51	70	72	82	99	105	112	143	140	147
Nepal	1	2	0	1	0	1	1	1	2	1	2	3	3
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	10	8	8	13	16	28	26	31	34	28	32	27	55
Philippines	31	27	23	22	28	50	56	55	61	74	86	92	95
Singapore	155	129	152	178	192	230	304	373	465	515	606	732	797
South Korea	326	308	313	381	388	515	537	617	602	598	730	710	720
Sri Lanka	3	3	4	3	6	4	5	8	7	7	5	7	8
Taiwan	262	203	207	206	216	237	247	295	260	248	319	305	327
Thailand	57	50	44	62	88	128	114	143	154	147	150	180	217
Vietnam	8	12	13	19	15	26	34	32	41	50	57	53	63
Australia/Oceania													
Australia	308	345	334	342	393	429	558	616	783	800	863	945	1,108

Appendix table 6-37

U.S. trade in life sciences products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand	39	39	30	39	48	59	53	67	77	85	91	97	80
Imports													
World	16,211	20,113	25,416	30,801	32,775	30,420	33,616	36,232	39,944	38,117	41,849	45,832	44,414
North America												4,269	4,435
Canada	386	521	578	824	781	779	1,187	1,727	1,380	1,165	883	934	960
Mexico	793	895	1,113	1,480	1,695	1,831	2,234	2,586	2,786	2,828	3,215	3,335	3,475
Central and South America												1,237	1,312
Argentina	5	3	2	2	3	2	3	3	3	4	4	8	8
Brazil	3	3	4	3	3	8	7	12	14	17	18	28	37
Chile	0	0	0	0	0	0	1	0	1	0	0	1	0
Colombia	0	1	1	1	0	0	3	0	0	0	1	4	2
Costa Rica	176	285	352	464	474	512	561	616	728	694	699	718	746
Peru	0	0	0	0	0	0	0	0	0	1	0	0	0
Venezuela	0	0	1	0	0	2	8	0	1	1	0	0	0
All others	356	356	349	433	388	375	349	328	342	348	495	478	519
Europe													
EU	10,807	13,940	18,022	21,278	22,788	20,683	22,359	23,675	26,828	25,047	27,162	29,802	27,203
Belgium	405	745	725	411	1,000	485	1,168	1,191	1,738	3,068	2,439	1,531	518
Czech Republic	8	15	15	20	33	39	42	50	73	60	49	66	87
France	491	931	1,418	1,901	1,865	1,561	1,400	1,432	1,695	1,563	1,818	1,602	958
Germany	2,432	2,565	2,644	2,995	4,236	3,379	3,569	3,727	3,411	3,218	3,508	4,065	4,098
Hungary	10	9	13	22	31	26	31	27	21	25	111	106	38
Ireland	4,744	7,061	10,229	12,691	11,697	11,981	11,905	12,749	14,672	12,611	14,555	16,557	15,411
Italy	470	363	386	399	498	402	398	392	434	478	413	477	614
Netherlands	372	451	518	556	740	726	789	786	786	743	804	913	880
Poland	1	2	2	1	3	6	11	20	22	30	30	115	227
Portugal	1	0	0	0	0	1	2	2	11	7	15	96	30
Spain	47	73	149	269	234	147	144	261	530	422	473	370	128
Sweden	98	96	121	122	156	159	211	214	203	184	188	188	230
United Kingdom	1,304	1,201	1,165	1,135	1,396	1,185	2,131	2,235	2,590	1,977	2,045	2,995	3,233
All others	425	429	637	755	898	584	556	577	643	661	714	721	752
Other Europe													
Norway	35	29	46	34	41	64	87	87	79	70	80	79	80
Russia	14	14	19	26	29	35	36	36	45	42	47	57	58
Switzerland	588	829	824	1,304	1,234	1,651	1,688	1,445	1,776	1,863	2,334	2,812	3,015
Ukraine	0	0	0	0	0	0	0	0	0	0	0	0	1
All others	10	11	14	23	28	33	44	42	42	33	40	45	48
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq	0	0	0	0	0	0	0	0	0	0	0	0	0
Israel	317	349	440	504	562	483	475	502	527	454	498	520	581

Appendix table 6-37

U.S. trade in life sciences products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	3	2
Turkey	0	0	1	1	1	0	1	1	2	2	2	4	4
United Arab Emirates	0	0	0	1	1	1	2	3	1	2	2	2	1
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	0	0	0	0	0	0	0	0	0	0	0	0	0
Morocco	0	0	0	0	0	0	0	0	0	0	2	1	0
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	11	3	7	7	9	13	11	13	14	19	22	18	15
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	0	0	0	0	0	0	0	0	0	0
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	1	2	1	0	0
Asia													
Afghanistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	1	1	2	2
Burma	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	358	368	450	498	594	405	625	794	1,085	1,270	1,518	1,790	2,054
India	43	83	112	159	189	233	321	381	509	501	709	831	913
Indonesia	0	0	0	1	1	2	2	2	1	4	10	37	65
Japan	1,690	1,770	1,801	1,903	2,007	2,159	2,135	2,332	2,103	1,919	2,227	1,798	1,778
Kazakhstan	0	0	0	0	0	0	0	0	0	0	0	0	0
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	17	14	15	18	26	0	58	61	56	62	102	184	196
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	24	23	27	26	30	31	32	42	54	52	49	59	67
Philippines	4	7	5	10	14	14	0	28	33	36	24	27	20
Singapore	311	352	925	1,433	1,411	528	680	679	613	807	638	1,008	1,342
South Korea	83	67	72	74	110	102	144	170	170	153	197	214	224
Sri Lanka	0	0	0	0	0	0	1	0	0	0	0	1	1
Taiwan	168	66	82	115	113	74	93	105	125	130	145	191	202
Thailand	0	4	5	9	12	20	25	1	1	20	62	80	80
Vietnam	0	0	0	0	1	0	1	10	25	37	37	46	56

Appendix table 6-37

U.S. trade in life sciences products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania													
Australia	88	85	107	127	165	259	333	412	446	411	494	597	542
New Zealand	26	32	40	40	58	67	78	90	105	107	110	96	95

EU = European Union.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-38

U.S. trade in optoelectronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports													
World	3,815	3,091	2,430	2,467	3,525	4,583	5,033	5,379	5,000	4,484	6,178	6,017	5,200
North America													
Canada	291	248	289	224	253	315	340	312	358	397	644	662	429
Mexico	167	130	158	312	273	320	325	372	508	788	547	651	575
Central and South America													
Argentina	5	5	1	3	4	22	10	12	10	13	12	16	11
Brazil	101	22	23	19	19	45	62	83	80	53	95	87	78
Chile	3	3	8	12	8	17	20	16	17	14	21	18	20
Colombia	3	5	5	4	6	12	17	22	35	32	17	27	23
Costa Rica	2	3	2	2	2	4	5	4	6	7	13	10	11
Peru	1	1	4	2	3	5	11	10	13	28	35	20	34
Venezuela	5	4	2	1	3	9	11	26	26	13	11	20	25
All others	46	14	14	12	11	39	36	58	79	44	55	64	68
Europe													
EU	1,415	1,227	737	728	959	1,460	1,545	1,654	1,746	1,432	1,951	1,607	1,048
Belgium	9	14	16	41	55	69	59	66	83	79	82	49	12
Czech Republic	2	1	3	3	3	4	6	19	8	8	39	15	8
France	114	80	58	62	92	102	118	88	116	115	157	110	64
Germany	398	485	294	238	338	506	534	714	732	761	1,008	718	515
Hungary	1	2	3	2	1	2	5	3	5	4	5	4	4
Ireland	30	27	19	52	47	120	52	24	27	7	10	17	13
Italy	134	132	48	65	46	84	73	71	104	120	156	93	44
Netherlands	130	109	120	126	195	321	377	357	255	117	222	323	174
Poland	2	3	4	3	6	6	8	10	10	7	12	11	10
Portugal	2	1	1	2	4	8	10	6	17	15	8	5	4
Spain	16	31	24	18	17	27	54	72	159	26	58	30	10
Sweden	25	47	10	5	8	13	22	23	28	26	17	25	18
United Kingdom	516	243	102	83	112	144	164	143	154	110	116	126	115
All others	34	53	33	27	35	56	61	56	48	36	59	79	56
Other Europe													
Norway	5	6	4	4	4	17	25	15	9	4	10	7	7
Russia	0	1	2	5	9	8	11	11	7	7	24	19	18
Switzerland	22	18	17	21	28	25	37	40	34	25	27	29	33
Ukraine	0	0	0	0	0	0	1	1	3	4	1	1	1
All others	0	0	0	0	0	1	1	1	0	0	0	1	5
Middle East													
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq	0	0	0	0	1	4	2	5	6	8	15	17	2
Israel	51	65	26	37	45	49	55	88	76	60	58	117	59
Saudi Arabia	1	1	2	2	1	5	7	7	18	25	20	16	8

Appendix table 6-38

U.S. trade in optoelectronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turkey	9	3	6	4	4	12	8	19	18	12	10	16	9
United Arab Emirates	2	4	3	4	9	12	13	12	18	27	41	37	31
Africa													
Algeria	93	0	0	0	0	0	1	0	0	0	0	4	1
Angola	0	0	0	0	0	0	0	2	4	1	1	1	1
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	4	2	1	4	1	3	4	9	1	1	6	7	8
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	0	0	1	3	3	1	1	1	1	1	2	3	1
Morocco	2	0	1	0	0	0	0	0	1	5	4	2	0
Nigeria	0	0	1	0	0	5	3	1	9	7	5	9	4
South Africa	15	10	9	9	12	12	12	10	12	10	8	10	10
Tanzania	0	0	0	0	0	0	0	1	2	1	2	1	1
Tunisia	0	0	0	0	0	0	0	0	3	1	0	0	4
Uganda	0	6	0	1	0	0	0	0	1	1	0	0	0
All others	1	0	1	2	1	8	1	4	8	5	7	10	6
Asia													
Afghanistan	0	0	0	0	0	0	1	3	3	11	28	30	90
Bangladesh	0	0	1	1	0	0	0	1	0	0	0	1	0
Burma	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	1	0	0	0	0	0
China	135	181	185	219	266	317	363	446	369	291	561	449	442
India	12	44	10	16	11	24	28	49	28	44	61	159	111
Indonesia	3	0	1	1	1	0	1	1	2	1	3	11	14
Japan	557	483	348	346	545	845	778	774	576	307	452	516	476
Kazakhstan	0	0	0	0	0	0	1	0	2	0	1	0	1
Laos	0	1	0	0	0	0	0	0	0	0	0	0	0
Malaysia	100	34	31	31	41	55	99	60	84	35	51	48	55
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	1	1	7	1	2	7	9	10	4	7	2
Philippines	69	30	12	5	16	11	10	11	7	5	17	18	7
Singapore	140	102	97	112	184	130	187	186	206	109	263	138	167
South Korea	133	148	86	93	190	221	400	325	275	184	331	420	565
Sri Lanka	0	0	0	0	0	0	0	1	1	0	0	0	0
Taiwan	453	255	295	180	515	468	492	608	212	355	645	572	591
Thailand	12	9	10	16	33	35	35	41	30	22	28	51	38
Vietnam	0	0	1	0	1	1	1	2	2	6	17	10	4
Australia/Oceania													
Australia	38	25	28	26	43	39	47	44	63	51	39	61	68

Appendix table 6-38

U.S. trade in optoelectronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand	2	3	3	3	3	7	7	4	5	6	6	3	7
Imports													
World	5,823	5,607	5,447	5,256	7,802	12,149	19,584	24,964	25,566	23,290	25,936	26,108	26,385
North America													
Canada	78	67	80	90	89	128	102	211	166	167	139	150	163
Mexico	503	561	432	627	2,141	4,957	10,164	14,147	14,623	13,379	13,972	12,581	12,043
Central and South America													
Argentina	0	0	1	0	0	0	0	3	3	2	3	5	4
Brazil	4	4	1	2	1	1	1	4	4	4	1	4	2
Chile	1	0	0	0	1	0	0	0	0	0	0	0	1
Colombia	0	0	0	0	0	0	0	1	0	1	0	0	1
Costa Rica	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	1	1	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	2	0	0	0	0	0	0	0	0
All others	10	7	6	8	6	6	7	9	10	7	11	10	10
Europe													
EU	351	407	455	664	677	822	770	957	988	695	918	1,047	1,137
Belgium	14	11	24	57	44	54	19	12	11	8	11	14	16
Czech Republic	1	1	4	4	6	3	4	6	6	5	11	27	43
France	53	44	48	38	29	38	33	42	48	47	79	69	61
Germany	90	108	117	118	137	298	356	507	589	372	462	567	619
Hungary	4	19	49	60	52	55	55	43	30	8	6	5	4
Ireland	2	5	11	8	12	12	9	6	4	5	4	3	2
Italy	16	16	17	24	31	38	41	36	31	25	36	48	54
Netherlands	32	61	80	235	223	159	72	67	45	25	44	46	24
Poland	0	0	0	0	0	1	1	3	1	2	2	2	2
Portugal	3	0	4	4	1	2	4	12	7	4	4	5	4
Spain	7	10	6	3	6	4	2	15	14	4	6	5	28
Sweden	11	15	24	27	34	27	24	20	34	36	41	22	26
United Kingdom	106	97	48	58	66	91	102	137	124	113	153	179	177
All others	14	15	23	28	33	41	48	60	45	41	57	57	75
Other Europe													
Norway	1	1	1	1	1	1	3	2	2	1	2	2	4
Russia	1	0	1	1	2	3	2	5	5	3	3	2	2
Switzerland	99	76	37	44	71	120	124	99	110	61	95	111	120
Ukraine	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	1	1	1	1	0	1	0	0	0	0	0	0
Middle East													
Iran	0	0	0	0	0	4	0	0	0	0	0	0	0
Iraq	155	139	112	69	133	118	179	155	130	0	0	0	0
Israel	0	0	1	0	0	0	0	0	1	176	179	315	240

Appendix table 6-38

U.S. trade in optoelectronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	2	0	0	0	0	0	1	1	1	1	1	2
United Arab Emirates	0	0	0	1	0	0	0	0	0	0	0	0	0
Africa													
Algeria	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Democratic Republic of the	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	0	0	0	0	0	0	1	0	0	0	0	0	0
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenya	0	0	0	0	0	0	0	0	0	0	0	0	0
Morocco	0	0	0	0	0	0	0	0	0	0	0	0	0
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	0	0	1	2	1	2	3	1	1	1	1	3	2
Tanzania	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunisia	0	0	0	0	0	0	0	0	0	0	0	0	1
Uganda	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	1	0	0	0	0	0	0
Asia													
Afghanistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0
China	1,492	1,663	1,936	1,288	1,664	2,770	4,448	5,852	6,665	6,563	7,573	7,949	7,225
India	7	8	12	5	6	6	19	29	15	14	37	49	16
Indonesia	148	138	115	61	1	1	0	1	3	31	38	32	30
Japan	2,042	1,654	1,392	1,354	1,627	1,625	1,332	1,266	1,225	796	1,094	1,259	1,094
Kazakhstan	0	0	0	0	0	0	0	0	0	0	0	0	0
Laos	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	365	286	298	215	135	41	254	101	80	101	335	788	1,581
Nepal	0	0	0	0	0	0	0	0	0	0	0	0	0
North Korea	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0
Philippines	38	54	51	60	67	77	17	123	213	224	113	313	444
Singapore	200	134	99	102	124	132	153	170	194	195	313	393	482
South Korea	88	150	206	283	502	418	511	383	121	67	93	150	378
Sri Lanka	0	0	0	0	0	0	0	0	0	0	0	0	0
Taiwan	11,376	109	81	258	294	355	596	894	438	216	332	206	414
Thailand	7	145	119	109	173	330	753	33	25	499	546	554	743
Vietnam	0	0	0	0	0	0	4	97	74	74	126	167	234

Appendix table 6-38

U.S. trade in optoelectronics products, by region/country/economy: 2000–12

(Millions of current dollars)

Region/country/economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Australia/Oceania													
Australia	2	2	8	6	1	14	16	7	6	7	7	12	10
New Zealand	0	0	0	1	2	1	2	2	2	2	2	1	1

EU = European Union.

NOTES: Technologies are classified by the U.S. Census. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: U.S. Census Bureau, Business and Industry, Foreign Trade, U.S. International Trade Data, Country and Product Trade Data, Advanced Technology Products, http://www.census.gov/foreign-trade/statistics/country/, accessed 15 February 2013.

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Appendix table 6-39

Value added and employment of U.S. multinationals, by selected industry and location: 2010

Industry	United States	Foreign countries	World
	Value added ($billions)		
All industries	2,885,927	1,241,272	4,127,199
Commercial KI services	873,277	278,268	1,151,545
Business services	206,106	90,450	296,556
Professional, scientific, and technical services	194,673	75,937	270,610
Architectural, engineering, and related services	23,844	5,808	29,652
Computer systems design and related services	79,575	50,284	129,859
Management, scientific, and technical consulting	10,209	5,760	15,969
Management of nonbank companies and enterprises	11,433	14,513	25,946
Finance and insurance	340,360	130,284	470,644
Information	326,811	57,534	384,345
Publishing industries	72,202	27,039	99,241
Motion picture and sound recording industries	8,770	1,658	10,428
Broadcasting (except Internet)	39,833	7,775	47,608
Telecommunications	157,944	9,496	167,440
Data processing, hosting, and related services	12,482	1,203	13,685
All manufacturing industries	1,131,725	752,342	1,884,067
All HT manufacturing	266,908	153,335	420,243
Pharmaceuticals and medicines	112,199	74,309	186,508
Computers and peripheral equipment	36,560	30,379	66,939
Communications equipment	27,378	5,573	32,951
Semiconductors and other electronic components	51,464	27,714	79,178
Navigational, measuring, and other instruments	39,307	15,360	54,667
All other industries	880,925	210,662	1,091,587
	Employment (thousands)		
All industries	22,819.8	11,070.3	33,890.1
Commercial KI services	5,339.4	2,075.4	7,414.8
Business services	1,233.5	957.9	2,191.4
Professional, scientific, and technical services	1,231.3	837.9	2,069.2
Architectural, engineering, and related services	194.4	70.2	264.6
Computer systems design and related services	427.7	516.4	944.1
Management, scientific, and technical consulting	54.1	25.7	79.8
Management of nonbank companies and enterprises	2.2	120.0	122.2
Finance and insurance	2,481.1	747.3	3,228.4
Information	1,624.8	370.2	1,995.0
Publishing industries	354.7	135.7	490.4
Broadcasting (except Internet)	219.4	53.6	273.0
Telecommunications	678.3	61.6	739.9
Data processing, hosting, and related services	73.8	16.6	90.4
HT manufacturing	1,248.2	1,196.2	2,444.4
Pharmaceuticals and medicines	385.4	349.4	734.8
Computers and peripheral equipment	248.5	260.4	508.9
Communications equipment	102.4	55.0	157.4
Semiconductors and other electronic components	219.7	378.0	597.7
Testing, measuring, and control instruments	292.2	153.4	445.6
All other industries	16,232	7,798.7	24,031

HT = high technology; KI = knowledge intensive.

NOTES: HT manufacturing industries consist of aerospace, computers, communications, semiconductors, measuring, testing, and control instruments and are classified by the Organisation for Economic Co-operation and Development (OECD). Data are not available for aerospace. KI services consist of education, health, business, finance, and information services and are classified by the OECD. Commercial KI services consist of business, finance, and information services.

SOURCE: Bureau of Economic Analysis, International Economic Accounts, U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies, 2009–10, http://www.bea.gov/international/di1usdop.htm, accessed 15 January 2013.

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Appendix table 6-40

USPTO patent grants, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	111,982	153,481	166,033	169,020	164,290	143,805	173,771	157,282	157,772	167,349	219,609	224,500	253,138
North America	63,913	86,869	91,020	91,114	87,396	77,239	93,020	82,543	80,593	85,644	112,099	113,116	126,195
Bermuda	2	1	2	4	0	2	0	3	2	1	2	5	2
Canada	2,382	3,215	3,590	3,447	3,395	2,917	3,601	3,342	3,375	3,668	4,853	5,046	5,754
Mexico	50	80	90	91	91	82	72	59	64	64	101	103	135
United States	61,479	83,574	87,339	87,572	83,911	74,238	89,346	79,138	77,152	81,912	107,142	107,962	120,304
Central and South America	186	263	258	317	249	197	249	203	209	244	321	394	419
Argentina	36	48	50	61	47	27	42	41	35	47	47	60	68
Brazil	62	98	113	132	106	75	130	92	101	111	181	222	201
All others	87	117	95	124	96	94	77	70	74	86	93	112	150
Europe	19,127	25,562	29,328	28,830	26,831	22,734	26,323	23,698	23,703	24,115	33,072	33,386	38,981
EU	17,707	23,762	27,292	26,923	25,043	21,280	24,571	22,135	22,012	22,355	30,701	30,868	36,153
Austria	372	488	584	594	546	452	559	452	456	509	738	763	870
Belgium	518	656	736	635	630	530	621	532	517	601	828	809	882
Denmark	336	487	487	536	426	372	443	396	397	393	610	736	852
Finland	455	653	742	867	922	726	955	858	825	866	1,143	960	1,058
France	2,968	3,825	4,062	3,874	3,402	2,903	3,461	3,151	3,184	3,162	4,478	4,556	5,388
Germany	7,015	9,363	11,264	11,456	10,781	9,038	10,053	9,080	8,952	9,017	12,378	11,916	13,873
Hungary	29	42	59	74	51	48	54	48	66	50	93	104	110
Ireland	74	96	140	162	185	158	186	151	174	193	277	328	355
Italy	1,258	1,503	1,727	1,722	1,603	1,315	1,496	1,318	1,369	1,377	1,840	1,922	2,164
Netherlands	826	1,265	1,328	1,330	1,286	1,004	1,339	1,274	1,324	1,317	1,659	1,764	1,953
Spain	184	239	275	325	273	274	313	282	317	339	436	492	674
Sweden	863	1,405	1,744	1,511	1,286	1,131	1,249	1,067	1,064	1,009	1,433	1,712	2,090
United Kingdom	2,704	3,600	3,976	3,641	3,471	3,153	3,621	3,303	3,117	3,230	4,383	4,352	5,311
All others	105	140	170	195	181	177	221	223	250	292	404	454	575
Other Europe	1,420	1,800	2,036	1,907	1,788	1,454	1,752	1,563	1,691	1,760	2,371	2,518	2,828
Norway	141	227	264	258	247	223	239	243	263	267	390	369	445
Russia	0	0	253	224	188	167	199	201	200	217	308	331	365
Former Soviet Union	132	208	0	0	0	0	0	0	0	0	0	0	0
Switzerland	1,104	1,283	1,423	1,333	1,267	991	1,211	1,032	1,126	1,192	1,583	1,712	1,879
All others	43	82	96	92	86	73	103	87	102	84	90	106	139
Asia	27,517	39,045	43,246	46,324	47,501	41,487	51,294	48,182	50,495	54,369	70,062	73,173	82,815
China	154	266	460	613	740	744	1,057	1,192	1,607	2,041	3,211	3,717	5,351
India	52	118	187	354	369	401	511	566	651	709	1,143	1,277	1,756
Japan	23,207	31,139	33,257	35,545	35,403	30,361	36,852	33,401	33,720	35,523	44,897	46,206	50,708
Malaysia	16	31	34	48	85	94	123	171	159	156	200	177	213
Singapore	97	149	307	438	457	345	412	391	406	434	615	650	805
South Korea	1,903	3,568	3,547	3,952	4,428	4,364	5,899	6,299	7,540	8,769	11,650	12,234	13,210
Taiwan	2,065	3,718	5,397	5,299	5,950	5,114	6,350	6,104	6,345	6,663	8,233	8,787	10,633
All others	23	55	57	75	69	64	90	58	67	74	113	125	139

Appendix table 6-40

USPTO patent grants, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East	566	792	1,031	1,251	1,095	982	1,284	1,175	1,263	1,491	1,959	2,149	2,788
Israel	539	755	983	1,188	1,052	934	1,217	1,112	1,183	1,411	1,838	1,972	2,479
All others	27	37	48	63	42	48	67	64	80	80	121	177	309
Africa	105	125	137	136	124	114	129	100	109	112	152	155	189
South Africa	99	110	119	111	102	90	109	79	90	90	121	120	140
All others	6	15	18	25	22	24	21	21	19	22	30	35	48
Australia/Oceania	568	825	1,013	1,049	1,094	1,053	1,472	1,381	1,402	1,374	1,944	2,127	1,752
Australia	480	708	882	908	957	929	1,333	1,270	1,295	1,242	1,769	1,942	1,528
New Zealand	85	116	129	137	135	122	137	111	104	132	171	185	223
All others	3	1	3	5	2	2	2	0	2	0	4	1	1

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Patents are fractionally allocated among regions/countries/economies based on proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-41

Regions/countries/economies in USPTO patent data

- North America
  - Bermuda
  - Canada
  - Mexico
  - United States
- Central and South America
  - Argentina
  - Brazil
  - All others
    - Anguilla
    - Antigua and Barbuda
    - Aruba
    - Bahamas, The
    - Barbados
    - Belize
    - Bolivia
    - Cayman Islands
    - Chile
    - Colombia
    - Costa Rica
    - Cuba
    - Dominica
    - Dominican Republic
    - Ecuador
    - El Salvador
    - Falkland Islands (Islas Malvinas)
    - French Guiana
    - Grenada
    - Guadeloupe
    - Guatemala
    - Guyana
    - Haiti
    - Honduras
    - Jamaica
    - Nicaragua
    - Panama
    - Paraguay
    - Peru
    - All others (continued)
      - Puerto Rico
      - Saint Kitts and Nevis
      - Saint Lucia
      - Suriname
      - Trinidad and Tobago
      - Turks and Caicos Islands
      - Uruguay
      - Venezuela
      - Virgin Islands (British)
      - Virgin Islands (U.S.)
- Europe
  - EU
    - Austria
    - Belgium
    - Denmark
    - Finland
    - France
    - Germany
    - Hungary
    - Ireland
    - Italy
    - Netherlands
    - Spain
    - Sweden
    - United Kingdom
    - All others
      - Bulgaria
      - Cyprus
      - Czech Republic
      - Estonia
      - Greece
      - Latvia
      - Lithuania
      - Luxembourg
      - Malta
      - Poland
      - All others (continued)
        - Portugal
        - Romania
        - Slovakia
        - Slovenia
  - Other Europe
    - Norway
    - Russia
    - Switzerland
    - Former Soviet Union
      - Belarus
      - Moldova
      - Ukraine
    - All others
      - Albania
      - Andorra
      - Bosnia and Herzegovina
      - Croatia
      - Faroe Islands
      - Gibraltar
      - Greenland
      - Iceland
      - Liechtenstein
      - Macedonia
      - Monaco
      - Montenegro
      - San Marino
      - Vatican City
- Middle East
  - Israel
  - All others
    - Bahrain
    - Iran
    - Iraq
    - Jordan
    - Kuwait
    - Lebanon
    - Oman
    - Qatar
    - Saudi Arabia
    - Syria
    - Turkey
    - United Arab Emirates
    - Yemen
- Africa
  - South Africa
  - All others
    - Algeria
    - Angola
    - Benin
    - Burkina Faso
    - Cameroon
    - Chad
    - Congo, Democratic Republic of the
    - Congo, Republic of the
    - Côte d'Ivoire
    - Djibouti
    - Egypt
    - Eritrea
    - Ethiopia
    - Gabon
    - Gambia, The
    - Ghana
    - Guinea
    - Kenya
    - Liberia
    - Libya
    - Madagascar
    - Mali
    - Mauritius
    - Morocco
    - Namibia
    - All others (continued)
      - Niger
      - Nigeria
      - Rwanda
      - Senegal
      - Seychelles
      - Sierra Leone
      - Swaziland
      - Tanzania
      - Tunisia
      - Uganda
      - Zambia
      - Zimbabwe
- Asia
  - China
    - China
    - Hong Kong
    - Macau
  - India
  - Japan
  - Malaysia
  - Singapore
  - South Korea
  - Taiwan
  - All others
    - Afghanistan
    - Armenia
    - Azerbaijan
    - Bangladesh
    - British Indian Ocean Territory
    - Brunei
    - Burma
    - Cambodia
    - Christmas Island
    - Georgia
    - Indonesia
    - Kazakhstan
    - All others (continued)
      - Kyrgyzstan
      - Laos
      - Nepal
      - North Korea
      - Pakistan
      - Philippines
      - Sri Lanka
      - Tajikistan
      - Thailand
      - Uzbekistan
      - Vietnam
- Australia/Oceania
  - Australia
  - New Zealand
  - All others
    - Cook Islands
    - Fiji
    - French Polynesia
    - Kiribati
    - Marshall Islands
    - Nauru
    - New Caledonia
    - Norfolk Island
    - Northern Mariana Islands
    - Palau
    - Papua New Guinea
    - Samoa
    - Solomon Islands
    - Tokelau
    - Vanuatu

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies.

SOURCE: The Patent Board™, Proprietary Patent Database (2013).

Science and Engineering Indicators 2014

Appendix table 6-42
USPTO patent applications and grants, by industry: 2011
(Number)

Industry and company size	NAICS code (2007)	Patent applications	Patents issued
All industries	21–23, 31–33, 42–81	135,958	101,201
Manufacturing industries	31–33	82,878	58,124
Food	311	2,810	1,276
Beverage and tobacco products	312	566	296
Textile, apparel, and leather products	313–316	634	469
Wood products	321	121	86
Paper	322	1,251	969
Printing and related support activities	323	279	123
Petroleum and coal products	324	693	463
Chemicals	325	15,192	8,558
Basic chemicals	3251	4,301	1,302
Resin, synthetic rubber, fibers, and filament	3252	745	506
Pesticide, fertilizer, and other agricultural chemical	3253	1,078	700
Pharmaceuticals and medicines	3254	6,777	4,405
Soap, cleaning compound, and toilet preparation	3256	1,582	1,145
Paint, coating, adhesive, and other chemicals	3255, 3259	708	500
Plastics and rubber products	326	2,276	1,572
Nonmetallic mineral products	327	924	476
Primary metals	331	463	235
Fabricated metal products	332	1,989	1,779
Machinery	333	9,581	6,064
Agricultural implement	33311	661	448
Semiconductor machinery	333295	1,244	827
Engine, turbine, and power transmission equipment	3336	3,331	1,974
Other machinery	other 333	4,345	2,815
Computer and electronic products	334	26,269	23,042
Communications equipment	3342	4,054	3,064
Semiconductor and other electronic components	3344	11,391	10,460
Navigational, measuring, electromedical, and control instruments	3345	5,236	4,394
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	1,692	1,142
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	2,179	2,236
Other measuring and controlling device	other 3345	1,364	1,016
Other computer and electronic products	other 334	5,588	5,124
Electrical equipment, appliances, and components	335	3,233	2,145
Transportation equipment	336	7,370	4,712
Automobiles, bodies, trailers, and parts	3361–3363	4,268	2,679
Aerospace products and parts	3364	2,814	1,905
Aircraft, aircraft engines, and aircraft parts	336411–336413	2,713	1,830
Guided missiles, space vehicles, and related parts	336414, 336415, 336419	101	75
Military armored vehicles, tanks, and tank components	336992	14	2
Other transportation equipment	other 336	274	126
Furniture and related products	337	521	273
Miscellaneous manufacturing	339	8,705	5,588
Medical equipment and supplies	3391	6,362	3,872
Other miscellaneous manufacturing	3399	2,343	1,716
Nonmanufacturing industries	21–23, 42–81	53,080	43,077
Mining, extraction, and support activities	21	2,872	1,497
Utilities	22	128	30
Wholesale trade	42	6,958	3,715
Electronic shopping and electronic auctions	454111, 454112	974	240
Transportation and warehousing	48, 49	337	35
Information	51	16,615	12,828
Publishing	511	9,015	10,501

Appendix table 6-42
USPTO patent applications and grants, by industry: 2011
(Number)

Industry and company size	NAICS code (2007)	Patent applications	Patents issued
Newspaper, periodical, book, and directory publishers	5111	25	23
Software publishers	5112	8,990	10,478
Telecommunications	517	1,414	970
Data processing, hosting, and related services	518	1,013	441
Other information	other 51	5,172	915
Finance and insurance	52	1,126	582
Real estate and rental and leasing	53	432	317
Lessors of nonfinancial intangible assets (except copyrighted works)	533	265	283
Other real estate and rental and leasing	other 53	167	34
Professional, scientific, and technical services	54	12,061	6,439
Architectural, engineering, and related services	5413	1,979	940
Computer systems design and related services	5415	2,695	1,084
Scientific R&D services	5417	6,125	2,600
R&D in biotechnology	541711	2,993	1,030
R&D in physical, engineering, and life sciences (except biotechnology)	541712	3,120	1,568
R&D in social sciences and humanities	541720	13	2
Other professional, scientific, and technical services	other 54	1,262	1,815
Health care services	621–623	1,752	104
Other nonmanufacturing	23, 44, 45 (excluding 454111, 454112), 55, 56, 624, 71, 72, 81	9,825	17,291

NAICS = North American Industry Classification System; USPTO = U.S. Patent and Trademark Office.

NOTES: Detail may not add to total because of rounding. Industry classification is based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, the classification used for sampling was assigned. Statistics are based on companies in the United States that reported to the survey, regardless of whether they did or did not perform or fund R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse. For a small number of companies issued more than 100 patents by the USPTO, counts from http://www.USPTO.gov were used to supplement survey data.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics and U.S. Census Bureau, Business R&D and Innovation Survey, 2011.

Science and Engineering Indicators 2014

Appendix table 6-43

USPTO patents granted in networking technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	756	1,438	1,931	2,626	3,379	3,321	5,239	4,859	5,806	6,921	9,859	9,950	10,986
North America	482	1,014	1,411	1,855	2,389	2,270	3,828	3,420	4,015	4,784	6,494	6,502	7,171
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	15	42	85	114	137	110	159	167	218	268	362	350	449
Mexico	0	0	0	0	0	2	0	0	1	0	1	1	1
United States	467	972	1,326	1,741	2,252	2,158	3,669	3,254	3,796	4,516	6,131	6,151	6,721
Central and South America	0	0	0	0	2	1	1	3	2	7	10	8	6
Argentina	0	0	0	0	0	0	0	2	0	1	2	2	1
Brazil	0	0	0	0	1	0	0	0	0	2	2	4	4
All others	0	0	0	0	0	1	1	0	2	5	6	2	1
Europe	84	135	196	330	457	459	558	583	731	796	1,124	1,134	1,325
EU	80	125	189	316	439	445	537	552	692	748	1,058	1,058	1,241
Austria	1	1	0	1	6	4	3	8	10	6	20	15	13
Belgium	2	0	3	10	11	14	19	3	15	20	27	34	33
Denmark	0	3	0	10	9	10	15	14	9	13	13	12	12
Finland	4	17	19	47	73	66	70	88	110	109	125	105	136
France	33	31	43	53	68	67	78	86	130	107	184	183	186
Germany	11	20	28	68	78	91	121	127	142	196	267	243	283
Hungary	0	0	0	6	2	3	4	5	6	7	7	12	11
Ireland	0	1	10	9	19	8	7	10	12	16	26	25	27
Italy	4	0	4	8	12	7	11	14	26	26	48	49	60
Netherlands	7	5	7	5	10	24	22	17	30	23	41	44	54
Spain	2	1	1	3	2	3	5	12	7	8	15	20	30
Sweden	10	10	26	34	56	56	52	34	35	33	58	69	120
United Kingdom	8	35	48	61	93	90	126	126	154	167	200	221	245
All others	0	1	0	2	1	1	5	6	6	18	25	26	31
Other Europe	4	10	7	14	18	14	21	31	39	48	66	76	84
Norway	0	1	1	6	5	3	8	7	11	8	12	8	14
Russia	0	0	1	0	2	1	2	2	7	4	11	23	26
Former Soviet Union	0	2	0	0	0	0	0	0	0	0	0	0	0
All others	1	0	1	2	0	1	0	1	1	2	2	2	3
Switzerland	3	7	4	6	11	9	11	21	20	34	41	43	41
Asia	177	267	283	373	469	505	748	745	934	1,189	1,987	2,066	2,192
China	0	2	1	5	6	14	29	20	40	78	185	244	293
India	0	0	4	10	11	19	28	38	50	58	130	155	193
Japan	165	217	221	281	341	330	509	476	549	706	1,140	1,067	1,115
Malaysia	0	0	0	0	1	2	1	1	1	2	6	4	4
Singapore	0	3	1	3	7	5	6	11	8	22	17	24	17
South Korea	10	31	41	59	67	97	100	108	204	224	369	440	410
Taiwan	2	13	15	15	35	36	74	90	82	98	139	132	159
All others	0	1	0	0	1	2	1	1	0	1	1	0	1

Appendix table 6-43

USPTO patents granted in networking technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East	10	20	34	57	54	68	81	72	75	105	178	171	216
Israel	10	20	34	55	54	66	79	71	73	100	174	168	204
All others	0	0	0	1	0	2	1	2	2	5	4	4	12
Africa	0	0	0	1	1	0	2	1	3	3	4	4	5
South Africa	0	0	0	0	0	0	1	0	3	2	3	2	2
All others	0	0	0	1	1	0	1	1	0	1	1	2	3
Australia/Oceania	3	2	8	9	10	17	21	37	47	39	62	65	72
Australia	3	2	8	9	10	14	17	34	45	36	57	61	63
New Zealand	0	0	1	0	0	2	4	2	3	3	5	4	9
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-44

USPTO patents granted in information processing technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	3,806	6,808	7,092	7,533	8,365	8,141	12,626	11,672	13,268	15,075	22,032	22,701	27,880
North America	2,510	4,830	5,217	5,538	6,046	5,850	8,489	7,795	8,707	10,163	14,877	14,988	17,711
Bermuda	0	0	0	0	0	0	0	0	0	0	0	2	0
Canada	50	98	121	127	158	149	256	251	324	382	567	633	712
Mexico	0	1	1	0	1	2	4	2	1	2	6	5	11
United States	2,459	4,731	5,095	5,410	5,887	5,699	8,228	7,542	8,382	9,779	14,305	14,348	16,988
Central and South America	4	2	4	3	8	5	9	8	11	12	18	22	25
Argentina	1	0	0	0	2	0	0	1	1	2	0	4	3
Brazil	0	1	1	0	3	1	7	5	7	8	13	14	12
All others	3	1	3	2	3	4	1	2	4	2	5	4	10
Europe	286	485	530	607	719	729	1,328	1,260	1,460	1,657	2,452	2,463	3,160
EU	276	449	505	566	680	692	1,251	1,189	1,381	1,543	2,301	2,276	2,922
Austria	1	6	1	9	8	10	18	8	11	20	34	29	33
Belgium	7	8	15	11	18	7	22	28	22	26	38	40	50
Denmark	1	8	10	9	8	9	16	16	10	15	31	30	37
Finland	6	13	18	28	37	36	64	73	62	82	80	85	87
France	69	76	81	98	130	130	198	183	223	222	359	324	460
Germany	51	98	109	134	170	172	393	394	497	548	891	841	1,045
Hungary	0	0	1	1	1	2	1	4	3	3	2	13	7
Ireland	4	6	14	8	12	17	17	15	22	32	43	54	64
Italy	9	15	17	22	18	19	45	39	57	43	63	93	142
Netherlands	23	23	36	38	36	23	76	62	63	80	97	105	113
Spain	1	3	0	1	4	4	14	7	17	15	20	36	53
Sweden	19	32	47	38	32	32	69	60	57	62	99	104	174
United Kingdom	83	160	151	167	201	219	311	294	312	359	500	463	572
All others	1	2	4	4	6	11	8	6	23	33	45	61	84
Other Europe	10	36	25	41	39	37	77	71	79	114	151	187	238
Norway	0	4	2	4	5	1	9	15	15	16	18	27	31
Russia	0	0	12	17	11	13	24	14	22	33	48	56	77
Former Soviet Union	5	19	0	0	0	0	0	0	0	0	0	0	0
Switzerland	4	13	9	20	21	22	39	38	38	62	77	96	118
All others	1	0	2	0	2	1	5	4	4	3	8	8	12
Asia	959	1,392	1,218	1,208	1,402	1,389	2,550	2,342	2,824	2,930	4,236	4,703	6,276
China	7	6	17	20	27	41	82	100	162	184	274	347	518
India	1	4	12	28	43	50	73	76	113	164	283	358	478
Japan	868	1,209	1,043	979	1,125	1,076	1,956	1,733	1,983	2,026	2,854	3,049	3,837
Malaysia	1	0	0	0	0	3	5	10	6	11	11	7	10
Singapore	4	8	9	15	21	13	24	20	41	32	39	51	54
South Korea	42	103	87	84	87	94	206	212	291	285	500	524	831
Taiwan	35	62	49	82	99	111	199	188	224	223	270	358	536
All others	1	0	1	0	0	1	5	3	4	5	5	9	12
Middle East	38	72	85	118	126	104	163	140	169	201	257	309	482

Appendix table 6-44

USPTO patents granted in information processing technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	37	72	83	116	125	104	160	138	163	194	242	296	442
All others	1	0	2	1	1	0	2	2	6	7	14	13	40
Africa	0	1	3	2	5	3	6	3	8	5	9	12	25
South Africa	0	0	2	1	4	3	4	1	5	5	6	7	14
All others	0	1	1	1	1	0	2	2	3	0	3	5	11
Australia/Oceania	11	25	35	58	60	60	85	124	90	106	183	204	201
Australia	10	21	33	51	58	53	79	115	81	96	169	191	179
New Zealand	1	3	2	7	2	7	6	9	9	10	15	13	22
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-45

USPTO patents granted in telecommunications technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	3,483	6,296	6,744	7,385	7,843	7,125	11,699	10,264	10,540	11,138	14,726	16,697	20,743
North America	1,950	3,572	3,844	4,040	4,431	4,022	6,721	5,791	5,649	6,013	7,795	8,649	10,507
Bermuda	0	0	0	0	0	0	0	0	1	0	1	0	0
Canada	88	229	218	203	244	223	377	322	355	337	500	612	805
Mexico	0	1	3	3	6	4	2	2	0	0	1	0	2
United States	1,862	3,342	3,624	3,834	4,181	3,795	6,342	5,467	5,294	5,676	7,293	8,037	9,699
Central and South America	1	2	0	0	1	1	3	2	8	6	6	7	20
Argentina	0	0	0	0	0	0	1	0	0	3	1	2	5
Brazil	0	0	0	0	0	0	1	1	5	3	4	5	9
All others	1	2	0	0	1	1	1	0	3	1	1	1	5
Europe	569	1,044	1,214	1,363	1,393	1,216	1,937	1,578	1,643	1,560	2,169	2,334	2,891
EU	549	1,008	1,183	1,328	1,333	1,165	1,859	1,514	1,571	1,491	2,062	2,225	2,780
Austria	5	9	9	20	26	28	37	19	34	39	52	46	61
Belgium	11	13	17	13	32	33	24	27	29	29	31	33	38
Denmark	2	14	13	19	12	15	30	23	35	23	26	39	49
Finland	67	163	172	239	249	182	319	270	253	246	324	297	275
France	96	154	182	184	191	154	282	214	236	216	289	316	423
Germany	113	171	257	324	323	317	514	403	391	396	548	532	602
Hungary	0	1	1	7	3	2	3	5	2	5	11	9	15
Ireland	10	4	9	15	20	12	27	25	24	13	26	32	34
Italy	27	19	25	32	38	33	65	52	64	57	73	104	121
Netherlands	40	72	42	39	60	40	88	71	76	70	87	103	114
Spain	5	4	9	7	10	11	19	22	32	28	18	40	71
Sweden	82	189	221	224	149	137	153	97	120	120	224	300	420
United Kingdom	92	194	225	204	218	193	288	277	262	233	326	339	496
All others	0	1	1	1	4	7	9	9	12	16	26	37	60
Other Europe	20	36	31	35	60	51	78	64	72	69	107	109	111
Norway	1	1	5	6	7	7	11	10	9	3	13	13	10
Russia	0	0	6	5	11	10	9	13	21	21	31	28	36
Former Soviet Union	2	6	0	0	0	0	0	0	0	0	0	0	0
All others	0	5	7	3	12	5	3	4	2	3	1	6	11
Switzerland	17	24	13	21	30	29	55	37	40	42	62	62	54
Asia	928	1,618	1,613	1,864	1,878	1,751	2,820	2,717	3,044	3,320	4,448	5,398	6,908
China	3	8	11	9	24	24	69	67	91	164	277	423	762
India	0	1	4	10	12	26	36	45	64	63	96	94	158
Japan	820	1,319	1,253	1,408	1,331	1,199	1,844	1,559	1,650	1,702	2,282	2,613	3,155
Malaysia	0	3	4	1	3	3	2	8	4	7	6	10	12
Singapore	8	2	11	14	19	13	23	23	21	28	38	41	63
South Korea	68	231	247	308	331	317	512	625	802	935	1,254	1,570	1,967
Taiwan	28	52	82	114	156	169	332	389	411	419	492	644	783
All others	1	2	1	0	2	0	2	1	1	2	3	3	8
Middle East	26	50	56	93	116	101	159	135	150	180	224	216	326

Appendix table 6-45

USPTO patents granted in telecommunications technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	25	50	54	92	113	99	155	133	146	179	218	205	310
All others	1	0	2	1	2	3	4	2	4	1	6	12	16
Africa	2	0	2	2	4	6	5	3	6	2	6	7	10
South Africa	1	0	0	2	4	4	5	2	5	2	4	4	3
All others	1	0	2	0	0	2	0	1	1	1	2	4	6
Australia/Oceania	8	9	16	23	21	29	53	39	42	58	79	84	82
Australia	4	9	10	12	20	26	48	37	37	52	73	70	72
New Zealand	4	1	6	11	1	3	5	2	5	6	6	14	9
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-46

USPTO patents granted in semiconductor technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,470	9,148	12,665	13,108	12,764	11,036	12,082	11,440	11,080	11,974	16,661	16,216	15,272
North America	2,483	4,183	5,889	6,199	5,834	5,106	5,616	5,152	4,706	4,783	6,481	6,044	5,764
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	27	28	45	68	51	48	60	71	62	72	99	96	112
Mexico	0	0	1	0	0	1	0	1	0	0	0	1	2
United States	2,457	4,155	5,842	6,132	5,783	5,057	5,556	5,080	4,644	4,712	6,382	5,946	5,651
Central and South America	1	1	1	1	0	1	1	1	1	1	7	6	9
Argentina	0	0	0	0	0	0	1	1	0	0	1	2	1
Brazil	0	1	1	0	0	0	0	0	1	1	6	2	3
All others	1	0	0	1	0	1	0	0	0	0	0	2	5
Europe	379	614	868	1,033	977	908	1,034	926	904	979	1,508	1,437	1,421
EU	349	578	815	979	931	874	985	893	869	944	1,446	1,390	1,362
Austria	5	11	20	24	22	22	25	19	26	35	45	55	63
Belgium	5	8	22	36	33	22	35	31	40	47	83	76	74
Denmark	1	3	2	4	3	1	8	6	6	8	10	7	5
Finland	1	9	8	13	21	14	21	18	16	22	30	25	15
France	66	99	131	145	137	123	164	154	115	167	239	243	242
Germany	125	218	319	412	462	444	462	444	437	425	716	647	646
Hungary	0	0	0	0	0	1	0	2	1	0	1	0	1
Ireland	6	3	6	9	10	9	11	6	13	9	10	24	18
Italy	55	74	113	99	60	47	60	43	50	59	63	73	62
Netherlands	20	33	59	84	59	55	47	54	45	35	82	81	73
Spain	2	1	3	2	1	4	4	1	2	2	6	4	6
Sweden	18	38	48	24	19	26	22	23	18	20	32	43	42
United Kingdom	42	80	82	122	104	103	119	89	93	109	116	103	96
All others	4	3	4	5	4	3	8	4	8	8	14	11	19
Other Europe	30	36	53	54	46	34	49	33	35	35	62	47	59
Norway	0	0	0	0	2	2	6	4	4	3	4	2	6
Russia	0	0	24	24	9	8	13	10	10	5	9	9	10
Former Soviet Union	4	11	0	0	0	0	0	0	0	0	0	0	0
Switzerland	25	23	27	25	31	22	26	16	16	26	47	34	37
All others	1	2	2	5	4	2	4	3	5	1	2	2	6
Asia	2,586	4,319	5,862	5,818	5,901	4,984	5,372	5,303	5,404	6,145	8,578	8,636	7,992
China	4	9	17	29	40	54	42	54	67	83	151	176	236
India	3	2	3	13	11	16	29	42	30	25	56	50	70
Japan	1,896	2,766	3,359	3,764	3,713	3,091	3,164	3,033	2,872	3,271	4,623	4,588	4,242
Malaysia	0	2	11	10	19	24	27	50	39	36	51	54	45
Singapore	29	44	147	155	141	107	122	126	116	117	215	263	260
South Korea	293	608	725	733	831	786	972	1,037	1,280	1,636	2,204	2,183	1,723
Taiwan	360	883	1,595	1,096	1,128	892	999	948	988	962	1,252	1,298	1,398
All others	1	5	5	18	18	14	17	13	12	15	26	24	18
Middle East	17	24	40	38	33	29	36	42	47	47	62	62	70

Appendix table 6-46

USPTO patents granted in semiconductor technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	17	24	39	37	32	28	35	42	45	47	59	57	60
All others	0	0	1	1	1	1	1	0	2	0	3	5	10
Africa	1	2	0	2	1	1	1	0	1	2	6	3	2
South Africa	0	1	0	0	0	1	1	0	0	0	4	2	0
All others	1	1	0	1	1	0	0	0	1	2	2	2	2
Australia/Oceania	2	6	5	16	17	8	21	15	18	19	19	28	13
Australia	2	6	4	14	16	8	21	15	17	18	18	25	13
New Zealand	0	0	1	2	1	0	0	1	0	0	1	3	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-47

USPTO patents granted in computer systems technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,661	8,657	9,249	9,789	10,577	9,711	11,755	10,506	11,148	11,679	12,654	13,155	15,260
North America	2,915	4,618	4,934	5,199	5,554	5,224	6,086	5,225	5,601	5,884	6,343	6,457	7,234
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	42	57	69	93	94	97	111	113	130	173	227	248	273
Mexico	1	0	1	1	3	4	1	1	0	1	1	2	0
United States	2,873	4,560	4,864	5,105	5,457	5,123	5,975	5,111	5,471	5,710	6,116	6,207	6,962
Central and South America	1	0	1	2	2	2	3	4	2	4	5	5	6
Argentina	1	0	0	0	0	0	0	0	0	0	1	1	2
Brazil	0	0	1	2	1	2	2	2	1	2	4	2	3
All others	0	0	0	0	1	0	1	2	2	2	0	3	1
Europe	346	537	633	651	753	726	854	819	887	863	1,010	978	1,044
EU	327	516	601	624	713	684	818	776	837	812	950	901	965
Austria	3	7	12	14	13	7	8	12	12	10	13	12	13
Belgium	1	9	10	6	11	11	14	7	10	14	19	13	24
Denmark	1	4	2	5	6	9	10	5	6	5	9	11	16
Finland	1	8	12	25	23	23	37	38	34	33	51	27	30
France	88	112	100	118	122	97	143	116	127	134	144	148	147
Germany	73	136	172	190	258	237	266	288	303	252	328	288	284
Hungary	1	0	1	0	1	0	1	0	1	1	0	2	1
Ireland	3	3	11	10	13	8	12	8	7	9	12	15	18
Italy	40	64	81	70	65	83	74	74	73	68	60	76	67
Netherlands	33	57	45	44	54	34	52	58	51	59	58	49	47
Spain	2	0	3	1	1	5	10	4	14	10	14	9	16
Sweden	12	16	27	26	18	22	27	24	25	22	33	34	36
United Kingdom	68	97	124	114	127	145	157	135	164	180	184	203	244
All others	0	3	1	1	3	4	6	6	10	15	24	14	24
Other Europe	19	21	32	27	40	42	36	43	50	51	60	77	79
Norway	5	10	9	5	10	14	8	9	12	10	9	6	11
Russia	0	0	5	5	3	1	6	6	4	8	11	17	13
Former Soviet Union	3	2	0	0	0	0	0	0	0	0	0	0	0
Switzerland	11	8	17	17	26	27	22	28	33	32	39	53	53
All others	0	1	1	0	1	0	0	0	1	1	1	1	2
Asia	2,370	3,466	3,624	3,848	4,187	3,667	4,639	4,318	4,486	4,767	5,079	5,397	6,646
China	8	2	17	27	41	41	54	72	123	162	177	203	360
India	2	3	6	15	7	15	32	51	66	63	117	110	163
Japan	1,941	2,704	2,796	2,998	3,118	2,658	3,401	3,028	2,911	2,972	2,927	3,206	3,805
Malaysia	0	3	2	4	3	8	6	8	8	14	21	12	20
Singapore	7	16	21	65	86	40	50	26	32	38	49	32	53
South Korea	306	527	483	377	444	475	680	716	825	991	1,184	1,175	1,266
Taiwan	106	209	299	362	488	428	414	414	518	522	598	644	966
All others	0	2	0	0	0	2	2	3	3	5	6	15	13
Middle East	24	33	54	70	69	71	93	80	98	106	148	201	254

Appendix table 6-47

USPTO patents granted in computer systems technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	24	32	54	70	68	71	93	80	97	105	146	199	250
All others	0	0	0	1	1	0	0	0	1	1	2	2	4
Africa	0	0	1	3	1	0	2	2	2	3	0	4	4
South Africa	0	0	1	3	1	0	2	1	2	1	0	3	0
All others	0	0	0	0	0	0	0	1	0	2	0	2	4
Australia/Oceania	4	6	3	17	10	19	80	59	72	52	71	112	74
Australia	4	4	2	14	10	18	77	57	70	47	65	109	69
New Zealand	0	2	0	3	0	2	3	3	2	5	5	3	5
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-48

USPTO patents granted in biotechnology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	4,685	6,367	6,278	5,379	4,806	4,117	6,008	5,940	5,703	5,826	8,203	8,277	8,464
North America	3,307	4,374	4,260	3,640	3,206	2,722	3,910	3,929	3,615	3,751	5,097	4,985	5,118
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	122	207	204	180	161	110	183	204	174	185	237	241	244
Mexico	3	2	4	4	3	2	3	1	3	7	9	7	7
United States	3,182	4,164	4,053	3,456	3,042	2,611	3,725	3,724	3,438	3,558	4,851	4,738	4,867
Central and South America	8	5	10	15	16	10	24	16	20	18	34	31	30
Argentina	3	1	1	0	5	0	5	3	3	3	3	5	2
Brazil	2	1	6	8	8	2	12	7	5	7	14	12	10
All others	4	4	3	7	3	7	6	6	11	9	17	14	18
Europe	868	1,233	1,272	1,094	964	794	1,132	1,088	1,093	1,117	1,658	1,716	1,764
EU	804	1,155	1,182	1,023	901	735	1,047	998	1,004	1,025	1,527	1,566	1,619
Austria	27	27	25	24	15	21	19	25	19	33	35	47	41
Belgium	29	62	52	51	57	36	59	65	58	61	75	79	66
Denmark	44	67	76	70	44	43	71	60	61	61	108	132	128
Finland	18	40	23	13	17	12	18	14	25	24	39	27	27
France	144	182	202	186	135	138	187	157	164	153	232	238	258
Germany	212	276	325	308	273	201	290	272	273	282	440	420	465
Hungary	2	3	7	6	7	3	3	4	6	3	4	3	7
Ireland	3	4	5	4	5	4	9	6	3	9	13	12	11
Italy	49	64	37	40	27	28	56	40	44	48	95	96	101
Netherlands	58	73	70	46	58	51	55	65	70	86	95	121	108
Spain	8	15	15	14	12	16	14	11	26	26	26	27	37
Sweden	38	67	75	72	56	44	52	60	61	43	76	77	85
United Kingdom	166	260	254	185	183	133	203	204	184	186	259	264	268
All others	5	15	15	5	11	5	12	15	10	11	29	22	18
Other Europe	64	78	90	71	63	59	85	90	89	92	131	150	145
Norway	6	12	11	9	12	10	7	15	12	18	14	20	23
Russia	0	0	11	9	11	10	12	23	21	22	31	33	19
Former Soviet Union	6	12	0	0	0	0	0	0	0	0	0	0	0
Switzerland	50	51	61	48	37	35	63	46	49	46	83	88	97
All others	2	3	7	5	3	4	3	6	7	6	3	9	6
Asia	432	590	588	500	504	506	785	764	822	757	1,180	1,280	1,279
China	6	8	17	14	20	25	40	64	54	53	83	76	124
India	7	8	21	44	35	35	50	44	44	28	60	57	67
Japan	386	507	453	367	373	361	514	513	559	493	715	855	754
Malaysia	1	1	0	0	1	1	2	3	4	1	9	5	5
Singapore	1	8	7	7	4	7	12	7	15	12	12	18	24
South Korea	20	41	55	44	37	44	92	80	84	97	180	174	181
Taiwan	10	15	33	22	32	31	68	50	60	69	114	93	121
All others	1	2	2	2	2	2	7	3	2	4	7	2	3
Middle East	26	71	54	61	49	34	68	66	66	87	114	128	128

Appendix table 6-48

USPTO patents granted in biotechnology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	23	70	52	61	48	34	64	63	63	85	108	126	120
All others	2	1	2	0	1	0	4	3	3	2	6	2	9
Africa	1	4	6	6	2	2	3	4	5	4	11	10	5
South Africa	0	3	3	2	2	0	2	1	2	2	5	6	4
All others	1	1	2	3	0	2	1	3	3	2	6	4	1
Australia/Oceania	43	91	90	63	63	50	87	73	83	93	110	126	140
Australia	39	81	81	54	49	44	71	62	72	76	92	109	115
New Zealand	3	10	9	9	13	6	15	11	11	16	17	17	24
All others	1	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-49

USPTO patents granted in pharmaceuticals technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,025	5,687	5,753	5,590	4,324	3,911	4,492	3,835	3,796	4,275	5,470	5,358	6,505
North America	2,845	3,290	3,233	3,276	2,478	2,296	2,561	2,056	2,042	2,259	2,897	2,684	3,389
Bermuda	0	0	1	2	0	0	0	0	0	0	0	0	0
Canada	109	152	148	138	130	91	119	85	98	105	139	136	130
Mexico	3	2	3	4	1	2	0	0	3	2	2	3	6
United States	2,732	3,135	3,082	3,132	2,348	2,203	2,442	1,971	1,941	2,152	2,756	2,545	3,253
Central and South America	9	10	11	15	9	5	13	7	9	8	15	12	24
Argentina	3	5	7	9	3	1	7	4	3	3	2	4	6
Brazil	1	3	1	4	4	1	4	1	2	4	10	4	14
All others	4	3	3	2	2	3	3	2	3	1	2	3	4
Europe	1,482	1,606	1,608	1,503	1,158	1,043	1,250	1,154	1,165	1,225	1,628	1,622	1,853
EU	1,329	1,466	1,465	1,386	1,056	958	1,141	1,060	1,060	1,117	1,462	1,435	1,663
Austria	21	29	20	12	22	11	9	13	14	12	27	14	24
Belgium	42	33	37	30	31	30	35	32	31	41	46	51	54
Denmark	32	69	61	60	52	36	32	36	30	28	61	56	54
Finland	8	19	14	15	14	12	12	7	8	7	13	8	11
France	242	234	230	242	152	156	179	177	175	187	217	249	275
Germany	443	462	471	446	359	291	377	331	332	334	442	413	509
Hungary	8	9	16	19	11	15	15	9	20	10	23	20	15
Ireland	5	4	9	12	8	9	4	3	5	6	9	9	9
Italy	120	125	127	87	85	79	84	88	89	93	140	127	159
Netherlands	25	39	50	43	35	30	30	32	34	38	53	60	52
Spain	24	28	20	33	18	15	34	37	33	46	52	55	70
Sweden	61	61	67	68	39	42	49	34	53	49	67	58	66
United Kingdom	290	331	325	292	213	221	253	240	226	230	283	268	326
All others	8	24	18	26	16	10	28	20	9	36	26	49	38
Other Europe	153	140	143	117	102	85	109	94	105	108	166	187	190
Norway	11	10	14	10	5	5	6	6	6	8	17	14	11
Russia	0	0	9	7	6	6	4	8	4	6	8	9	11
Former Soviet Union	10	12	0	0	0	0	0	0	0	0	0	0	0
Switzerland	123	113	116	93	87	67	89	69	87	87	139	156	159
All others	9	5	4	7	4	7	10	11	8	7	2	8	9
Asia	631	689	798	701	604	494	577	550	499	670	823	914	1,114
China	8	6	9	22	23	22	19	23	21	45	61	64	101
India	15	35	44	86	57	67	75	77	82	85	109	120	152
Japan	552	575	666	494	422	334	407	359	313	450	539	572	649
Malaysia	0	0	0	2	1	0	0	2	1	1	0	1	1
Singapore	1	0	0	2	2	1	4	2	3	2	5	9	16
South Korea	40	44	53	65	67	44	45	64	47	48	64	87	110
Taiwan	15	26	22	29	30	24	25	21	29	39	44	57	80
All others	0	3	4	1	2	2	2	2	3	0	1	4	5
Middle East	34	50	45	61	48	44	54	47	57	83	69	63	69

Appendix table 6-49

USPTO patents granted in pharmaceuticals technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	32	47	41	58	47	39	53	46	56	79	68	59	58
All others	2	3	4	3	1	4	1	1	0	4	1	4	10
Africa	5	3	8	6	4	2	2	4	1	2	3	6	7
South Africa	5	2	5	5	3	1	1	3	0	2	2	3	5
All others	1	1	3	1	2	1	1	1	1	1	1	3	2
Australia/Oceania	20	40	50	30	23	28	36	20	24	25	35	58	50
Australia	17	30	47	25	19	21	28	17	20	19	28	41	42
New Zealand	3	9	3	5	4	7	7	3	4	7	7	17	7
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-50

USPTO patents granted in medical electronics technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,418	1,733	2,370	2,575	2,165	2,026	2,473	2,439	2,240	2,565	3,489	3,534	4,195
North America	963	1,239	1,602	1,667	1,404	1,315	1,560	1,577	1,323	1,615	2,268	2,403	2,809
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	18	24	47	43	32	30	28	38	32	29	54	54	58
Mexico	1	0	1	0	1	3	1	2	0	0	1	1	1
United States	944	1,215	1,554	1,623	1,371	1,282	1,531	1,537	1,291	1,586	2,213	2,348	2,750
Central and South America	0	1	1	4	4	4	4	3	2	4	4	8	7
Argentina	0	0	0	1	0	1	1	1	1	1	2	5	3
Brazil	0	1	1	0	1	0	0	2	0	1	1	3	3
All others	0	1	0	3	3	2	2	0	1	2	2	1	0
Europe	259	277	428	449	369	352	395	409	414	470	585	529	640
EU	243	261	395	413	339	327	374	384	385	439	546	491	579
Austria	2	3	1	8	6	6	7	3	7	10	8	12	23
Belgium	9	10	7	6	4	6	14	9	9	12	12	9	14
Denmark	3	2	7	8	4	4	5	7	6	6	4	4	7
Finland	10	6	19	29	24	18	19	25	20	17	34	28	22
France	31	35	48	53	41	39	51	33	44	37	51	41	40
Germany	89	111	154	159	144	137	153	187	207	240	285	234	277
Hungary	2	2	2	2	0	2	1	0	1	0	1	2	0
Ireland	1	1	1	2	3	2	2	1	1	0	3	3	2
Italy	11	5	15	23	14	9	13	14	13	19	24	24	19
Netherlands	19	42	45	42	29	25	38	34	32	35	49	37	57
Spain	2	0	1	0	2	2	1	5	4	3	2	1	8
Sweden	35	21	43	40	39	37	37	38	23	20	27	35	47
United Kingdom	29	20	50	36	30	37	32	24	18	40	43	51	51
All others	1	2	4	6	1	3	2	3	0	1	3	10	11
Other Europe	16	16	33	36	30	25	21	25	29	31	39	38	61
Norway	5	2	9	15	8	3	7	9	6	10	15	11	19
Switzerland	8	10	15	12	14	13	9	10	11	15	17	18	25
Russia	0	0	8	3	4	6	3	4	8	3	2	6	12
Former Soviet Union	2	2	0	0	0	0	0	0	0	0	0	0	0
All others	1	2	1	6	4	3	2	2	4	3	5	3	5
Asia	170	178	245	355	305	290	425	372	416	361	501	438	589
China	2	4	1	2	4	6	5	6	11	20	33	37	45
India	0	1	2	3	4	2	7	6	5	9	6	2	9
Japan	161	156	216	312	265	242	383	331	358	297	408	327	423
Malaysia	0	0	0	1	1	0	1	0	1	0	0	1	2
Singapore	0	0	1	2	1	1	1	0	4	4	3	6	7
South Korea	4	8	17	22	19	16	12	18	23	20	36	41	68
Taiwan	3	9	7	13	11	23	16	10	14	10	14	24	35
All others	0	0	1	0	0	0	0	1	0	1	1	0	0
Middle East	15	25	82	81	67	54	70	58	63	94	100	111	114

Appendix table 6-50

USPTO patents granted in medical electronics technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	15	25	82	81	67	54	70	57	61	93	98	108	109
All others	0	0	1	0	0	0	1	1	1	2	2	3	5
Africa	1	0	1	4	1	2	0	1	1	1	0	2	5
South Africa	1	0	1	1	0	1	0	0	0	1	0	1	3
All others	0	0	0	3	1	1	0	1	1	0	0	1	2
Australia/Oceania	9	15	11	16	15	9	20	19	21	21	33	42	30
Australia	8	14	11	15	14	9	19	19	20	21	33	40	27
New Zealand	1	0	0	1	1	0	1	0	1	0	1	1	3
All others	0	0	0	0	0	0	0	0	0	0	0	1	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-51

USPTO patents granted in medical equipment technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,374	6,994	6,840	7,412	6,064	4,913	5,219	4,582	4,022	4,691	7,424	8,451	10,360
North America	4,087	5,249	4,958	5,307	4,300	3,537	3,673	3,167	2,794	3,292	5,319	6,175	7,174
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	100	108	128	149	119	90	88	64	74	85	103	129	125
Mexico	3	2	2	2	6	1	4	0	3	1	4	6	3
United States	3,984	5,140	4,828	5,156	4,175	3,446	3,581	3,103	2,717	3,205	5,211	6,039	7,045
Central and South America	20	35	28	37	18	17	11	8	7	18	12	16	28
Argentina	10	15	11	15	9	8	3	4	1	11	2	3	9
Brazil	6	6	7	12	1	5	7	0	4	1	6	6	9
All others	5	15	10	10	8	4	2	4	2	6	4	7	10
Europe	825	1,049	1,172	1,206	1,051	791	812	792	663	791	1,207	1,232	1,772
EU	754	930	1,039	1,065	922	694	707	697	545	672	1,035	1,026	1,537
Austria	17	22	22	28	23	16	17	12	11	18	23	32	30
Belgium	12	14	17	16	11	11	14	13	7	18	12	20	19
Denmark	33	45	33	55	46	30	41	31	30	35	62	76	118
Finland	14	16	18	13	17	14	10	7	3	5	13	9	11
France	137	139	174	170	130	94	83	96	103	92	161	161	211
Germany	271	317	365	365	334	239	255	261	186	270	408	356	620
Hungary	1	0	3	4	0	1	3	3	2	0	4	3	4
Ireland	5	10	10	22	15	28	20	20	8	19	37	49	49
Italy	51	62	69	84	77	52	45	55	36	46	61	58	67
Netherlands	40	48	49	31	37	24	29	31	20	26	41	37	64
Spain	6	13	10	14	12	5	6	14	2	4	8	12	15
Sweden	43	78	115	99	66	56	67	42	41	46	46	70	82
United Kingdom	119	159	147	163	144	117	114	108	87	91	145	134	234
All others	6	9	7	2	10	6	4	5	8	2	15	10	14
Other Europe	71	119	133	141	129	97	105	95	118	119	172	206	235
Norway	6	2	10	9	12	5	6	7	3	2	13	12	11
Russia	0	0	15	13	5	9	8	9	7	10	8	13	17
Former Soviet Union	5	12	0	0	0	0	0	0	0	0	0	0	0
Switzerland	56	85	99	105	104	76	82	70	98	94	138	165	193
All others	4	20	9	14	8	7	9	9	10	13	13	16	14
Asia	365	529	530	652	526	423	543	482	455	434	661	749	1,103
China	4	9	7	19	18	16	22	21	19	18	32	56	105
India	0	5	2	5	2	3	7	3	6	4	3	8	16
Japan	301	418	408	463	343	271	335	316	319	315	490	522	713
Malaysia	1	0	1	5	1	2	2	0	1	0	2	0	2
Singapore	2	2	4	5	5	1	7	2	5	9	11	9	35
South Korea	12	18	27	61	36	34	47	39	25	29	44	57	73
Taiwan	44	74	81	92	120	95	122	99	79	58	78	93	153
All others	1	3	0	2	1	1	1	2	1	1	1	4	6
Middle East	50	75	90	115	92	72	81	66	59	84	133	151	170

Appendix table 6-51

USPTO patents granted in medical equipment technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	47	72	85	111	89	71	78	66	57	83	132	143	163
All others	3	3	5	4	3	1	3	0	2	0	1	8	7
Africa	2	7	7	8	4	6	11	3	3	6	7	10	12
South Africa	2	7	6	6	4	5	8	3	2	4	6	8	10
All others	0	1	1	2	0	1	3	0	1	2	1	2	2
Australia/Oceania	26	50	55	87	72	68	87	63	42	65	85	117	102
Australia	26	45	50	74	58	58	72	56	39	57	74	108	83
New Zealand	0	5	5	13	15	10	15	7	3	8	10	9	19
All others	0	0	1	0	0	0	0	0	0	0	1	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-52

USPTO patents granted in automation and control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,265	1,599	1,710	1,843	1,987	1,856	3,276	2,773	2,889	3,225	3,951	4,176	4,713
North America	803	992	1,033	1,042	1,206	1,096	1,984	1,581	1,739	1,779	2,141	2,299	2,558
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	38	42	43	42	53	48	69	48	64	78	101	97	97
Mexico	1	1	1	2	0	2	3	1	0	3	5	4	4
United States	765	949	988	998	1,153	1,047	1,912	1,532	1,675	1,698	2,036	2,198	2,456
Central and South America	1	1	1	3	2	2	4	1	0	7	4	9	8
Argentina	0	1	0	1	0	0	1	0	0	1	0	0	0
Brazil	1	0	1	1	1	2	1	0	0	5	2	8	7
All others	0	0	0	1	1	0	2	1	0	2	2	1	1
Europe	181	239	307	335	318	316	486	375	380	430	583	622	706
EU	172	230	287	319	298	310	455	354	354	406	549	582	672
Austria	4	3	8	8	8	6	10	10	9	13	21	31	25
Belgium	0	0	3	3	3	2	6	2	5	3	5	8	8
Denmark	3	6	0	5	2	4	8	2	3	5	11	9	10
Finland	5	4	10	6	3	6	10	12	9	16	21	17	20
France	25	38	31	47	44	51	58	40	45	47	104	91	116
Germany	83	97	139	157	155	163	189	160	143	166	200	213	254
Hungary	0	2	0	0	0	0	1	1	0	0	2	2	1
Ireland	0	2	1	2	2	4	8	6	4	9	6	6	10
Italy	20	19	26	28	22	15	43	32	27	44	39	43	56
Netherlands	3	9	12	15	10	8	17	13	19	19	25	35	43
Spain	0	0	3	3	4	5	3	3	4	4	9	5	8
Sweden	10	18	19	11	14	12	22	15	23	19	32	43	39
United Kingdom	18	30	32	31	29	30	79	53	51	58	67	68	73
All others	1	3	3	1	3	4	2	6	10	4	7	11	9
Other Europe	9	9	20	16	20	6	31	21	26	24	34	40	34
Norway	0	1	3	2	3	2	4	6	2	3	3	7	6
Russia	0	0	2	1	2	1	1	1	2	3	3	1	2
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	9	8	12	13	14	3	25	14	21	18	27	31	25
All others	0	0	3	0	1	0	1	0	1	0	1	1	1
Asia	265	347	351	435	440	419	766	775	740	973	1,160	1,178	1,368
China	0	2	1	2	5	5	18	34	42	46	82	66	120
India	1	0	2	0	3	3	6	9	14	12	16	30	22
Japan	229	274	283	340	321	315	555	503	462	607	714	722	722
Malaysia	1	1	0	0	1	0	2	2	1	2	2	0	2
Singapore	2	3	1	5	5	5	7	9	9	17	21	10	15
South Korea	20	33	33	32	29	27	74	88	87	130	148	175	204
Taiwan	12	34	31	54	75	64	102	130	125	156	173	174	279
All others	0	0	0	2	1	0	2	0	0	3	4	1	4
Middle East	10	13	7	19	14	12	21	23	18	25	34	46	47

Appendix table 6-52

USPTO patents granted in automation and control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	10	13	7	18	13	10	20	22	16	23	27	37	41
All others	0	0	0	1	1	1	1	1	2	2	8	10	6
Africa	0	3	5	2	1	1	1	3	0	4	3	1	2
South Africa	0	3	4	2	1	0	1	3	0	4	2	0	2
All others	0	0	1	0	0	1	0	0	0	0	1	1	0
Australia/Oceania	7	5	7	8	7	10	15	16	13	8	25	22	23
Australia	5	4	4	8	6	7	10	15	12	6	23	16	18
New Zealand	2	1	3	1	1	3	4	1	1	2	2	6	5
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-53

USPTO patents granted in measuring techniques and instrumentation technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	5,544	6,958	7,802	9,219	9,311	8,406	9,803	9,478	9,694	9,790	10,915	10,496	11,060
North America	3,303	4,078	4,450	5,206	5,174	4,661	5,263	5,020	5,105	5,006	5,463	5,324	5,516
Bermuda	0	0	0	0	0	0	0	0	1	1	1	0	0
Canada	96	133	144	182	181	145	166	182	168	182	208	224	243
Mexico	0	3	2	8	9	8	9	5	3	3	3	4	2
United States	3,207	3,942	4,304	5,016	4,984	4,509	5,088	4,832	4,934	4,821	5,251	5,096	5,271
Central and South America	3	4	10	12	8	5	12	11	8	9	13	11	17
Argentina	2	0	1	4	2	0	2	3	2	3	3	5	3
Brazil	0	2	5	5	1	2	4	5	6	4	6	4	9
All others	1	2	5	4	4	3	6	3	0	2	4	2	5
Europe	983	1,171	1,513	1,775	1,728	1,577	1,859	1,827	1,830	1,871	2,272	2,213	2,428
EU	883	1,068	1,369	1,593	1,536	1,399	1,681	1,636	1,604	1,646	1,999	1,992	2,142
Austria	15	18	18	30	30	20	29	35	32	39	45	51	53
Belgium	13	14	15	20	14	17	17	23	24	21	29	30	36
Denmark	12	18	8	17	16	18	28	24	13	17	22	37	32
Finland	31	26	35	54	56	37	46	55	48	62	60	47	67
France	138	161	177	181	165	179	203	217	238	218	291	284	331
Germany	377	494	656	828	770	695	834	783	752	762	924	882	917
Hungary	2	4	3	2	2	2	1	1	2	2	0	5	4
Ireland	3	5	4	14	14	2	11	14	14	9	17	8	13
Italy	32	42	57	59	64	53	61	63	63	69	79	90	97
Netherlands	44	50	71	80	73	51	69	76	107	87	89	116	111
Spain	3	2	1	4	2	10	7	8	11	18	12	22	23
Sweden	34	62	91	71	66	72	89	79	59	69	89	86	79
United Kingdom	172	166	228	218	249	233	268	241	221	253	319	306	347
All others	8	5	5	14	13	10	18	18	18	20	22	27	33
Other Europe	100	103	144	182	192	178	178	191	226	225	273	221	286
Norway	12	12	16	23	28	36	29	32	47	40	62	56	58
Russia	0	0	22	25	17	10	16	17	12	17	15	15	21
Former Soviet Union	10	12	0	0	0	0	0	0	0	0	0	0	0
Switzerland	77	75	103	130	145	129	125	137	157	163	193	146	192
All others	1	4	3	4	2	3	8	5	10	5	3	4	15
Asia	1,203	1,633	1,721	2,109	2,270	2,039	2,509	2,457	2,583	2,728	2,972	2,738	2,874
China	3	3	13	20	33	33	54	60	93	146	180	163	201
India	0	2	3	10	17	17	16	29	34	33	39	33	58
Japan	1,098	1,461	1,450	1,785	1,901	1,640	1,998	1,895	1,910	1,963	2,118	1,957	1,960
Malaysia	1	1	3	9	7	7	18	24	30	18	16	12	13
Singapore	2	8	18	29	29	22	15	21	22	23	14	18	26
South Korea	51	76	93	103	110	124	201	225	266	287	307	295	300
Taiwan	48	80	139	147	169	195	206	200	226	258	292	259	311
All others	0	2	2	6	4	1	1	3	2	0	6	1	5
Middle East	34	40	68	76	71	78	90	82	97	103	114	118	132

Appendix table 6-53

USPTO patents granted in measuring techniques and instrumentation technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	32	40	68	70	70	70	85	75	89	95	98	101	108
All others	2	0	0	6	1	8	5	6	8	8	16	17	24
Africa	2	6	4	1	5	4	6	8	5	6	3	1	5
South Africa	2	6	4	1	3	2	6	5	2	3	2	1	3
All others	0	0	0	0	1	2	1	4	3	3	0	0	2
Australia/Oceania	17	27	38	42	56	42	61	72	66	68	78	91	86
Australia	14	18	32	36	45	32	59	65	51	57	67	79	72
New Zealand	3	9	6	6	10	9	2	7	13	11	11	12	14
All others	0	0	0	0	1	1	0	0	1	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-54

Triadic patent families, by region/country/economy: 1999–2010

Region/country/economy	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
World	44,976	45,452	43,943	46,238	47,992	50,014	50,335	51,582	50,469	47,155	47,870	50,352
North America												
Canada	524	527	501	596	578	655	667	660	677	614	639	654
Mexico	11	9	12	10	15	16	14	19	17	16	14	14
United States	14,582	13,827	13,621	14,492	14,815	15,211	15,379	15,838	15,007	14,071	14,012	14,022
Central and South America												
Argentina	7	7	6	4	5	4	9	11	10	8	9	8
Brazil	27	30	46	43	43	49	53	50	69	68	62	63
Chile	2	2	5	5	3	5	5	6	5	5	7	8
Europe												
EU	14,129	13,330	12,847	13,255	13,302	13,979	14,267	14,723	14,756	14,401	14,327	14,230
Austria	261	276	258	323	340	386	430	432	414	391	408	418
Belgium	374	329	315	344	327	414	379	404	428	404	385	403
Bulgaria	2	1	1	2	5	3	4	6	3	4	4	4
Cyprus	3	0	0	1	1	1	1	1	1	1	1	1
Czech Republic	10	9	12	14	15	15	15	16	21	22	20	20
Denmark	236	226	183	232	246	296	311	303	310	309	288	294
Estonia	1	1	2	1	4	1	2	5	6	7	9	7
Finland	454	352	305	275	302	340	344	369	365	350	361	366
France	2,350	2,147	1,970	2,220	2,272	2,416	2,406	2,429	2,482	2,482	2,470	2,465
Germany	6,026	5,814	5,660	5,508	5,452	5,643	5,786	5,965	5,954	5,759	5,774	5,726
Greece	6	6	8	8	10	9	15	14	16	12	13	10
Hungary	40	29	30	28	31	33	40	44	47	46	46	45
Ireland	75	31	49	52	67	71	81	74	79	80	81	76
Italy	664	639	651	712	711	758	746	756	744	734	718	715
Latvia	1	3	1	1	3	1	4	3	3	4	4	3
Lithuania	2	1	0	3	14	8	1	1	1	2	1	1
Luxembourg	22	20	26	10	20	23	18	22	18	21	18	20
Netherlands	0	2	2	1	0	0	1	1	1	1	1	1
Norway	918	1,026	921	971	942	948	906	1,015	959	941	929	867
Poland	8	9	12	12	10	17	13	14	18	20	24	27
Portugal	5	3	6	6	7	6	12	17	27	22	18	18
Romania	2	0	1	1	1	1	6	1	3	3	3	3
Slovak Republic	3	2	2	3	5	1	2	3	3	3	3	4
Slovenia	4	9	6	14	13	12	18	13	14	16	14	13
Spain	126	146	153	164	157	218	221	206	222	228	242	245
Sweden	884	619	669	694	675	697	832	898	927	904	865	881
United Kingdom	1,652	1,630	1,604	1,655	1,671	1,661	1,672	1,710	1,690	1,634	1,628	1,596
Other Europe												
Iceland	7	11	3	10	4	4	4	4	5	4	4	3
Norway	108	106	78	108	98	107	111	122	119	112	134	127
Russia	62	73	55	51	53	50	60	70	68	64	65	72

Appendix table 6-54

Triadic patent families, by region/country/economy: 1999–2010

Region/country/economy	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Switzerland	775	812	737	806	845	881	871	907	867	851	846	857
Middle East												
Israel	278	325	290	268	296	351	422	420	388	373	351	335
Turkey	3	4	10	8	9	13	13	14	21	21	28	35
Africa												
South Africa	28	36	17	27	32	29	35	39	32	31	27	26
Asia												
China	82	100	129	186	246	251	338	388	489	520	730	900
India	39	54	83	128	133	114	131	145	151	164	190	207
Indonesia	1	4	2	3	2	0	1	4	1	2	1	2
Japan	13,196	14,846	14,081	14,329	15,135	15,521	15,060	15,225	14,754	13,249	13,474	15,713
Singapore	56	71	86	84	99	131	115	114	124	125	123	119
South Korea	581	733	889	1,215	1,697	2,002	2,132	2,144	2,201	1,780	2,122	2,223
Taiwan	46	40	56	104	95	115	163	193	243	234	265	298
Australia/Oceania												
Australia	297	375	278	352	344	369	343	328	313	304	302	292
New Zealand	48	47	33	56	57	64	50	61	55	51	49	49

EU = European Union.

NOTES: Triadic patent families include patents applied for in the U.S. Patent and Trademark Office, European Patent Office, and Japan Patent Office. Patent families are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. China includes Hong Kong.

SOURCE: Organisation for Economic Co-operation and Development, Patent Statistics, Patents by Region database, http://stats.oecd.org/WBOS/index.aspx, accessed 15 February 2013.

Science and Engineering Indicators 2014

Appendix table 6-55

U.S. HT industries by number of firms and employees: 2010

Industry	Number of firms			Employment		
	< 5 employees	> 5 employees	All employees	< 5 employees	> 5 employees	All employees
All industries	316,636	165,550	482,186	437,604	14,528,866	14,966,470
All manufacturing industries	11,512	23,573	35,085	20,683	2,701,423	2,722,106
Aerospace products and parts	403	903	1,306	679	382,930	383,609
Audio and video equipment	227	233	460	448	8,410	8,858
Basic chemicals	334	1,049	1,383	601	146,443	147,044
Commercial and service industry machinery	723	1,157	1,880	1,309	71,340	72,649
Communications equipment	479	895	1,374	830	112,756	113,586
Computer and peripheral equipment	446	648	1,094	701	70,347	71,048
Electrical equipment	650	1,325	1,975	1,249	111,038	112,287
Engine, turbine, and power transmission equipment	237	625	862	408	89,959	90,367
Industrial machinery	1,128	2,220	3,348	2,129	96,088	98,217
and reproducing magnetic and optical media	342	269	611	543	18,274	18,817
Navigational, measuring, electromedical, and control instruments	1,645	2,823	4,468	3,025	379,952	382,977
Other electrical equipment and components	540	1,337	1,877	933	126,009	126,942
Other general-purpose machinery	1,589	3,734	5,323	3,036	241,962	244,998
Petroleum and coal products	353	739	1,092	606	99,084	99,690
Pharmaceuticals and medicines	473	1,073	1,546	871	230,151	231,022
Railroad rolling stock	36	121	157	48	24,443	24,491
Resins, synthetic rubbers, and artificial synthetic fibers and filaments	169	803	972	326	84,424	84,750
Semiconductors and other electronic components	1,121	2,803	3,924	1,954	281,109	283,063
Ship and boat building	617	816	1,433	987	126,704	127,691
All service industries	300,259	138,586	438,845	408,968	11,214,659	11,623,627
Architectural, engineering, and related services	61,046	31,475	92,521	95,055	1,197,621	1,292,676
Colleges, universities, and professional schools	327	1,862	2,189	657	1,718,570	1,719,227
Computer systems design and related services	80,767	25,303	106,070	107,719	1,318,482	1,426,201
Data processing, hosting, and related services	4,309	4,197	8,506	6,434	378,076	384,510
Junior colleges	108	372	480	0	86,175	86,175
Management of companies and enterprises	3,127	24,360	27,487	4,024	2,828,929	2,832,953
Management, scientific, and technical consulting services	117,678	23,351	141,029	140,953	749,721	890,674
Monetary authorities—central bank	0	12	12	0	18,205	18,205
Other information services	4,763	2,664	7,427	7,022	129,391	136,413
Other pipeline transportation	13	47	60	17	9,019	9,036
Other telecommunications	3,371	1,605	4,976	5,248	48,896	54,144
Pipeline transportation of natural gas	31	90	121	0	29,675	29,675
Professional and commercial equipment and supplies merchant	12,889	11,311	24,200	22,713	644,703	667,416
Satellite telecommunications	321	175	496	442	7,710	8,152
Scientific R&D services	7,351	6,292	13,643	11,479	635,335	646,814
Securities and commodity exchanges	7	13	20	0	4,835	4,835
Software publishers	2,235	3,051	5,286	3,757	360,706	364,463
Wired telecommunications carriers	1,495	1,960	3,455	2,673	796,573	799,246
Wireless telecommunications carriers (except satellite)	421	446	867	775	252,037	252,812

Appendix table 6-55

U.S. HT industries by number of firms and employees: 2010

Industry	Number of firms			Employment		
	< 5 employees	> 5 employees	All employees	< 5 employees	> 5 employees	All employees
Other industries	4,865	3,391	8,256	7,953	612,784	620,737
Electric power generation, transmission, and distribution	403	1,340	1,743	605	510,933	511,538
Oil and gas extraction	4,462	2,051	6,513	7,348	101,851	109,199

HT = high technology.

NOTES: Firms with fewer than five employees include those reporting no employees on their payroll. A firm is an entity that is either a single location with no subsidiary or branches or the topmost parent of a group of subsidiaries or branches. HT industries are defined by the Bureau of Labor Statistics (BLS) on the basis of employment intensity of the technology-oriented occupations based on the BLS's Occupational Employment Survey of 2011. HT small business employment is a lower-bound estimate because employment data are not available for a few industries due to data suppression.

SOURCES: U.S. Census Bureau, Statistics of U.S. Businesses, http://www.census.gov/econ/susb/, accessed 15 May 2013; Hecker DE, High-technology employment: A NAICS-based update, *Monthly Labor Review* 128(7):57–72 (2006), http://www.bls.gov/opub/mlr/2005/07/art6full.pdf, accessed 15 May 2013.

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Appendix table 6-56

U.S. venture capital investment, by financing stage and selected industry/technology: 1997–2012

(Millions of dollars)

Financing stage and industry/technology	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All financing stages																
All industries/technologies	12,159	16,496	44,854	87,300	35,451	21,828	19,494	22,492	24,231	29,751	32,706	31,836	23,291	28,131	34,006	29,208
Biopharmaceuticals	1,048	1,278	1,726	4,039	3,585	3,286	3,584	4,635	4,057	4,817	5,702	4,637	3,820	3,466	4,043	3,380
Business support services	927	1,681	8,150	18,188	4,030	1,530	1,453	1,261	1,690	2,439	3,184	3,155	2,248	2,748	4,261	3,698
Communications and networking	2,421	3,502	9,965	21,411	8,396	4,479	2,921	2,637	2,923	3,935	2,587	1,596	1,613	1,075	1,348	1,361
Consumer information services	275	515	2,703	2,499	244	152	214	470	663	1,227	1,832	2,496	2,264	4,107	4,328	2,823
Electronics and computer hardware	507	541	864	2,085	1,432	1,172	869	1,199	1,192	1,249	1,695	1,335	1,008	1,351	1,464	1,174
Financial institutions and services	156	556	2,066	3,325	1,205	537	429	605	713	661	865	648	545	803	1,318	1,009
Media and content	630	740	2,175	3,041	782	228	249	383	519	486	631	698	317	467	650	715
Medical devices and equipment	763	985	1,413	2,164	1,786	1,810	1,821	1,750	2,366	2,840	3,766	3,562	3,060	2,551	3,403	2,765
Medical software and information services	514	503	1,141	2,257	731	416	386	344	494	422	296	414	502	520	670	679
Renewable energy	7	13	26	75	148	128	42	316	231	1,033	1,624	3,770	1,173	2,379	2,797	1,180
Semiconductors	556	627	1,347	3,382	2,533	1,467	1,827	2,058	1,893	2,177	1,761	1,319	784	929	667	621
Software	2,473	3,538	8,766	21,150	9,022	5,585	4,729	5,587	5,569	5,968	5,693	5,182	3,350	4,183	4,973	6,663
All others	1,882	2,017	4,512	3,684	1,557	1,038	970	1,247	1,921	2,497	3,070	3,024	2,607	3,552	4,084	3,140
Seed stage																
All industries/technologies	199	216	602	504	233	129	77	137	93	153	189	174	120	230	376	302
Biopharmaceuticals	25	31	12	32	36	32	11	21	7	29	28	19	10	15	30	6
Business support services	9	27	181	92	24	9	1	6	7	26	19	23	18	39	46	23
Communications and networking	34	18	63	96	36	17	10	6	7	4	5	2	1	3	6	2
Consumer information services	1	13	33	10	3	3	1	7	10	21	51	38	36	60	95	79
Electronics and computer hardware	1	3	5	3	6	11	6	5	11	4	12	5	4	2	2	7
Financial institutions and services	8	7	46	11	9	1	2	0	1	4	7	3	2	18	23	7
Media and content	9	3	27	12	2	1	0	1	4	0	7	2	6	3	10	21
Medical devices and equipment	27	13	23	15	10	9	8	14	11	19	20	15	8	13	9	6
Medical software and information services	5	9	9	6	7	1	2	2	4	1	2	3	3	6	4	13
Renewable energy	0	0	0	0	3	5	0	13	2	5	6	12	1	2	0	1
Semiconductors	5	6	17	33	19	4	8	14	6	0	2	4	1	5	3	2
Software	56	47	148	177	64	31	23	24	15	28	21	26	22	44	128	102
All others	19	39	38	17	14	5	5	24	8	12	9	22	8	20	20	33
First round																
All industries/technologies	4,261	6,152	15,622	29,311	7,887	4,388	3,914	5,051	6,019	5,992	8,061	7,256	4,295	5,299	6,152	6,017
Biopharmaceuticals	336	444	580	1,091	1,236	913	603	1,026	1,134	1,162	1,580	1,413	676	667	1,036	743
Business support services	483	763	3,575	6,476	621	235	292	329	535	709	986	838	465	486	718	625
Communications and networking	606	1,485	3,763	6,871	1,514	486	294	505	398	388	416	218	100	279	157	140
Consumer information services	83	174	761	776	31	41	62	86	334	543	855	843	538	691	569	824
Electronics and computer hardware	168	268	223	655	421	268	243	295	239	219	325	225	121	174	143	185
Financial institutions and services	65	127	781	1,369	158	110	68	201	513	133	206	138	143	265	163	363
Media and content	274	246	784	1,222	139	28	47	107	209	214	216	176	100	203	151	206
Medical devices and equipment	207	315	312	440	212	337	400	435	436	534	592	725	424	371	561	321
Medical software and information services	147	188	358	788	111	56	79	80	68	63	57	135	61	203	153	75

Appendix table 6-56

U.S. venture capital investment, by financing stage and selected industry/technology: 1997–2012

(Millions of dollars)

Financing stage and industry/technology	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Renewable energy	3	3	5	22	48	58	21	49	43	297	565	518	183	152	142	62
Semiconductors	245	234	382	1,025	718	314	466	399	361	313	121	141	24	100	27	38
Software	952	1,219	2,722	7,699	2,218	1,209	1,055	1,190	1,130	953	1,190	944	781	879	1,349	1,616
All others	692	686	1,376	877	460	333	284	349	619	464	952	942	679	829	983	819
Expansion																
All industries/technologies	3,330	4,734	12,638	28,514	12,792	6,424	5,119	5,813	4,955	7,954	7,044	7,650	5,034	5,181	6,741	5,038
Biopharmaceuticals	155	323	627	1,011	1,267	1,138	978	1,693	1,044	1,392	1,117	949	961	694	1,027	579
Business support services	221	390	2,416	6,789	1,819	295	301	182	245	577	792	822	582	593	1,100	627
Communications and networking	682	1,055	2,162	6,386	3,405	1,230	722	376	352	1,432	396	264	207	149	161	99
Consumer information services	72	154	1,002	623	98	40	27	229	93	369	441	793	445	416	812	512
Electronics and computer hardware	103	132	366	488	481	447	204	339	271	354	294	254	293	214	288	232
Financial institutions and services	41	211	726	1,292	436	110	152	39	39	192	137	79	154	171	226	192
Media and content	201	195	603	895	349	50	51	180	26	163	110	56	61	100	109	172
Medical devices and equipment	177	343	368	604	445	486	435	361	651	509	806	848	674	501	494	437
Medical software and information services	185	141	365	837	270	77	53	77	104	91	41	43	54	35	189	162
Renewable energy	3			3	61	8	12	169	108	383	545	1,468	157	707	563	48
Semiconductors	92	156	478	1,133	728	563	560	545	402	556	409	312	108	144	49	63
Software	850	1,085	2,458	7,101	3,106	1,829	1,403	1,328	1,252	1,452	1,144	1,234	764	974	1,024	1,475
All others	548	549	1,067	1,352	327	151	221	295	368	484	812	528	574	483	699	440
Later																
All industries/technologies	4,032	5,138	15,680	28,508	13,941	9,464	8,549	9,669	11,173	13,535	15,795	15,347	12,909	16,668	19,983	16,773
Biopharmaceuticals	504	481	491	1,850	973	1,042	1,833	1,762	1,779	2,120	2,806	2,100	2,068	2,055	1,872	1,780
Business support services	213	500	1,942	4,785	1,532	878	641	581	820	1,027	1,168	1,332	1,157	1,474	2,372	2,384
Communications and networking	916	922	3,914	7,932	3,372	2,343	1,470	1,519	1,791	1,522	1,401	868	1,021	588	742	733
Consumer information services	118	173	906	1,089	112	59	71	148	176	263	486	752	1,226	2,937	2,842	1,409
Electronics and computer hardware	233	137	267	932	523	385	382	474	648	616	1,011	786	552	950	1,019	746
Financial institutions and services	38	210	513	653	569	294	144	209	98	170	489	426	222	306	906	447
Media and content	147	296	761	910	277	138	145	59	234	85	268	463	129	142	378	312
Medical devices and equipment	320	245	691	1,061	1,064	905	859	826	1,082	1,593	2,227	1,694	1,822	1,514	2,150	1,883
Medical software and information services	171	162	380	575	343	262	184	179	107	228	143	222	363	240	323	409
Renewable energy	1	10	21	50	36	47	9	86	78	333	480	1,767	814	1,519	2,087	1,070
Semiconductors	213	200	470	1,190	1,058	533	705	993	942	1,037	1,126	719	606	604	564	479
Software	591	1,087	3,325	6,057	3,481	2,150	1,751	2,401	2,578	3,118	2,960	2,769	1,641	2,133	2,391	3,301
All others	567	715	1,999	1,424	601	428	355	432	840	1,423	1,230	1,449	1,288	2,206	2,337	1,820

NOTES: Industries and technologies are classified by Dow Jones VentureSource. Seed stage consists of financing, proof-of-concept, and initial product development.

SOURCE: Dow Jones, special tabulations (2013) of the VentureSource database, http://www.dowjones.com/info/venture-capital-data.asp.

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Appendix table 6-57

USPTO patents granted in alternative energy and pollution-control technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	3,087	3,640	4,081	4,256	4,085	3,594	3,960	3,701	3,742	4,297	6,260	6,906	8,834
North America	1,733	1,967	2,147	2,116	2,068	1,815	2,055	1,881	1,930	2,156	3,032	3,444	4,324
Bermuda	1	1	0	0	0	0	0	0	1	0	1	0	0
Canada	96	124	114	131	143	142	146	113	124	114	161	177	225
Mexico	3	0	4	3	3	3	2	1	4	1	8	4	9
United States	1,633	1,842	2,029	1,982	1,922	1,670	1,907	1,767	1,802	2,041	2,863	3,264	4,090
Central and South America	5	11	5	9	10	6	4	4	7	7	7	26	25
Argentina	2	1	1	4	0	0	0	0	0	0	1	3	2
Brazil	2	2	1	2	4	3	2	3	3	3	6	16	13
All others	1	8	3	3	6	3	2	1	5	4	1	7	11
Europe	573	698	758	760	670	646	598	631	643	687	1,067	1,109	1,493
EU	527	638	682	718	621	588	549	594	594	638	1,007	1,044	1,417
Austria	11	16	13	7	11	19	17	17	12	16	19	17	24
Belgium	7	6	10	10	12	9	13	9	6	12	20	20	17
Denmark	11	14	22	24	18	23	11	19	22	34	56	108	149
Finland	18	15	15	22	15	13	15	18	9	12	22	9	20
France	92	94	104	96	68	84	62	98	85	96	155	151	165
Germany	237	291	327	351	319	287	268	264	276	316	474	458	596
Hungary	1	1	0	3	0	1	0	0	1	0	4	1	4
Ireland	0	0	2	2	3	4	1	1	4	3	3	3	4
Italy	25	26	25	28	30	23	28	26	28	25	43	42	67
Netherlands	16	36	34	31	24	19	14	23	32	15	37	49	60
Spain	3	1	3	13	12	11	4	9	9	19	20	30	44
Sweden	44	64	53	40	38	34	34	31	31	21	41	40	75
United Kingdom	61	71	65	81	65	54	81	74	74	64	94	102	161
All others	0	3	8	12	7	6	3	6	8	6	20	15	31
Other Europe	46	60	76	42	49	58	49	37	49	49	60	65	76
Norway	5	8	11	7	6	13	8	11	12	10	13	14	13
Russia	0	0	14	10	8	10	7	5	14	9	12	11	10
Former Soviet Union	9	12	0	0	0	0	0	0	0	0	0	0	0
Switzerland	32	36	49	22	30	32	31	19	22	27	32	37	50
All others	0	4	2	3	5	3	3	2	1	3	3	3	3
Asia	722	912	1,125	1,311	1,278	1,079	1,252	1,140	1,111	1,380	2,062	2,217	2,873
China	5	3	7	12	13	10	18	20	23	32	67	74	146
India	1	1	3	7	7	8	5	13	9	12	21	39	43
Japan	653	809	993	1,152	1,105	932	1,071	941	910	1,038	1,451	1,522	1,965
Malaysia	0	0	1	0	4	1	0	1	0	0	0	1	4
Singapore	2	1	2	3	3	5	1	6	3	5	10	11	18
South Korea	37	55	76	85	99	76	105	106	105	210	394	421	489
Taiwan	21	39	39	48	46	45	49	51	61	79	110	144	204
All others	3	4	4	4	1	2	3	2	0	4	9	5	4
Middle East	17	19	21	28	27	18	16	15	21	27	49	53	72

Appendix table 6-57

USPTO patents granted in alternative energy and pollution-control technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	15	17	19	26	24	15	16	12	20	24	39	45	49
All others	2	2	3	2	3	3	0	3	1	3	10	9	24
Africa	6	7	8	2	4	4	8	6	6	5	11	7	4
South Africa	6	7	8	2	3	3	7	6	6	3	11	6	3
All others	0	0	0	0	1	1	1	1	0	2	1	1	0
Australia/Oceania	32	30	19	30	31	26	28	25	25	34	33	50	43
Australia	29	26	17	28	28	26	25	24	22	31	26	47	37
New Zealand	3	4	2	2	3	1	3	1	3	4	6	2	6
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Alternative energy and pollution-control technologies include alternative energy, energy storage, smart grid, and pollution mitigation. Alternative energy includes solar, wind, nuclear, hydropower, wave/tidal/ocean, geothermal, and electric/hybrid. Energy storage includes batteries, compressed air, flywheels, superconductivity, magnet energy systems, ultracapacitors, hydrogen production and storage, and thermal energy. Pollution mitigation includes recycling, control of air, water, and solid waste pollution, environmental remediation, cleaner coal, and capture and storage of carbon and other greenhouse gases. Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-58

USPTO patents granted in alternative energy technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	846	1,093	1,346	1,588	1,606	1,501	1,691	1,605	1,649	2,012	3,094	3,924	5,214
North America	449	532	644	747	783	721	846	796	791	955	1,468	1,927	2,473
Bermuda	1	1	0	0	0	0	0	0	1	0	0	0	0
Canada	23	25	24	55	64	71	67	43	50	50	65	92	101
Mexico	1	0	1	0	1	1	0	0	1	0	2	1	2
United States	424	506	618	692	718	649	779	753	740	905	1,401	1,833	2,371
Central and South America	0	6	1	5	2	3	4	2	0	2	1	11	13
Argentina	0	0	1	0	0	0	0	0	0	0	1	2	2
Brazil	0	1	0	0	1	2	1	2	0	1	0	7	8
All others	0	5	0	5	1	1	3	0	0	1	0	3	3
Europe	147	201	230	274	260	279	243	284	321	341	537	659	970
EU	137	184	204	264	246	261	230	272	300	327	513	630	931
Austria	2	6	4	1	5	4	9	4	5	9	9	9	18
Belgium	0	0	3	5	6	6	5	5	4	5	9	11	10
Denmark	3	2	4	12	12	14	4	14	12	20	46	96	137
Finland	2	5	3	3	2	5	4	5	2	4	6	3	12
France	32	27	28	34	25	32	31	40	29	34	63	76	92
Germany	57	94	109	139	134	139	126	136	165	186	260	273	398
Hungary	1	1	0	0	0	0	0	0	0	0	2	1	3
Ireland	0	0	1	0	0	3	0	0	2	1	1	2	3
Italy	6	9	9	7	7	7	10	7	12	10	21	24	42
Netherlands	2	5	12	12	9	7	5	15	17	10	17	30	48
Spain	1	0	1	11	7	6	3	6	4	13	15	26	38
Sweden	14	17	14	16	14	11	11	9	9	9	12	15	27
United Kingdom	19	18	14	22	24	26	23	29	37	26	41	55	87
All others	0	1	4	2	1	1	1	1	3	1	12	8	18
Other Europe	10	17	26	10	14	18	13	12	21	14	24	29	39
Norway	1	1	2	1	0	2	2	2	7	5	4	7	10
Russia	0	0	2	2	2	3	1	2	3	2	4	4	4
Former Soviet Union	1	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	8	16	21	6	10	11	10	8	11	6	14	15	23
All others	0	0	1	1	2	2	0	0	0	1	2	3	2
Asia	227	327	451	537	536	486	578	506	520	687	1,046	1,273	1,698
China	1	0	1	2	3	3	8	9	10	15	32	33	78
India	0	0	1	1	1	1	0	5	3	4	7	26	28
Japan	211	299	420	504	484	440	517	444	436	521	737	868	1,141
Malaysia	0	0	1	0	1	0	0	0	0	0	0	1	2
Singapore	0	0	0	0	0	1	0	0	1	3	5	7	13
South Korea	9	13	14	18	27	28	28	28	42	93	192	226	270
Taiwan	4	12	10	9	20	13	22	20	28	49	66	110	163
All others	2	3	4	3	0	0	3	0	0	2	7	2	3

Appendix table 6-58

USPTO patents granted in alternative energy technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East	13	13	11	13	14	7	6	7	9	9	23	27	34
Israel	11	12	10	12	13	6	6	5	9	7	18	21	24
All others	2	1	1	1	1	1	0	2	1	1	5	5	10
Africa	2	1	0	0	0	2	2	2	0	2	6	3	1
South Africa	2	1	0	0	0	1	2	2	0	1	6	3	1
All others	0	0	0	0	0	1	0	0	0	1	0	0	0
Australia/Oceania	7	15	8	14	11	3	14	9	8	16	14	28	24
Australia	6	14	8	13	11	3	13	9	6	15	13	26	20
New Zealand	1	1	0	1	1	0	1	0	2	1	1	2	4
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies classified by The Patent BoardTM. Alternative energy technologies consist of bioenergy, electric/hybrid vehicles, fuel cells, geothermal, hydropower, nuclear, solar, and wind. Patents fractionally allocated among regions/countries/economies based on proportion of residences of all named inventors. EU includes 27 member countries. China includes Hong Kong and Macau. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-51 for full list of countries by region.

SOURCE: The Patent Board™, special tabulations (2013) of Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-59

USPTO patents granted in energy storage technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	349	401	540	618	617	463	533	508	530	619	989	933	1,098
North America	165	191	233	241	263	194	233	199	233	237	369	341	384
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	15	15	16	18	17	17	16	9	8	17	18	19	28
Mexico	0	0	1	0	0	0	0	0	0	0	0	0	0
United States	150	176	216	223	246	177	217	190	224	219	351	321	356
Central and South America	0	0	2	0	0	1	1	0	1	0	0	0	1
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	2	0	0	1	1	0	1	0	0	0	1
Europe	34	36	62	61	71	54	42	41	50	53	89	81	84
EU	32	32	56	54	59	43	34	35	42	46	77	73	74
Austria	2	1	0	0	1	3	0	0	1	1	1	1	0
Belgium	0	0	1	0	0	0	0	0	0	0	0	1	1
Denmark	0	3	4	1	2	2	0	0	1	4	0	2	1
Finland	2	1	0	0	0	0	1	0	0	0	2	0	0
France	11	8	18	11	9	4	3	6	9	12	21	29	22
Germany	10	13	22	26	37	22	16	21	12	19	36	25	30
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	1
Ireland	0	0	0	0	0	0	0	0	1	0	0	0	0
Italy	3	1	2	1	2	2	2	1	2	1	7	0	5
Netherlands	2	1	2	4	2	5	1	0	8	1	1	0	2
Spain	0	0	1	1	1	0	1	0	0	0	0	2	0
Sweden	0	0	1	1	1	1	2	1	1	0	3	2	2
United Kingdom	2	4	7	6	4	5	9	7	6	5	6	10	9
All others	0	0	0	3	0	0	0	0	2	2	0	1	3
Other Europe	2	4	6	7	12	11	8	6	8	7	12	8	10
Norway	0	1	1	1	2	2	0	2	1	0	2	1	0
Russia	0	0	3	3	3	4	3	1	4	3	4	4	3
Former Soviet Union	1	3	0	0	0	0	0	0	0	0	0	0	0
Switzerland	1	0	2	2	5	3	5	3	2	4	6	3	6
All others	0	0	0	1	2	2	0	0	1	0	0	0	1
Asia	144	166	239	309	276	210	253	262	242	317	521	498	622
China	0	1	1	1	2	1	1	1	3	2	18	14	31
India	0	0	0	1	0	1	0	1	0	0	3	0	0
Japan	128	149	212	264	230	174	205	206	198	228	308	308	417
Malaysia	0	0	0	0	1	0	0	0	0	0	0	0	0
Singapore	1	0	0	0	0	1	0	1	0	0	1	2	0
South Korea	12	14	22	36	36	30	41	46	36	77	170	158	164
Taiwan	3	2	4	7	7	3	6	6	5	10	21	15	10
All others	0	0	0	0	0	0	0	1	0	0	0	1	0

Appendix table 6-59

USPTO patents granted in energy storage technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Middle East	2	3	3	1	4	1	1	2	1	5	3	6	4
Israel	1	3	3	1	3	1	1	1	1	5	1	6	3
All others	1	0	0	0	1	0	0	1	0	0	2	0	1
Africa	1	2	0	0	1	0	0	0	1	1	4	2	0
South Africa	1	2	0	0	1	0	0	0	1	1	4	1	0
All others	0	0	0	0	0	0	0	0	0	0	0	1	0
Australia/Oceania	4	3	2	5	2	4	4	5	4	7	3	6	4
Australia	4	2	1	5	2	4	4	4	4	6	2	5	4
New Zealand	0	1	1	0	0	1	0	1	0	1	2	1	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Energy storage technology includes batteries, compressed air, flywheels, superconductivity magnet energy systems, ultracapacitors, hydrogen production and storage, and thermal energy storage. Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries/economies by region.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-60

USPTO patents granted in smart grid technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	291	302	321	344	306	295	384	366	386	384	543	543	811
North America	166	171	202	208	193	183	247	245	272	248	344	364	528
Bermuda	0	0	0	0	0	0	0	0	0	0	1	0	0
Canada	9	11	10	15	19	12	21	24	22	15	28	24	34
Mexico	0	0	0	1	0	1	1	0	0	0	3	0	1
United States	157	160	192	193	173	169	225	221	250	233	313	340	493
Central and South America	0	0	0	2	3	0	0	0	0	1	0	2	6
Argentina	0	0	0	1	0	0	0	0	0	0	0	1	0
Brazil	0	0	0	1	1	0	0	0	0	0	0	1	3
All others	0	0	0	0	1	0	0	0	0	1	0	0	0
Europe	55	73	57	66	51	61	52	51	54	67	91	86	145
EU	47	68	48	55	42	49	42	45	47	60	86	70	131
Austria	0	0	0	0	1	1	0	0	1	2	0	2	2
Belgium	0	1	0	0	0	0	0	0	0	0	1	0	3
Denmark	0	0	3	2	2	3	2	0	1	1	8	6	6
Finland	1	0	0	0	0	3	2	3	0	1	2	2	3
France	10	15	8	12	4	9	2	8	5	7	16	12	10
Germany	12	19	13	19	14	16	12	13	19	25	29	22	39
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	1	2	1	1	0	0	2	1	1	0	1
Italy	1	3	3	4	8	7	8	6	4	2	4	6	12
Netherlands	0	2	1	1	2	0	1	0	1	2	0	1	2
Spain	0	0	0	0	1	2	0	1	3	6	6	2	6
Sweden	16	21	10	10	3	6	6	5	4	2	12	9	29
United Kingdom	8	8	10	5	6	1	10	7	6	10	7	9	14
All others	0	0	0	1	1	1	0	2	1	1	1	1	3
Other Europe	8	5	9	11	9	12	10	6	7	7	5	16	14
Norway	1	1	0	0	2	3	0	1	1	0	0	1	0
Russia	0	0	0	0	0	0	0	0	1	1	0	1	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	7	2	8	10	7	9	10	5	5	6	5	14	14
All others	0	2	1	1	0	0	0	0	0	0	0	0	0
Asia	67	57	64	64	51	42	75	62	57	61	96	74	121
China	1	0	2	1	0	1	1	1	4	6	5	7	13
India	0	0	0	1	2	1	2	3	2	1	4	5	7
Japan	63	52	54	49	41	30	53	41	38	34	67	38	62
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	1
Singapore	0	1	0	1	0	0	0	1	0	0	1	0	3
South Korea	1	3	6	5	5	3	14	10	6	15	9	19	24
Taiwan	2	1	2	7	3	7	5	6	7	4	10	5	10
All others	0	0	0	0	0	0	0	0	0	1	0	0	1
Middle East	1	0	0	2	2	5	6	4	4	5	8	16	12

Appendix table 6-60

USPTO patents granted in smart grid technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	1	0	0	2	2	4	6	4	4	5	6	15	12
All others	0	0	0	0	0	1	0	0	0	0	2	1	1
Africa	0	1	0	0	0	0	0	1	0	1	1	0	0
South Africa	0	1	0	0	0	0	0	1	0	1	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	1	0	0
Australia/Oceania	3	2	0	3	7	4	4	3	0	2	4	2	3
Australia	1	1	0	3	5	4	4	3	0	2	3	2	1
New Zealand	2	1	0	0	2	0	0	0	0	0	1	0	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-61

USPTO patents granted in pollution mitigation technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	1,719	1,955	2,021	1,858	1,725	1,497	1,549	1,382	1,347	1,448	1,916	1,812	2,064
North America	1,017	1,138	1,141	1,005	913	814	851	741	739	813	1,025	996	1,132
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	54	77	68	51	51	48	54	42	48	34	58	49	69
Mexico	2	0	3	2	2	1	1	1	3	1	2	3	6
United States	961	1,061	1,070	952	860	765	796	697	687	778	964	945	1,058
Central and South America	5	7	2	4	6	2	1	2	6	4	6	15	10
Argentina	2	1	0	3	0	0	0	0	0	0	0	1	0
Brazil	2	1	1	1	2	1	1	1	2	2	6	8	2
All others	1	5	1	0	4	1	0	1	4	2	0	6	7
Europe	357	407	434	379	311	283	279	284	245	256	395	320	347
EU	328	374	395	362	294	260	258	271	230	233	375	305	333
Austria	7	9	10	6	5	12	9	13	5	5	9	6	7
Belgium	7	5	8	4	7	4	8	4	2	7	10	8	4
Denmark	8	11	12	11	2	5	5	4	9	12	6	11	8
Finland	15	11	13	19	13	5	8	11	7	8	13	4	5
France	42	48	58	42	34	44	28	50	42	46	60	40	46
Germany	166	169	191	176	146	123	122	105	89	99	164	147	152
Hungary	0	0	0	3	0	1	0	0	1	0	3	0	0
Ireland	0	0	0	0	2	0	0	1	1	1	2	1	0
Italy	16	16	13	16	14	10	9	13	12	13	17	12	15
Netherlands	12	30	20	14	13	9	7	9	9	2	20	19	11
Spain	2	1	2	1	3	3	0	2	3	3	4	0	4
Sweden	16	26	29	15	20	16	17	18	18	11	18	14	19
United Kingdom	37	46	35	48	32	24	42	37	30	24	44	36	55
All others	0	3	5	8	5	4	2	4	4	3	8	7	8
Other Europe	29	33	39	17	17	23	21	13	15	23	20	15	14
Norway	4	5	8	5	3	8	6	5	4	5	8	6	4
Russia	0	0	9	6	4	4	4	2	6	4	4	3	2
Former Soviet Union	7	9	0	0	0	0	0	0	0	0	0	0	0
Switzerland	18	17	21	6	8	10	8	4	5	13	7	6	7
All others	0	2	1	0	2	1	3	2	0	1	1	0	1
Asia	317	386	420	446	472	377	400	340	334	355	458	450	535
China	3	2	4	8	7	5	9	11	9	10	13	22	27
India	1	1	2	4	4	5	3	4	4	8	7	8	10
Japan	281	332	351	377	404	317	347	277	271	288	378	354	415
Malaysia	0	0	0	0	2	1	0	1	0	0	0	0	1
Singapore	1	0	1	2	3	3	1	4	2	2	3	2	3
South Korea	17	26	36	28	34	19	23	24	25	30	40	43	55
Taiwan	12	24	25	26	17	25	17	19	23	16	15	18	24
All others	2	1	1	1	1	2	0	0	0	1	2	3	0
Middle East	3	3	8	15	10	5	4	2	7	8	17	11	24

Appendix table 6-61

USPTO patents granted in pollution mitigation technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	3	2	7	14	8	4	4	2	7	6	14	7	12
All others	0	1	2	1	2	1	0	0	0	2	3	5	12
Africa	3	3	8	2	3	2	6	4	5	1	2	2	2
South Africa	3	3	8	2	2	2	5	3	5	0	2	2	2
All others	0	0	0	0	1	0	1	1	0	1	0	0	0
Australia/Oceania	18	12	9	9	13	16	9	9	13	12	14	15	15
Australia	18	11	8	8	13	16	7	9	12	10	10	15	14
New Zealand	0	1	1	1	0	0	2	0	1	2	4	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Pollution mitigation technologies include recycling; control of air, solid waste, and water pollution; environmental remediation; cleaner coal; and capture and storage of carbon and other greenhouse gases. Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-62

USPTO patents granted in fuel cell technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	95	174	281	482	572	521	616	549	551	700	1,093	1,043	1,143
North America	50	109	178	292	332	297	330	276	247	284	421	399	375
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	3	7	12	35	44	45	35	25	23	27	20	23	32
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	47	102	166	257	288	252	295	251	223	256	401	376	342
Central and South America	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Europe	19	30	44	72	76	68	65	76	90	80	135	111	121
EU	17	27	38	69	73	64	61	76	86	77	129	108	116
Austria	0	0	0	0	1	2	2	0	0	2	1	1	1
Belgium	0	0	0	0	0	0	0	1	0	1	2	1	0
Denmark	2	0	0	1	4	3	0	2	2	4	5	3	7
Finland	0	0	0	0	0	1	0	0	1	0	0	1	1
France	0	0	2	1	4	2	7	10	4	8	12	19	20
Germany	6	20	33	56	51	44	38	51	56	46	80	57	54
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	1	0	0	0	0
Italy	2	3	1	2	4	3	3	2	4	3	8	10	10
Netherlands	1	1	2	2	2	2	2	4	4	1	3	1	2
Spain	0	0	0	1	1	0	0	0	0	1	0	1	0
Sweden	1	0	0	0	0	0	2	0	1	0	1	1	1
United Kingdom	5	3	0	5	7	7	7	6	13	10	13	13	19
All others	0	0	0	1	0	0	0	0	0	0	5	1	1
Other Europe	2	3	6	3	3	4	4	0	4	3	6	3	5
Norway	0	0	0	0	0	0	0	0	1	0	0	0	0
Russia	0	0	0	2	0	2	0	0	1	0	1	0	1
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	2	3	6	1	2	2	4	0	2	3	5	3	4
All others	0	0	0	0	1	0	0	0	0	0	0	0	0
Asia	24	34	57	116	158	153	214	196	210	333	530	525	643
China	0	0	0	1	1	0	2	2	3	5	5	8	2
India	0	0	0	0	1	0	0	1	0	0	2	0	3
Japan	23	31	55	111	149	143	193	173	178	257	377	355	489
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	0	2	0	2
South Korea	1	2	2	4	6	7	13	15	23	54	124	134	122
Taiwan	0	1	0	0	1	3	6	5	6	17	19	28	25
All others	0	0	0	0	0	0	0	0	0	0	1	0	0
Middle East	2	0	0	2	4	2	3	0	3	2	4	3	4

Appendix table 6-62

USPTO patents granted in fuel cell technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	2	0	0	2	4	1	3	0	3	2	2	3	2
All others	0	0	0	0	0	1	0	0	0	0	2	0	1
Africa	0	0	0	0	0	0	0	0	0	0	0	0	1
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	1	2	0	2	1	3	2	2	2	3	5	0
Australia	0	1	2	0	2	1	3	2	2	2	3	5	0
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-63

USPTO patents granted in bioenergy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	52	66	70	77	61	59	73	101	103	170	226	367	564
North America	33	44	45	44	36	37	51	69	67	121	164	281	413
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	4	4	3	2	3	3	7	5	7	9	11	27	16
Mexico	0	0	0	0	0	0	0	0	1	0	0	0	0
United States	29	40	42	42	33	34	44	64	60	112	154	254	397
Central and South America	0	0	0	1	0	2	1	1	0	1	0	4	7
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	1
Brazil	0	0	0	0	0	2	1	1	0	1	0	4	5
All others	0	0	0	1	0	0	0	0	0	0	0	0	2
Europe	17	15	12	20	15	12	14	18	19	28	36	53	86
EU	15	15	11	19	13	11	14	17	18	28	34	50	84
Austria	0	2	1	0	0	0	2	1	0	1	0	0	1
Belgium	0	0	0	0	0	1	0	0	0	0	0	4	4
Denmark	0	2	1	2	0	0	0	1	2	3	2	10	9
Finland	1	3	0	2	2	3	2	3	1	3	5	1	5
France	5	1	2	2	0	1	2	2	1	3	6	6	6
Germany	4	1	2	7	5	3	3	2	5	10	8	11	25
Hungary	0	0	0	0	0	0	0	0	0	0	1	1	2
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	1
Italy	1	1	1	1	0	1	2	1	2	1	4	1	4
Netherlands	0	2	2	1	2	0	0	2	2	1	2	8	6
Spain	0	0	1	1	0	0	0	0	0	1	1	1	1
Sweden	3	1	0	0	2	1	1	1	1	3	0	2	7
United Kingdom	1	2	0	1	2	1	2	4	4	1	4	5	10
All others	0	0	1	2	0	0	0	1	1	1	1	1	4
Other Europe	2	0	1	1	2	1	0	1	1	0	2	3	2
Norway	0	0	0	0	0	0	0	0	0	0	0	0	1
Russia	0	0	0	0	0	0	0	0	0	0	1	2	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	2	0	1	1	2	0	0	1	1	0	0	0	1
All others	0	0	0	0	0	1	0	0	0	0	1	1	1
Asia	3	5	13	7	7	6	7	7	12	15	22	24	49
China	0	0	0	0	0	0	0	2	0	2	1	3	8
India	0	0	0	0	0	0	0	0	0	2	1	2	4
Japan	2	4	11	6	5	6	6	4	9	10	12	13	26
Malaysia	0	0	0	0	0	0	0	0	0	0	0	1	2
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	1	1	1	1	1	0	0	1	0	0	4	2	7
Taiwan	0	0	1	0	1	0	1	1	3	1	4	2	1
All others	0	0	0	0	0	0	0	0	0	1	0	1	1
Middle East	0	1	0	4	2	2	0	4	3	1	2	2	5

Appendix table 6-63

USPTO patents granted in bioenergy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	1	0	4	2	2	0	2	3	1	2	1	3
All others	0	0	0	0	0	0	0	2	0	0	0	1	2
Africa	0	0	0	0	0	0	0	0	0	1	0	0	0
South Africa	0	0	0	0	0	0	0	0	0	1	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	0	0	1	1	0	0	2	2	3	2	4	5
Australia	0	0	0	1	1	0	0	2	1	3	1	2	2
New Zealand	0	0	0	0	0	0	0	0	1	0	1	2	3
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-64

USPTO patents granted in solar energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	212	277	392	380	314	255	262	261	253	371	671	1,044	1,472
North America	107	124	153	145	144	122	133	146	137	222	376	595	818
Bermuda	1	1	0	0	0	0	0	0	0	0	0	0	0
Canada	5	3	2	7	3	4	6	3	3	6	6	21	19
Mexico	1	0	0	0	1	1	0	0	0	0	0	1	1
United States	100	120	152	139	140	117	127	143	134	216	370	573	798
Central and South America	0	2	1	2	0	1	0	0	0	0	0	0	0
Argentina	0	0	1	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	2	0	2	0	1	0	0	0	0	0	0	0
Europe	25	46	56	62	34	45	44	39	48	47	106	136	226
EU	24	40	47	57	33	39	42	37	42	43	102	121	209
Austria	1	2	2	0	1	1	1	2	1	4	2	3	4
Belgium	0	0	2	4	3	3	3	3	3	1	6	5	3
Denmark	1	0	0	0	0	0	0	0	0	0	2	2	2
Finland	1	1	0	0	0	0	1	0	0	1	0	0	1
France	1	6	1	5	3	3	5	3	8	7	14	17	22
Germany	14	24	29	28	21	21	22	16	18	26	51	65	106
Hungary	1	1	0	0	0	0	0	0	0	0	0	0	1
Ireland	0	0	1	0	0	0	0	0	0	0	1	0	0
Italy	1	1	2	2	0	1	2	1	2	0	4	8	11
Netherlands	0	0	5	5	3	3	1	5	3	1	7	4	13
Spain	1	0	0	4	0	1	1	2	1	1	2	2	14
Sweden	0	1	2	2	0	1	0	1	2	0	3	4	3
United Kingdom	3	4	2	7	2	4	6	4	4	2	9	8	21
All others	0	0	2	0	0	1	1	0	1	0	3	3	7
Other Europe	1	6	9	5	1	6	2	2	6	4	4	15	17
Norway	0	0	0	0	0	0	0	0	2	0	0	4	1
Russia	0	0	1	0	0	0	0	0	0	1	0	0	1
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	1	6	8	4	1	5	2	2	4	2	4	9	14
All others	0	0	0	1	0	1	0	0	0	1	0	2	1
Asia	71	90	174	160	128	83	75	69	64	89	171	289	402
China	1	0	1	1	0	1	3	3	3	4	9	10	32
India	0	0	0	0	0	1	0	1	1	1	0	1	5
Japan	67	77	169	152	116	74	64	55	50	56	98	164	186
Malaysia	0	0	0	0	1	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	3	2	3	1
South Korea	0	5	0	5	4	1	1	4	2	10	23	50	73
Taiwan	2	7	4	1	7	6	7	6	8	14	31	60	103
All others	1	1	0	1	0	0	1	0	0	1	7	1	2
Middle East	4	5	6	2	6	2	2	4	2	3	9	9	18

Appendix table 6-64

USPTO patents granted in solar energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	4	5	6	2	6	2	2	4	2	3	7	8	12
All others	0	0	0	0	0	0	0	0	0	0	2	1	5
Africa	2	0	0	0	0	1	0	0	0	1	2	1	0
South Africa	2	0	0	0	0	0	0	0	0	0	2	1	0
All others	0	0	0	0	0	1	0	0	0	1	0	0	0
Australia/Oceania	4	10	3	10	2	2	8	3	2	10	7	14	9
Australia	4	9	3	10	2	2	8	3	2	10	7	14	8
New Zealand	0	1	0	0	0	0	0	0	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-65

USPTO patents granted in hybrid and electric vehicle technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	189	271	319	388	363	371	433	396	384	410	543	605	896
North America	73	81	107	137	114	127	160	154	138	147	225	223	355
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	3	4	6	12	4	7	6	7	3	3	8	6	8
Mexico	0	0	1	0	0	0	0	0	0	0	0	0	0
United States	70	77	100	125	109	120	153	146	135	144	216	216	348
Central and South America	0	1	0	0	1	0	0	0	0	0	0	0	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	1	0	0	1	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Europe	29	32	51	50	55	49	43	47	55	46	68	59	117
EU	26	26	45	50	51	48	40	45	52	45	67	56	114
Austria	0	1	0	0	1	1	0	0	1	1	3	1	6
Belgium	0	0	0	0	0	1	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0	1	0	0	0	0	0
France	1	2	6	3	6	6	3	7	6	5	12	10	18
Germany	18	19	31	36	32	28	28	29	40	31	43	38	75
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	1	0	0	0	0	0	0	0
Italy	1	3	5	1	1	1	3	1	0	1	3	1	6
Netherlands	0	0	0	2	0	0	1	1	2	2	1	1	0
Spain	0	0	0	3	0	1	1	2	0	2	0	2	0
Sweden	2	0	1	4	7	7	1	2	2	1	5	1	4
United Kingdom	4	1	2	2	4	2	3	2	2	2	1	1	5
All others	0	0	0	0	0	0	0	0	0	0	1	1	1
Other Europe	3	6	6	0	4	1	3	2	3	1	1	3	3
Norway	0	0	0	0	0	0	0	0	0	0	0	0	1
Russia	0	0	1	0	0	0	0	0	1	0	0	0	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	3	6	5	0	4	1	3	2	2	1	1	3	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia	87	157	159	198	192	194	229	194	189	217	249	316	423
China	0	0	0	0	0	0	2	1	2	2	4	4	16
India	0	0	0	0	0	0	0	1	0	0	1	0	4
Japan	82	154	153	190	179	183	217	181	172	186	209	281	342
Malaysia	0	0	1	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	1	0	0	0	0	0	0	0
South Korea	4	2	3	1	6	8	5	8	11	19	26	28	51
Taiwan	1	1	2	7	7	2	6	3	4	10	9	3	10
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Middle East	0	1	0	0	1	1	0	0	1	0	1	4	1

Appendix table 6-65

USPTO patents granted in hybrid and electric vehicle technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	0	0	0	1	0	0	0	1	0	1	4	1
All others	0	1	0	0	0	1	0	0	0	0	0	0	0
Africa	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	0	2	3	1	0	1	1	1	0	1	3	0
Australia	0	0	2	2	1	0	1	1	0	0	1	3	0
New Zealand	0	0	0	1	1	0	0	0	1	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-66

USPTO patents granted in wind energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	29	29	59	69	97	137	152	173	197	221	362	614	856
North America	18	20	33	31	47	64	82	82	99	89	170	276	352
Bermuda	0	0	0	0	0	0	0	0	1	0	0	0	0
Canada	2	3	0	1	7	6	7	2	8	7	11	11	14
Mexico	0	0	0	0	0	0	0	0	0	0	1	0	0
United States	16	17	33	30	40	58	75	80	91	82	158	265	338
Central and South America	0	1	0	0	1	0	2	0	0	0	0	2	2
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	1
Brazil	0	0	0	0	0	0	0	0	0	0	0	1	1
All others	0	1	0	0	1	0	2	0	0	0	0	1	0
Europe	4	4	18	29	37	58	43	70	66	103	143	244	349
EU	4	4	17	29	36	57	42	67	63	102	141	239	341
Austria	1	0	0	0	0	0	1	0	0	1	2	2	5
Belgium	0	0	1	1	0	1	2	2	1	2	2	1	3
Denmark	0	0	2	8	8	10	4	10	8	12	36	81	117
Finland	0	1	2	0	0	0	0	1	0	0	1	0	4
France	0	0	3	1	1	6	2	2	0	0	1	2	7
Germany	1	1	4	10	20	30	29	39	42	66	72	93	123
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	1	0	0	0	0
Italy	0	0	0	0	0	1	0	1	3	3	2	4	9
Netherlands	1	0	1	2	2	1	0	3	3	3	6	15	26
Spain	0	0	0	2	3	2	0	2	2	8	13	19	23
Sweden	1	1	2	4	0	2	2	1	1	1	0	2	5
United Kingdom	0	1	2	1	2	4	2	6	4	6	4	19	18
All others	0	0	0	0	0	0	0	0	0	0	4	1	3
Other Europe	0	0	1	0	1	1	1	3	3	1	2	5	8
Norway	0	0	0	0	0	1	1	2	1	0	1	1	4
Russia	0	0	0	0	0	0	0	1	1	1	0	1	2
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	0	1	0	0	0	1	0	1	3	2
All others	0	0	1	0	0	0	0	0	0	0	0	0	0
Asia	5	4	7	6	9	14	23	20	30	28	41	90	145
China	0	0	0	1	0	1	1	1	2	3	14	9	18
India	0	0	0	0	0	0	0	0	2	1	2	23	13
Japan	3	1	6	3	5	8	16	14	18	12	19	40	81
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	1	0	4	11
South Korea	1	1	1	1	1	3	4	0	2	4	3	1	4
Taiwan	0	1	0	1	3	2	1	5	6	7	3	12	18
All others	1	1	0	0	0	0	1	0	0	0	0	1	0
Middle East	2	0	0	2	0	1	2	0	1	1	5	3	5

Appendix table 6-66

USPTO patents granted in wind energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	0	0	1	0	1	2	0	0	1	4	2	4
All others	2	0	0	1	0	0	0	0	1	0	1	1	1
Africa	0	0	0	0	0	0	0	1	0	1	2	0	0
South Africa	0	0	0	0	0	0	0	1	0	1	2	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	0	1	1	3	0	1	1	1	1	3	1	4
Australia	0	0	1	1	3	0	1	1	1	1	3	1	4
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-67

USPTO patents granted in nuclear energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	230	222	175	176	146	129	95	83	86	106	121	130	149
North America	144	120	94	74	69	50	50	39	45	66	50	61	70
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	4	3	1	2	1	3	2	0	1	1	3	0	1
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	1
United States	140	116	93	72	68	47	48	39	44	65	48	61	69
Central and South America	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Europe	54	68	46	47	35	36	21	26	24	22	35	30	34
EU	53	68	44	47	32	35	20	24	24	21	32	29	31
Austria	0	0	0	1	0	0	1	0	0	0	1	2	1
Belgium	0	0	0	1	3	0	0	0	0	1	0	0	0
Denmark	0	0	0	0	0	0	0	0	0	0	0	0	1
Finland	0	0	1	0	0	0	0	0	0	0	0	0	0
France	25	16	14	21	10	15	11	15	10	11	17	17	13
Germany	13	29	13	13	7	14	6	3	10	5	10	4	9
Hungary	0	0	0	0	0	0	0	0	0	0	1	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	2	1	0	1	1	0	0	0	0	0	0	0	0
Netherlands	0	1	0	0	0	0	0	1	0	0	0	1	0
Spain	0	0	0	1	1	1	0	0	0	0	0	0	0
Sweden	7	14	8	6	4	1	2	2	1	3	4	5	3
United Kingdom	6	8	8	3	6	5	1	3	2	1	0	0	4
All others	0	0	0	0	0	0	0	0	1	0	0	0	0
Other Europe	1	0	2	0	3	1	1	2	0	1	3	1	3
Norway	0	0	0	0	0	0	0	0	0	0	0	0	1
Russia	0	0	1	0	2	0	1	1	0	1	2	1	1
Former Soviet Union	1	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	1	0	0	1	0	1	0	0	1	0	1
All others	0	0	0	0	1	0	0	0	0	0	0	0	0
Asia	31	30	35	56	42	41	23	17	17	17	34	38	44
China	0	0	0	0	0	0	0	0	0	0	0	0	1
India	0	0	0	1	0	0	0	1	0	0	0	0	0
Japan	29	26	26	49	33	32	18	14	14	9	24	24	26
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	2	3	7	6	9	9	4	2	3	8	10	11	14
Taiwan	0	1	1	0	0	0	1	0	0	0	0	3	3
All others	0	0	1	0	0	0	0	0	0	0	0	0	0
Middle East	0	2	0	0	0	0	0	0	0	1	0	0	0

Appendix table 6-67

USPTO patents granted in nuclear energy technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	2	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	1	0	0	0
Africa	0	1	0	0	0	1	2	1	0	0	1	1	0
South Africa	0	1	0	0	0	1	2	1	0	0	1	1	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	1	0	0	0	0	1	0	0	0	0	0	1
Australia	0	1	0	0	0	0	1	0	0	0	0	0	1
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-68

USPTO patents granted in battery technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	220	208	288	324	303	216	238	227	228	309	523	482	632
North America	96	90	108	90	87	67	65	57	62	74	104	96	141
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	12	8	8	5	4	7	3	3	5	10	6	10	13
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	85	82	99	86	82	60	62	54	57	64	98	86	128
Central and South America	0	0	2	0	0	0	0	0	1	0	0	0	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	2	0	0	0	0	0	1	0	0	0	0
Europe	20	15	19	28	22	16	11	10	10	9	37	29	35
EU	18	15	18	27	21	14	9	9	10	8	34	27	30
Austria	2	1	0	0	0	2	0	0	1	1	1	0	0
Belgium	0	0	0	0	0	0	0	0	0	0	0	1	0
Denmark	0	0	2	1	0	1	0	0	0	0	0	0	1
Finland	1	0	0	0	0	0	1	0	0	0	1	0	0
France	6	4	6	6	5	3	1	2	3	3	16	13	10
Germany	5	6	4	9	11	5	2	4	2	2	9	10	13
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	2	0	2	1	1	1	0	1	0	0	3	0	0
Netherlands	0	1	1	3	0	0	0	0	0	0	0	0	1
Spain	0	0	1	1	1	0	1	0	0	0	0	0	0
Sweden	0	0	1	1	0	0	2	1	1	0	1	2	1
United Kingdom	2	2	2	4	3	3	3	2	2	2	3	1	2
All others	0	0	0	2	0	0	0	0	1	0	0	0	0
Other Europe	2	0	1	1	1	2	2	1	0	1	3	2	5
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia	0	0	1	0	0	1	0	0	0	1	2	1	1
Former Soviet Union	1	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	1	0	0	1	0	0	2	1	0	0	1	1	3
All others	0	0	0	0	1	1	0	0	0	0	0	0	1
Asia	102	100	156	201	192	132	161	157	154	221	378	354	454
China	0	1	1	0	2	0	1	0	2	2	13	13	25
India	0	0	0	0	0	1	0	0	0	0	0	0	0
Japan	92	88	132	172	155	101	119	118	117	142	203	204	296
Malaysia	0	0	0	0	1	0	0	0	0	0	0	0	0
Singapore	1	0	0	0	0	0	0	0	0	0	0	2	0
South Korea	8	9	20	29	32	28	37	38	34	70	151	130	126
Taiwan	1	2	3	0	2	2	4	1	1	7	11	5	7
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Middle East	1	2	3	0	0	0	0	0	0	1	0	1	2

Appendix table 6-68

USPTO patents granted in battery technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	1	2	3	0	0	0	0	0	0	1	0	1	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Africa	1	2	0	0	1	0	0	0	1	1	4	1	0
South Africa	1	2	0	0	1	0	0	0	1	1	4	1	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	0	1	4	1	1	1	2	1	3	2	2	2
Australia	0	0	0	4	1	0	1	1	1	2	0	2	2
New Zealand	0	0	1	0	0	1	0	1	0	1	2	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-69

USPTO patents granted in hydrogen production and storage technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	77	115	161	174	194	167	202	186	202	208	307	303	284
North America	34	53	79	98	120	90	124	105	127	123	198	174	153
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	2	7	5	11	11	9	12	6	3	7	10	6	12
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	32	46	74	87	109	81	112	99	124	116	188	167	141
Central and South America	0	0	0	0	0	0	1	0	0	0	0	0	1
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	1	0	0	0	0	0	1
Europe	9	13	33	21	28	28	20	22	29	31	37	37	31
EU	9	12	31	20	26	23	19	19	27	30	32	34	28
Austria	0	0	0	0	0	1	0	0	0	0	0	1	0
Belgium	0	0	1	0	0	0	0	0	0	0	0	0	0
Denmark	0	2	2	0	2	1	0	0	1	4	0	2	0
Finland	1	1	0	0	0	0	0	0	0	0	1	0	0
France	3	4	8	2	2	1	2	4	4	7	5	13	8
Germany	3	4	14	13	17	13	8	10	6	14	18	9	10
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	1
Ireland	0	0	0	0	0	0	0	0	1	0	0	0	0
Italy	1	1	0	0	0	1	2	0	1	1	4	0	3
Netherlands	1	0	0	1	2	5	0	0	8	1	0	0	1
Spain	0	0	0	0	0	0	0	0	0	0	0	2	0
Sweden	0	0	1	0	1	0	1	0	0	0	1	0	0
United Kingdom	0	1	5	2	1	1	6	5	4	3	3	7	4
All others	0	0	0	1	0	0	0	0	1	1	0	0	0
Other Europe	0	1	2	1	2	5	1	3	2	1	5	3	3
Norway	0	1	1	1	2	2	0	2	1	0	2	1	0
Russia	0	0	0	0	0	2	0	0	0	1	1	1	1
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	1	0	0	1	1	1	1	0	2	1	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia	30	46	50	56	45	46	56	58	45	48	68	84	97
China	0	0	1	1	0	0	0	1	1	0	1	0	1
India	0	0	0	1	0	0	0	1	0	0	2	0	0
Japan	24	40	45	52	44	43	55	45	40	41	46	56	71
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	1	0	1	0	0	0	0	0
South Korea	5	6	3	1	0	1	0	5	2	5	13	22	23
Taiwan	1	0	1	1	1	1	1	4	2	2	6	5	2
All others	0	0	0	0	0	0	0	1	0	0	0	1	0
Middle East	1	0	0	0	2	0	1	1	0	3	2	3	2

Appendix table 6-69

USPTO patents granted in hydrogen production and storage technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	0	0	0	1	0	1	0	0	3	0	3	1
All others	1	0	0	0	1	0	0	1	0	0	2	0	1
Africa	0	0	0	0	0	0	0	0	0	0	0	1	0
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	1	0
Australia/Oceania	3	3	0	0	0	2	0	2	2	2	1	3	1
Australia	3	2	0	0	0	2	0	2	2	2	1	3	1
New Zealand	0	1	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

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Appendix table 6-70

USPTO patents granted in cleaner coal technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	96	80	71	71	64	70	57	41	57	88	171	204	240
North America	53	47	38	51	41	46	40	32	42	59	124	151	187
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	2	0	1	0	1	2	4	1	3	2	4	4	8
Mexico	1	0	0	0	0	0	1	0	0	0	0	1	1
United States	50	47	37	51	40	44	35	31	39	57	119	146	179
Central and South America	0	0	0	1	1	0	0	0	1	0	0	1	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	1	0	0	0	0	0	0	0	1	0
All others	0	0	0	0	1	0	0	0	1	0	0	0	0
Europe	24	18	14	11	6	12	7	7	8	18	20	24	25
EU	20	15	11	8	6	9	7	7	8	12	20	18	23
Austria	1	0	1	0	0	0	0	0	1	0	0	0	0
Belgium	1	0	0	1	1	0	0	0	0	0	0	1	0
Denmark	0	0	0	0	0	0	0	0	1	2	0	0	0
Finland	4	1	1	0	0	0	1	0	1	0	0	0	1
France	2	2	0	1	2	2	0	3	1	2	3	2	4
Germany	7	9	6	6	3	6	4	3	2	6	6	9	8
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	1	1	1	0	0	1	0	0	1	0	0	0	2
Netherlands	1	0	1	0	1	0	2	0	0	0	5	1	1
Spain	0	0	0	0	0	0	0	0	0	1	0	0	0
Sweden	1	2	1	0	0	0	0	0	0	2	1	1	0
United Kingdom	3	0	0	0	0	0	0	1	1	0	5	4	6
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Europe	4	3	3	3	0	3	0	0	0	6	0	6	2
Norway	0	0	0	2	0	2	0	0	0	1	0	3	0
Russia	0	0	0	1	0	0	0	0	0	0	0	0	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	4	3	3	0	0	1	0	0	0	5	0	3	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia	17	12	19	7	15	10	10	1	5	9	26	22	25
China	1	0	0	0	0	0	0	0	0	0	2	8	5
India	0	0	0	0	0	0	0	0	0	0	4	2	6
Japan	15	10	19	6	15	8	9	1	5	7	15	12	12
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	1	1	0	1	0	0	1	0	0	1	4	0	2
Taiwan	0	1	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	2	0	0	0	1	1	0	0
Middle East	0	1	1	2	1	0	0	0	0	0	1	2	0

Appendix table 6-70

USPTO patents granted in cleaner coal technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	1	1	2	1	0	0	0	0	0	1	2	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Africa	0	1	0	0	0	1	0	0	0	0	0	0	2
South Africa	0	1	0	0	0	1	0	0	0	0	0	0	2
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	2	1	0	0	0	1	1	1	1	2	2	4	1
Australia	2	1	0	0	0	1	1	1	1	2	2	4	0
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-71

USPTO patents granted in capture and storage of carbon and other greenhouse gases technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	57	73	84	98	70	73	65	64	73	96	157	187	215
North America	33	47	56	61	41	44	42	36	47	58	105	135	147
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	2	3	2	3	0	4	5	3	2	2	11	4	13
Mexico	0	0	0	0	0	0	0	0	0	0	0	1	1
United States	31	44	54	57	41	40	37	33	45	56	94	130	133
Central and South America	0	0	0	0	1	0	0	0	0	0	0	1	1
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	1	0
All others	0	0	0	0	1	0	0	0	0	0	0	0	1
Europe	6	13	15	23	10	15	15	19	22	19	35	30	34
EU	6	13	13	20	9	11	12	16	20	15	32	24	32
Austria	0	0	0	0	0	0	0	0	0	0	0	0	0
Belgium	0	0	1	1	0	0	0	0	0	1	0	0	0
Denmark	0	0	0	0	0	0	0	0	1	0	2	0	1
Finland	0	0	0	0	0	0	0	0	0	1	0	1	0
France	0	5	7	8	3	7	4	7	4	4	10	4	10
Germany	1	1	1	3	2	1	3	5	7	8	7	11	8
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0	1	1	0	1	0	0	0	1	0	0	0	0
Netherlands	0	1	0	0	2	2	0	2	3	1	6	4	3
Spain	0	0	0	0	0	0	0	0	0	1	0	0	1
Sweden	0	1	0	0	0	0	0	0	0	0	0	0	1
United Kingdom	5	5	3	7	1	1	5	2	5	1	7	4	8
All others	0	0	0	1	0	0	0	0	0	0	0	0	0
Other Europe	0	0	2	3	1	4	3	3	2	4	3	6	2
Norway	0	0	2	2	1	2	0	3	1	3	3	4	1
Russia	0	0	0	0	0	0	1	0	0	1	0	0	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	1	0	1	2	0	1	0	0	2	1
All others	0	0	0	0	0	1	0	0	0	0	0	0	0
Asia	15	10	11	15	18	13	8	9	4	17	17	20	29
China	0	0	0	0	0	0	0	0	0	0	1	1	2
India	0	0	0	0	0	0	0	0	0	0	1	0	1
Japan	14	10	11	13	16	12	8	7	4	16	10	16	16
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	1	0	0	2	0	0	0	2	0	1	4	3	7
Taiwan	0	0	0	0	1	1	0	0	0	0	1	0	3
Middle East	2	1	1	0	1	0	0	0	0	0	0	1	0
Israel	2	1	0	0	1	0	0	0	0	0	0	0	0

Appendix table 6-71

USPTO patents granted in capture and storage of carbon and other greenhouse gases technologies, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All others	0	0	1	0	0	0	0	0	0	0	0	1	0
Africa	0	1	1	0	0	1	0	0	0	0	0	0	1
South Africa	0	1	1	0	0	1	0	0	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	0	1	0	0	0	0	1	0	0	2	0	1	2
Australia	0	1	0	0	0	0	1	0	0	2	0	1	1
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-72

USPTO patents granted in air pollution control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	696	834	921	947	916	838	846	731	739	838	1,084	1,009	1,183
North America	344	392	441	424	420	399	406	329	362	411	522	468	554
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	11	14	17	15	16	17	18	13	18	12	20	19	22
Mexico	0	0	0	0	2	0	0	0	1	0	0	1	1
United States	333	378	424	409	402	382	388	316	343	400	502	448	531
Central and South America	0	3	0	1	0	1	1	0	1	1	2	1	3
Argentina	0	0	0	1	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	1	1	0	0	1	2	1	1
All others	0	3	0	0	0	0	0	0	1	0	0	0	2
Europe	148	199	228	223	182	176	175	168	150	168	236	208	228
EU	136	185	214	216	177	167	168	161	147	157	230	204	224
Austria	2	3	4	1	3	5	5	4	2	0	5	3	4
Belgium	3	3	3	2	2	2	3	1	0	3	5	2	2
Denmark	1	4	5	7	2	4	3	4	4	6	3	6	6
Finland	7	2	7	8	5	2	2	5	4	5	6	4	2
France	18	28	37	25	20	19	14	29	30	34	31	23	27
Germany	75	94	121	119	103	94	101	79	72	74	125	113	114
Hungary	0	0	0	1	0	0	0	0	0	0	1	0	0
Ireland	0	0	0	0	1	0	0	1	0	1	1	1	0
Italy	7	6	6	8	6	7	5	6	5	9	3	5	8
Netherlands	4	11	9	6	4	5	2	2	3	1	11	8	5
Spain	1	1	0	0	1	1	0	0	0	1	0	0	2
Sweden	6	11	12	10	12	11	10	10	12	10	9	11	13
United Kingdom	12	21	10	28	18	18	22	20	15	14	27	24	37
All others	0	2	0	3	1	0	1	1	0	0	2	4	5
Other Europe	12	14	14	7	5	9	7	7	3	11	6	4	4
Norway	2	2	7	3	2	3	2	3	2	3	2	3	0
Russia	0	0	2	0	1	1	3	0	0	2	2	1	1
Former Soviet Union	5	4	0	0	0	0	0	0	0	0	0	0	0
Switzerland	5	7	5	4	2	5	1	4	1	5	2	0	3
All others	0	1	0	0	0	0	1	0	0	1	0	0	0
Asia	197	234	248	295	312	257	264	232	225	254	319	326	388
China	0	0	2	6	3	1	2	7	4	4	6	11	10
India	1	0	1	0	1	0	0	1	1	0	1	1	3
Japan	185	218	221	258	285	233	244	202	200	228	284	282	338
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	1	0	0	1	1	1	0	0	0	1	1	0	0
South Korea	3	7	12	19	15	10	12	16	15	14	18	24	30
Taiwan	7	8	11	11	7	12	6	6	5	6	8	7	7
All others	0	1	1	0	0	0	0	0	0	1	1	1	0
Middle East	1	1	2	3	2	2	0	0	1	3	2	1	5

Appendix table 6-72

USPTO patents granted in air pollution control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	1	1	1	3	1	2	0	0	1	2	2	0	2
All others	0	0	1	0	1	0	0	0	0	1	0	1	3
Africa	0	2	0	0	0	0	2	1	0	0	0	0	1
South Africa	0	2	0	0	0	0	2	1	0	0	0	0	1
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	7	4	2	0	1	3	0	1	0	1	2	4	3
Australia	7	4	1	0	1	3	0	1	0	0	1	4	3
New Zealand	0	0	1	0	0	0	0	0	0	1	1	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-73

USPTO patents granted in solid waste control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	284	263	222	179	164	146	141	103	118	106	131	94	121
North America	176	153	121	88	83	85	82	62	67	75	67	61	81
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	8	8	8	6	9	11	6	6	5	6	6	8	7
Mexico	0	0	0	1	0	0	0	0	0	0	0	0	2
United States	168	145	113	81	74	75	77	57	62	69	60	53	72
Central and South America	0	1	1	1	1	0	0	0	2	0	0	1	1
Argentina	0	0	0	1	0	0	0	0	0	0	0	0	0
Brazil	0	1	0	0	1	0	0	0	1	0	0	1	0
All others	0	0	1	0	0	0	0	0	1	0	0	0	1
Europe	61	66	49	42	38	33	26	23	24	17	33	15	13
EU	57	58	38	40	33	27	24	21	20	15	29	14	12
Austria	2	2	1	2	1	2	0	0	0	0	1	0	0
Belgium	1	0	1	0	1	2	1	0	1	0	0	0	2
Denmark	1	4	4	1	0	2	0	0	0	0	2	1	1
Finland	3	4	3	3	3	1	1	1	0	1	0	0	0
France	10	7	4	7	5	9	5	7	4	3	3	4	0
Germany	28	21	9	14	14	6	9	4	4	6	10	3	3
Hungary	0	0	0	1	0	0	0	0	1	0	1	0	0
Ireland	0	0	0	0	0	0	0	0	1	0	0	0	0
Italy	4	2	2	2	1	2	1	2	0	1	2	1	2
Netherlands	2	2	2	3	2	0	1	1	1	0	1	1	1
Spain	0	0	0	0	1	0	0	0	0	1	1	0	0
Sweden	4	7	5	1	2	2	1	1	2	0	1	0	0
United Kingdom	4	10	6	5	3	1	5	5	4	2	6	4	3
All others	0	1	2	3	1	0	0	0	2	0	1	0	1
Other Europe	4	8	11	2	5	6	2	2	4	2	4	1	1
Norway	1	0	0	0	0	3	0	0	0	0	2	0	0
Russia	0	0	3	2	2	1	1	2	1	1	0	1	1
Former Soviet Union	0	2	0	0	0	0	0	0	0	0	0	0	0
Switzerland	3	6	8	0	2	2	1	0	3	1	2	0	0
All others	0	0	0	0	1	0	0	0	0	0	0	0	0
Asia	40	41	49	43	37	24	28	16	21	11	23	11	19
China	0	0	1	1	1	2	3	1	1	2	1	0	3
India	0	0	0	0	1	1	0	0	1	0	0	1	0
Japan	32	33	38	33	31	17	19	13	14	4	11	5	7
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	1	0	0	0	0	0	0	0	0	0	2	0	0
South Korea	2	3	5	3	4	0	4	1	4	2	6	5	6
Taiwan	3	5	5	6	0	4	2	1	1	3	3	0	3
All others	2	0	0	0	0	0	0	0	0	0	0	0	0
Middle East	1	1	1	2	2	1	2	0	1	1	4	1	6

Appendix table 6-73

USPTO patents granted in solid waste control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	1	1	1	2	2	1	2	0	1	1	3	0	4
All others	0	0	0	0	0	0	0	0	0	0	1	1	2
Africa	1	0	0	0	0	1	0	0	1	0	2	0	0
South Africa	1	0	0	0	0	1	0	0	1	0	2	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia/Oceania	6	3	2	3	3	1	3	2	1	2	1	5	1
Australia	6	3	2	3	3	1	3	2	1	2	1	5	1
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-74

USPTO patents granted in water pollution control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	271	338	426	325	297	276	293	306	281	277	321	321	311
North America	167	219	273	220	195	189	197	196	179	181	194	207	201
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	10	17	23	17	14	13	16	11	15	13	11	16	22
Mexico	1	0	3	1	0	1	0	0	0	0	1	0	2
United States	157	202	248	202	181	175	181	185	164	168	182	191	177
Central and South America	0	0	0	0	1	1	0	1	2	2	0	6	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	1	0	0	1	1	0	0	2	0
All others	0	0	0	0	0	1	0	0	1	2	0	4	0
Europe	60	57	78	47	40	38	34	43	38	31	58	41	33
EU	55	50	71	44	38	35	31	41	36	29	53	37	29
Austria	1	0	1	1	1	2	0	1	2	1	3	1	0
Belgium	0	0	2	1	3	0	0	0	0	1	0	2	0
Denmark	6	2	4	2	0	1	1	0	4	5	1	2	1
Finland	1	2	2	1	2	0	2	2	0	1	5	1	0
France	8	7	13	7	5	8	8	10	8	4	11	9	8
Germany	23	20	27	18	9	14	7	13	8	7	13	12	8
Hungary	0	0	0	0	0	0	0	0	1	0	0	0	0
Ireland	0	0	0	0	1	0	0	0	0	0	0	0	0
Italy	2	1	0	1	1	0	1	1	4	1	5	2	3
Netherlands	2	11	5	4	4	2	1	2	1	0	2	3	1
Spain	0	0	2	0	1	1	0	0	1	1	1	0	0
Sweden	4	2	5	2	5	1	3	4	3	1	8	2	3
United Kingdom	8	3	9	7	4	5	7	6	4	7	4	3	5
All others	0	1	2	0	2	2	1	2	1	0	1	1	1
Other Europe	5	7	7	3	2	3	3	2	2	2	5	4	4
Norway	2	2	0	1	0	0	1	1	0	2	2	0	1
Russia	0	0	3	2	1	1	1	1	2	0	1	2	1
Former Soviet Union	2	3	0	0	0	0	0	0	0	0	0	0	0
Switzerland	1	2	3	0	1	2	0	0	0	0	1	2	1
All others	0	0	1	0	0	0	1	0	0	0	1	0	1
Asia	38	58	62	46	51	37	55	60	51	56	55	56	62
China	0	2	1	0	1	1	3	3	3	3	5	4	9
India	0	1	0	4	0	3	2	1	1	5	1	3	1
Japan	28	37	46	32	32	23	36	36	28	30	36	33	33
Malaysia	0	0	0	0	1	0	0	1	0	0	0	0	1
Singapore	0	0	0	0	1	1	0	1	2	1	0	2	1
South Korea	9	12	6	6	11	3	8	7	5	10	11	8	9
Taiwan	1	6	9	3	5	6	6	11	13	7	2	5	8
All others	0	0	0	1	0	0	0	0	0	0	0	1	0
Middle East	0	1	3	6	3	3	1	2	3	3	8	7	11

Appendix table 6-74

USPTO patents granted in water pollution control technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	0	3	5	2	2	1	2	3	2	7	5	5
All others	0	1	1	1	1	1	0	0	0	1	1	2	6
Africa	3	1	5	2	1	1	3	3	1	1	0	1	0
South Africa	3	1	5	2	1	1	2	2	1	0	0	1	0
All others	0	0	0	0	0	0	1	1	0	1	0	0	0
Australia/Oceania	3	3	4	4	6	7	3	2	7	4	6	3	5
Australia	3	2	4	3	6	7	2	2	6	3	5	3	5
New Zealand	0	1	0	1	0	0	1	0	1	1	2	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 6-75

USPTO patents granted in recycling technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	330	381	328	295	275	179	178	156	127	134	187	176	192
North America	195	237	182	159	140	90	82	71	65	71	94	98	102
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	13	28	16	11	18	9	13	7	9	2	8	4	8
Mexico	0	0	0	1	0	0	0	1	1	1	2	2	1
United States	182	209	165	147	122	81	69	64	55	68	85	92	94
Central and South America	4	1	1	1	2	0	0	1	0	1	2	6	3
Argentina	2	1	0	1	0	0	0	0	0	0	0	1	0
Brazil	2	0	1	0	0	0	0	0	0	1	2	4	1
All others	0	0	0	0	2	0	0	1	0	0	0	1	2
Europe	79	83	80	59	51	30	34	45	20	30	44	34	42
EU	75	78	74	57	46	27	28	42	18	27	40	33	41
Austria	3	5	4	3	1	4	4	8	1	3	1	2	3
Belgium	2	2	2	2	2	0	4	3	1	2	5	3	1
Denmark	1	3	1	1	0	0	0	1	0	0	1	3	0
Finland	3	4	5	7	4	2	2	2	3	2	2	0	2
France	8	6	9	2	3	3	1	2	0	4	8	3	5
Germany	38	35	33	23	21	8	7	6	4	7	7	12	15
Hungary	0	0	0	1	0	1	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	1	0	0
Italy	3	7	3	5	6	0	3	4	1	4	8	3	3
Netherlands	5	5	4	0	0	1	3	3	1	0	0	4	1
Spain	1	0	1	1	1	1	0	1	1	0	0	0	1
Sweden	3	4	4	2	1	3	3	4	1	1	1	1	3
United Kingdom	8	8	8	6	5	2	2	8	3	2	3	1	5
All others	0	0	2	4	3	2	0	2	2	2	3	1	3
Other Europe	4	5	6	2	5	3	6	3	2	3	4	1	1
Norway	0	1	1	0	2	0	1	0	0	0	0	1	0
Switzerland	4	4	5	1	3	2	3	0	0	2	3	0	1
Russia	0	0	0	1	0	1	1	2	2	1	1	0	0
Former Soviet Union	0	0	0	0	0	0	0	0	0	0	0	0	0
All others	0	0	0	0	1	0	1	1	0	0	0	0	0
Asia	48	58	62	70	76	56	58	37	33	28	40	36	38
China	2	0	0	2	2	1	3	0	0	1	1	0	3
India	0	0	1	0	2	2	1	2	1	2	1	2	1
Japan	41	47	46	60	59	42	48	28	25	21	33	22	22
Malaysia	0	0	0	0	1	1	0	0	0	0	0	0	0
Singapore	0	0	1	0	1	1	1	3	0	0	1	0	1
South Korea	3	6	13	1	7	5	2	2	3	3	2	6	7
Taiwan	2	5	1	7	5	4	3	2	4	1	2	6	5
All others	0	0	0	0	0	0	0	0	0	0	0	0	0
Middle East	0	0	1	3	2	0	1	0	2	1	4	0	4

Appendix table 6-75

USPTO patents granted in recycling technology, by region/country/economy: Selected years, 1997–2012

Region/country/economy	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Israel	0	0	1	3	2	0	1	0	2	1	3	0	3
All others	0	0	0	0	0	0	0	0	0	0	1	0	1
Africa	0	0	1	0	2	1	1	0	3	0	1	1	0
South Africa	0	0	1	0	1	1	1	0	3	0	1	1	0
All others	0	0	0	0	1	0	0	0	0	0	0	0	0
Australia/Oceania	5	2	1	2	3	2	1	2	3	2	1	1	3
Australia	5	2	1	2	3	2	0	2	3	2	0	1	3
New Zealand	0	0	0	0	0	0	1	0	0	0	1	0	0
All others	0	0	0	0	0	0	0	0	0	0	0	0	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

NOTES: Technologies are classified by The Patent Board™. Patents are fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The EU includes 27 member countries. China includes Hong Kong. Detail may not add to total because of rounding or minor discrepancies. See appendix table 6-41 for a full list of countries by region/country/economy.

SOURCE: The Patent Board™, special tabulations (2013) of the Proprietary Patent Database.

Science and Engineering Indicators 2014

Appendix table 7-1

Public interest in selected issues: 1981–2012

(Percent)

Issue	1981 (*n* = 3,192)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2008 (*n* = 2,021)	2010 (*n* = 1,461)	2012 (*n* = 2,256)
New medical discoveries													
Very interested	NA	NA	68	72	68	66	69	70	68	65	58	60	58
Moderately interested	NA	NA	29	25	29	31	27	26	28	32	36	35	36
Not at all interested	NA	NA	3	3	3	3	4	4	4	4	6	5	5
Don't know/refused to answer	NA	NA	0	*	0	*	*	*	*	0	1	1	1
Local school issues													
Very interested	46	46	47	51	50	54	57	58	54	59	46	54	51
Moderately interested	36	36	39	33	34	35	31	30	34	31	40	36	37
Not at all interested	18	18	14	15	16	12	12	11	12	10	15	9	11
Don't know/refused to answer	*	*	*	*	0	*	*	*	*	*	*	1	1
Economic issues and business conditions													
Very interested	52	57	48	48	51	56	47	47	42	45	46	44	49
Moderately interested	37	33	41	42	40	36	42	42	45	45	43	45	40
Not at all interested	10	10	11	10	10	8	11	11	13	10	11	10	10
Don't know/refused to answer	*	1	*	*	*	*	0	*	*	*	*	1	1
Environmental pollution													
Very interested	NA	NA	NA	NA	64	59	52	52	51	48	47	46	45
Moderately interested	NA	NA	NA	NA	31	36	41	40	41	43	42	46	45
Not at all interested	NA	NA	NA	NA	5	5	6	8	8	8	10	7	9
Don't know/refused to answer	NA	NA	NA	NA	*	*	*	*	*	0	1	1	1
Use of new inventions and technologies													
Very interested	33	42	39	40	39	37	43	47	41	42	40	40	42
Moderately interested	51	45	49	49	49	53	46	43	48	47	46	48	46
Not at all interested	16	12	12	12	12	10	11	10	10	10	13	10	11
Don't know/refused to answer	*	*	*	*	*	*	*	*	*	1	*	1	1
New scientific discoveries													
Very interested	37	48	44	43	39	36	44	49	45	47	38	41	40
Moderately interested	45	41	43	46	49	49	45	42	43	45	47	50	45
Not at all interested	17	11	12	12	12	15	11	9	11	8	15	8	14
Don't know/refused to answer	*	*	*	0	0	*	*	*	1	*	*	1	1
Military and defense policy													
Very interested	NA	43	47	47	55	47	37	35	42	38	38	37	37
Moderately interested	NA	42	42	42	35	43	46	48	44	44	47	47	47
Not at all interested	NA	15	11	11	9	10	17	18	14	18	15	15	15
Don't know/refused to answer	NA	1	*	*	*	*	*	*	*	*	1	1	1

Appendix table 7-1

Public interest in selected issues: 1981–2012

(Percent)

Issue	1981 (*n* = 3,192)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2008 (*n* = 2,021)	2010 (*n* = 1,461)	2012 (*n* = 2,256)
Space exploration													
Very interested	25	27	29	34	26	22	25	32	28	26	21	23	23
Moderately interested	43	45	46	44	48	50	49	45	46	47	45	49	44
Not at all interested	31	28	25	22	26	28	26	22	25	27	34	27	32
Don't know/refused to answer	*	*	0	1	0	*	*	1	1	*	*	1	1
Agricultural and farm issues													
Very interested	24	NA	30	40	24	NA	21	24	22	29	22	25	22
Moderately interested	47	NA	48	45	48	NA	53	50	50	46	52	55	49
Not at all interested	29	NA	22	15	28	NA	26	26	28	25	26	20	28
Don't know/refused to answer	*	NA	*	0	0	NA	1	*	*	*	*	1	1
International and foreign policy issues													
Very interested	35	30	33	33	48	38	21	23	30	28	23	22	21
Moderately interested	47	47	51	50	39	47	53	50	47	49	48	48	47
Not at all interested	18	22	16	16	12	15	26	28	23	22	29	29	31
Don't know/refused to answer	*	*	*	*	*	*	*	*	*	*	1	2	1

* = < 0.5% responded; NA = not available, question not asked.

NOTES: Responses to *There are a lot of issues in the news, and it is hard to keep up with every area. I'm going to read you a short list of issues, and for each one I would like you to tell me if you are very interested, moderately interested, or not at all interested.* Percentages may not add to 100% because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1981–2001); University of Chicago, National Opinion Research Center, General Social Survey (2008–12).

Science and Engineering Indicators 2014

Appendix table 7-2

Public interest in selected issues, by respondent characteristic: 2012

(Percent)

Characteristic	New medical discoveries			Local school issues			Economic issues/business conditions			Environmental pollution			Use of new inventions/technologies		
	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested
All adults (*n* = 2,256)	58	36	5	51	37	11	49	40	10	45	45	9	42	46	11
Sex															
Male (*n* = 1,011)	56	39	5	44	41	15	55	37	7	45	46	9	51	41	7
Female (*n* = 1,245)	60	34	4	58	33	8	44	43	13	45	44	10	35	50	14
Formal education															
< High school (*n* = 308)	57	32	9	50	35	12	32	38	26	40	43	13	36	39	22
High school diploma (*n* = 671)	58	36	5	50	39	10	43	45	11	43	45	11	39	47	14
Some college (*n* = 608)	59	38	4	52	37	12	53	39	7	46	45	9	46	46	8
Bachelor's degree (*n* = 429)	56	40	4	50	39	11	56	40	4	42	50	8	43	51	7
Graduate/professional degree (*n* = 240)	64	33	3	58	31	12	65	33	3	57	40	2	50	44	5
Science/mathematics education[a]															
Low (*n* = 1,248)	59	35	5	52	36	11	45	41	13	44	45	10	39	46	13
Middle (*n* = 398)	60	37	3	51	39	10	53	41	6	49	41	10	47	46	7
High (*n* = 484)	55	41	4	51	37	12	59	37	4	45	49	6	48	47	6
Family income (quartile)[b]															
Top (*n* = 446)	61	36	3	47	42	11	58	40	2	46	46	8	48	46	6
Second (*n* = 494)	52	45	4	53	35	12	53	39	8	40	51	9	44	49	7
Third (*n* = 521)	59	35	5	53	36	10	52	39	9	46	44	9	39	49	11
Bottom (*n* = 563)	64	31	5	56	32	11	35	46	18	49	42	8	38	43	18
Age (years)[b]															
18–24 (*n* = 140)	58	38	5	46	45	9	38	49	12	47	45	8	48	42	10
25–34 (*n* = 357)	52	42	6	54	35	11	44	45	11	38	52	9	40	47	12
35–44 (*n* = 385)	51	41	8	67	27	5	53	38	8	45	41	13	41	49	10
45–54 (*n* = 423)	59	36	5	52	33	14	50	40	9	44	46	10	42	46	10
55–64 (*n* = 420)	60	34	5	47	39	13	52	37	9	48	43	8	42	46	11
≥ 65 (*n* = 504)	68	29	2	41	45	13	53	35	12	48	44	8	42	45	12

Appendix table 7-2

Public interest in selected issues, by respondent characteristic: 2012

(Percent)

Characteristic	New scientific discoveries			Military/defense policy			Space exploration			Agricultural/farm issues			International/foreign policy issues		
	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested	Very interested	Moderately interested	Not at all interested
All adults (*n* = 2,256)	40	45	14	37	47	15	23	44	32	22	49	28	21	47	31
Sex															
Male (*n* = 1,011)	44	44	11	47	43	10	32	43	25	24	50	25	27	47	25
Female (*n* = 1,245)	37	45	17	29	50	19	16	45	38	20	48	31	16	47	36
Formal education															
< High school (*n* = 308)	32	37	28	35	41	21	19	36	41	31	39	26	11	40	46
High school diploma (*n* = 671)	34	49	16	37	48	14	20	43	36	24	52	23	13	48	39
Some college (*n* = 608)	41	46	13	39	48	14	26	43	31	19	50	31	20	49	31
Bachelor's degree (*n* = 429)	47	45	8	36	49	15	27	48	26	18	46	36	33	47	20
Graduate/professional degree (*n* = 240)	56	39	4	40	49	11	27	52	21	17	56	27	42	48	10
Science/mathematics education[a]															
Low (*n* = 1,248)	35	45	19	38	45	16	20	43	36	24	51	24	15	47	37
Middle (*n* = 398)	42	50	8	41	48	11	27	46	28	21	45	34	24	53	23
High (*n* = 484)	54	39	7	37	50	13	32	46	23	18	50	32	36	44	20
Family income (quartile)[b]															
Top (*n* = 446)	47	45	8	38	49	12	25	50	25	19	52	29	28	51	21
Second (*n* = 494)	40	48	12	42	46	12	25	47	29	21	51	28	25	50	25
Third (*n* = 521)	40	45	15	36	47	16	24	39	36	23	50	27	18	49	32
Bottom (*n* = 563)	36	44	19	34	47	17	21	43	34	26	44	30	13	42	43
Age (years)[b]															
18–24 (*n* = 140)	48	40	11	29	53	18	32	39	29	15	48	37	8	46	45
25–34 (*n* = 357)	38	45	16	28	52	20	20	48	32	17	48	35	13	48	39
35–44 (*n* = 385)	38	46	15	33	46	20	23	42	34	19	52	29	20	43	36
45–54 (*n* = 423)	41	43	15	36	52	11	22	44	34	27	46	27	26	47	27
55–64 (*n* = 420)	37	48	14	44	44	11	24	41	34	26	48	25	24	49	26
≥ 65 (*n* = 504)	43	44	11	50	38	11	24	46	29	24	54	21	30	49	21

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.

NOTES: Responses to *There are a lot of issues in the news, and it is hard to keep up with every area. I'm going to read you a short list of issues, and for each one I would like you to tell me if you are very interested, moderately interested, or not at all interested.* Percentages may not add to 100% because of rounding and because "don't know" responses and refusals to respond are not shown.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-3

Primary source of information about current news events, by respondent characteristic: 2012

(Percent)

Characteristic	Newspaper	Magazine	Internet	Book/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Don't know
All adults (*n* = 2,256)	13	1	33	1	43	5	*	2	2	*	*
Sex											
Male (*n* = 1,011)	13	1	34	1	41	7	0	1	2	*	*
Female (*n* = 1,245)	12	1	33	*	45	4	*	2	1	*	1
Formal education											
< High school (*n* = 308)	14	1	11	*	66	1	0	1	3	1	2
High school diploma (*n* = 671)	13	*	22	*	56	6	0	1	2	0	*
Some college (*n* = 608)	9	*	41	1	38	6	*	3	2	0	0
Bachelor's degree (*n* = 429)	16	1	49	1	24	6	*	1	2	0	*
Graduate/professional degree (*n* = 240)	17	3	45	1	26	7	0	0	*	*	0
Science/mathematics education[a]											
Low (*n* = 1,248)	14	*	23	*	54	5	*	1	2	*	*
Middle (*n* = 398)	11	1	47	*	33	5	0	1	1	*	*
High (*n* = 484)	13	1	50	2	22	7	*	3	2	0	0
Family income (quartile)[b]											
Top (*n* = 446)	14	1	45	*	32	6	*	1	1	0	0
Second (*n* = 494)	15	1	36	1	37	7	0	3	1	0	0
Third (*n* = 521)	10	*	33	1	46	6	0	1	2	1	*
Bottom (*n* = 563)	11	*	21	*	58	3	0	2	4	0	*
Age (years)[b]											
18–24 (*n* = 140)	6	*	53	0	29	2	*	2	5	1	*
25–34 (*n* = 357)	5	*	48	1	34	4	0	4	4	0	1
35–44 (*n* = 385)	8	1	49	*	33	7	0	1	1	0	0
45–54 (*n* = 423)	11	1	28	1	50	7	*	*	2	0	*
55–64 (*n* = 420)	18	*	24	1	49	5	0	2	1	0	1
≥ 65 (*n* = 504)	26	1	9	1	56	6	0	1	*	*	1

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.

NOTES: Responses to *We are interested in how people get information about events in the news. Where do you get most of your information about current news events?* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-4

Primary source of information about science and technology, by respondent characteristic: 2012

(Percent)

Characteristic	Newspaper	Magazine	Internet	Book/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Don't know
All adults (*n* = 2,256)	7	8	42	3	32	2	*	2	3	*	2
Sex											
Male (*n* = 1,011)	7	9	44	3	31	2	*	1	3	*	1
Female (*n* = 1,245)	6	6	40	4	34	2	*	3	2	1	2
Formal education											
< High school (*n* = 308)	5	6	15	2	54	2	*	2	3	2	9
High school diploma (*n* = 671)	6	5	32	3	47	2	*	2	3	*	1
Some college (*n* = 608)	6	7	50	4	26	2	0	2	2	0	*
Bachelor's degree (*n* = 429)	6	11	56	4	14	2	*	2	4	0	*
Graduate/professional degree (*n* = 240)	12	12	56	2	12	4	*	0	*	*	1
Science/mathematics education[a]											
Low (*n* = 1,248)	7	6	31	3	44	2	0	2	3	*	2
Middle (*n* = 398)	6	9	54	3	22	1	*	2	2	1	*
High (*n* = 484)	6	10	58	5	12	3	*	1	3	*	0
Family income (quartile)[b]											
Top (*n* = 446)	8	10	51	3	20	3	*	1	3	1	0
Second (*n* = 494)	6	7	49	3	30	2	*	2	1	0	*
Third (*n* = 521)	5	9	40	4	35	1	0	1	3	0	1
Bottom (*n* = 563)	6	5	29	4	45	3	*	2	3	1	3
Age (years)[b]											
18–24 (*n* = 140)	*	1	70	3	12	0	0	1	8	3	2
25–34 (*n* = 357)	2	4	55	2	29	2	*	3	3	0	2
35–44 (*n* = 385)	6	7	53	3	23	2	*	3	2	*	1
45–54 (*n* = 423)	6	8	37	3	37	3	*	1	3	0	2
55–64 (*n* = 420)	9	7	34	4	39	3	0	2	1	0	2
≥ 65 (*n* = 504)	13	15	16	5	45	3	0	1	1	*	2

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.

NOTES: Responses to *We are interested in how people get information about science and technology. Where do you get most of your information aboutscience and technology?* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-5

Primary source of information about specific scientific issues, by respondent characteristic: 2012

(Percent)

Characteristic	Newspaper	Magazine	Internet	Book/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Don't know
All adults (*n* = 2,256)	3	3	63	7	17	1	1	1	1	*	2
Sex											
Male (*n* = 1,011)	4	5	62	8	16	2	1	*	1	0	2
Female (*n* = 1,245)	3	2	63	7	18	1	1	2	1	*	3
Formal education											
< High school (*n* = 308)	4	5	34	9	36	1	1	1	2	*	7
High school diploma (*n* = 671)	3	2	56	7	25	1	1	1	1	*	3
Some college (*n* = 608)	3	4	70	7	11	1	2	1	1	*	1
Bachelor's degree (*n* = 429)	3	3	77	7	6	1	1	1	1	0	1
Graduate/professional degree (*n* = 240)	5	4	75	8	5	1	0	1	1	0	*
Science/mathematics education[a]											
Low (*n* = 1,248)	4	3	55	7	23	1	1	1	1	*	3
Middle (*n* = 398)	3	4	74	5	9	2	*	0	1	*	1
High (*n* = 484)	2	3	75	10	5	1	1	1	1	0	0
Family income (quartile)[b]											
Top (*n* = 446)	3	3	75	5	11	1	*	1	1	0	*
Second (*n* = 494)	2	4	70	8	12	1	1	1	*	*	*
Third (*n* = 521)	2	3	62	9	16	*	1	1	1	*	3
Bottom (*n* = 563)	4	3	48	8	26	1	3	2	2	1	3
Age (years)[b]											
18–24 (*n* = 140)	1	2	84	2	9	1	0	0	1	1	0
25–34 (*n* = 357)	2	1	75	6	12	*	*	*	*	*	1
35–44 (*n* = 385)	2	2	75	5	10	1	1	1	2	0	1
45–54 (*n* = 423)	1	1	63	8	20	2	*	1	1	*	2
55–64 (*n* = 420)	3	6	53	9	22	1	2	2	1	*	2
≥ 65 (*n* = 504)	10	6	38	13	23	2	2	1	1	0	5

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.

NOTES: Responses to *If you wanted to learn about scientific issues such as global warming or biotechnology, where would you get information?* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

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Appendix table 7-6

Visitors to informal science and other cultural institutions: 1981–2012

(Percent)

Institution	1981 (*n* = 1,235)	1983 (*n* = 1,631)	1985 (*n* = 2,003)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2008 (*n* = 2,021)	2012 (*n* = 2,256)
Informal science institution												
Zoo/aquarium	64	49	48	51	51	54	52	51	51	58	52	47
Natural history museum	37	29	29	30	30	31	29	30	27	30	28	28
Science/technology museum	39	26	24	26	25	21	28	27	30	30	27	25
Any informal science institution[a]	72	61	58	59	59	62	61	60	61	66	61	58
Public library	NA	NA	67	68	65	69	69	70	72	75	64	60
Art museum	43	32	31	33	31	29	31	30	30	32	34	33

NA = not available, question not asked.

[a] Visited zoo/aquarium, natural history museum, or science/technology museum at least once.

NOTES: Responses to *I am going to read you a short list of places and ask you to tell me how many times you visited each type of place during the last year, that is, the last 12 months.* Percentages indicate individuals who visited an institution at least once. Percentages are based on total in the sample, including those who responded "don't know" or refused to respond.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1981–2001); University of Chicago, National Opinion Research Center, General Social Survey (2008, 2012).

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Appendix table 7-7

Visitors to informal science and other cultural institutions, by respondent characteristic: 2012

(Percent)

Characteristic	Informal science institution				Public library	Art museum
	Zoo/ aquarium	Natural history museum	Science/technology museum	Any informal science institution[a]		
All adults (*n* = 2,256)	47	28	25	58	60	33
Sex						
Male (*n* = 1,011)	48	28	26	58	52	31
Female (*n* = 1,245)	46	29	24	57	67	35
Formal education						
< High school (*n* = 308)	27	15	8	35	42	16
High school diploma (*n* = 671)	42	21	16	50	51	18
Some college (*n* = 608)	49	28	26	60	67	32
Bachelor's degree (*n* = 429)	61	42	40	73	66	52
Graduate/professional degree (*n* = 240)	57	42	40	75	74	66
Science/mathematics education[b]						
Low (*n* = 1,248)	38	19	14	46	51	20
Middle (*n* = 398)	58	40	36	72	73	47
High (*n* = 484)	61	43	44	76	72	55
Family income (quartile)[c]						
Top (*n* = 446)	57	40	36	70	60	48
Second (*n* = 494)	52	34	30	62	62	34
Third (*n* = 521)	43	25	21	53	60	30
Bottom (*n* = 563)	37	19	15	46	61	22
Age (years)[c]						
18–24 (*n* = 140)	52	28	30	63	62	38
25–34 (*n* = 357)	57	30	29	69	66	30
35–44 (*n* = 385)	63	36	33	71	67	33
45–54 (*n* = 423)	42	32	26	54	57	36
55–64 (*n* = 420)	42	23	17	52	54	31
≥ 65 (*n* = 504)	30	21	17	41	55	31
Minor children at home[c]						
Yes (*n* = 683)	59	33	29	69	69	31
No (*n* = 1,539)	41	26	23	52	55	34

[a] Visited zoo/aquarium, natural history museum, or science/technology museum at least once.
[b] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.

NOTES: Responses to *I am going to read you a short list of places and ask you to tell me how many times you visited each type of place during the last year, that is, the last 12 months.* Percentages indicate individuals who visited an institution at least once. Percentages are based on the *n* in each row, including those who responded "don't know" or refused to respond.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-8

Correct answers to trend factual knowledge of science questions, by respondent characteristic: 1992–2012

(Average percent correct)

Characteristic	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2006 (*n* = 1,864)	2008 (*n* =2,021)	2010 (*n* = 1,932)	2012 (*n* = 2,256)
All adults	59	60	60	61	64	64	64	63	65
Sex									
Male	64	65	66	66	69	69	68	67	70
Female	55	55	55	57	59	60	60	59	60
Formal education									
< High school	44	44	43	44	45	44	43	42	45
High school diploma	59	59	60	62	62	62	63	60	62
Bachelor's degree	73	68	75	77	80	74	77	78	78
Graduate/professional	80	77	80	83	80	82	81	80	81
Science/mathematics education[a]									
Low	52	52	51	53	55	56	57	54	56
Middle	66	68	66	71	72	69	70	68	70
High	79	80	83	82	84	82	82	83	83
Family income (quartile)									
Top	NA	NA	NA	NA	NA	71	74	73	76
Second	NA	NA	NA	NA	NA	69	69	69	69
Third	NA	NA	NA	NA	NA	65	63	63	63
Bottom	NA	NA	NA	NA	NA	56	56	54	55
Age (years)									
18–24	59	63	64	65	66	68	67	64	67
25–34	64	64	63	65	68	64	67	67	67
35–44	65	64	66	66	66	67	63	63	67
45–54	61	62	61	64	68	68	67	65	64
55–64	53	52	57	58	61	64	65	63	64
≥ 65	47	47	45	46	49	53	54	54	61
Verbal ability[b]									
0–4	NA	NA	NA	NA	NA	48	47	46	46
5	NA	NA	NA	NA	NA	60	58	55	59
6	NA	NA	NA	NA	NA	66	63	63	66
7	NA	NA	NA	NA	NA	70	73	67	73
8–10	NA	NA	NA	NA	NA	77	80	80	81

NA = not available, question not asked.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses.
[b] Measure is based on correct responses to a 10-item, multiple-choice test of vocabulary knowledge. Categories represent the number of correct responses.

NOTES: This table shows the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. "Don't know" responses and refusals to respond count as incorrect. Questions in the trend factual knowledge of science scale are listed below:
• *The center of the Earth is very hot.* (True)
• *All radioactivity is man-made.* (False)
• *It is the father's gene that decides whether the baby is a boy or a girl.* (True) or (in 2008) *It is the mother's gene that decides whether the baby is a boy or a girl.* (False) (Split ballot in 2008; 1,506 survey respondents were asked about "father's gene"; 515 survey respondents were asked about "mother's gene.")
• *Lasers work by focusing sound waves.* (False)
• *Electrons are smaller than atoms.* (True)
• *Antibiotics kill viruses as well as bacteria.* (False)
• *The continents on which we live have been moving their locations for millions of years and will continue to move in the future.* (True)
• *Does the Earth go around the Sun, or does the Sun go around the Earth?* (Earth around Sun)
• *How long does it take for the Earth to go around the Sun?* (One year) (Asked only if the respondent answered correctly that the Earth goes around the Sun.)

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1992–2001); University of Chicago, National Opinion Research Center, General Social Survey (2006–12).

Science and Engineering Indicators 2014

Appendix table 7-9

Correct answers to factual knowledge questions in physical and biological sciences: 1988–2012

(Percent)

Question	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,932)	2012 (*n* = 2,256)
Physical science												
1. *The center of the Earth is very hot.* (True)	80	79	81	78	82	80	80	78	80	84	84	84
2. *The continents on which we live have been moving their locations for millions of years and will continue to move in the future.* (True)	80	77	79	78	78	80	79	77	80	78	80	83
3a. *Does the Earth go around the Sun, or does the Sun go around the Earth?* (Earth around Sun)	73	73	71	73	73	72	75	71	76	72	73	74
3b. *How long does it take for the Earth to go around the Sun?* (One year)[a]	45	48	46	47	48	49	54	NA	55	52	52	55
4. *All radioactivity is man-made.* (False)	65	63	73	72	71	71	76	73	70	71	67	72
5. *Electrons are smaller than atoms.* (True)	43	41	46	44	43	46	48	45	53	54	51	53
6. *Lasers work by focusing sound waves.* (False)	36	37	37	40	39	43	45	42	45	49	47	47
7. *The universe began with a huge explosion.* (True)[b]	54	32	38	35	32	33	33	33	33	33	38	39
Biological science												
1a. *It is the father's gene that decides whether the baby is a boy or a girl.* (True)[c]	NA	NA	65	64	62	66	65	62	64	62	61	63
1b. *It is the mother's gene that decides whether the baby is a boy or a girl.* (False)[d]	NA	NA	NA	NA	NA	NA	NA	NA	NA	72	NA	NA
2. *Antibiotics kill viruses as well as bacteria.* (False)	25	30	35	40	43	45	51	54	56	54	50	51
3. *Human beings, as we know them today, developed from earlier species of animals.* (True)[b]	46	45	45	44	44	45	53	42	43	46	47	48

NA = not available, question not asked.

[a] Question was asked only of survey respondents who answered correctly that the Earth goes around the Sun. Individuals who responded incorrectly that the Sun goes around the Earth also count as having responded incorrectly to the question on the length of the Earth's revolution around the Sun.
[b] Question was asked of 1,558 survey respondents in 2004 and 1,152 respondents in 2012.
[c] Question was asked of 1,506 survey respondents in 2008.
[d] Question was asked of 515 survey respondents in 2008.

NOTE: "Don't know" responses and refusals to respond count as incorrect.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1988–2001); University of Michigan, Survey of Consumer Attitudes (2004); University of Chicago, National Opinion Research Center, General Social Survey (2006–12).

Science and Engineering Indicators 2014

Appendix table 7-10

Correct answers to factual knowledge questions in physical and biological sciences, by respondent characteristic: 2012

(Percent)

Characteristic	Physical science			
	The center of the Earth is very hot. (True)	*The continents on which we live have been moving their locations for millions of years and will continue to move in the future.* (True)	*Does the Earth go around the Sun, or does the Sun go around the Earth?* (Earth around Sun)	*How long does it take for the Earth to go around the Sun: one day, one month, or one year?* [a] (One year)
All adults (*n* = 2,256)	84	83	74	55
Sex				
Male (*n* = 1,011)	89	88	82	66
Female (*n* = 1,245)	79	79	66	45
Formal education				
< High school (*n* = 308)	72	72	54	31
High school diploma (*n* = 671)	80	76	69	46
Some college (*n* = 608)	88	87	72	55
Bachelor's degree (*n* = 429)	91	90	90	75
Graduate/professional degree (*n* = 240)	90	94	87	72
Science/mathematics education[c]				
Low (*n* = 1,248)	80	78	65	43
Middle (*n* = 398)	90	87	81	61
High (*n* = 484)	94	94	92	81
Family income (quartile)[d]				
Top (*n* = 446)	90	89	85	71
Second (*n* = 494)	84	85	78	61
Third (*n* = 521)	84	85	73	49
Bottom (*n* = 563)	80	77	65	42
Age (years)[d]				
18–24 (*n* = 140)	88	92	80	59
25–34 (*n* = 357)	88	88	78	65
35–44 (*n* = 385)	87	85	80	59
45–54 (*n* = 423)	83	80	70	56
55–64 (*n* = 420)	80	79	71	48
≥ 65 (*n* = 504)	82	80	67	44
Verbal ability[e]				
0–4 (*n* = 277)	75	69	54	29
5 (*n* = 217)	80	80	65	51
6 (*n* = 297)	87	87	76	55
7 (*n* = 220)	93	86	83	59
8–10 (*n* = 354)	94	90	89	75
Trend factual knowledge of science scale (quartile)[f]				
Top (*n* = 616)	98	99	100	96
Second (*n* = 655)	94	92	91	65
Third (*n* = 583)	79	78	57	27
Bottom (*n* = 402)	49	48	23	6

Appendix table 7-10

Correct answers to factual knowledge questions in physical and biological sciences, by respondent characteristic: 2012

(Percent)

Characteristic	Physical science (continued)			
	All radioactivity is man-made. (False)	*Electrons are smaller than atoms.* (True)	*Lasers work by focusing sound waves.* (False)	*The universe began with a huge explosion.* [b] (True)
All adults (*n* = 2,256)	72	53	47	39
Sex				
Male (*n* = 1,011)	78	60	62	46
Female (*n* = 1,245)	67	47	34	32
Formal education				
< High school (*n* = 308)	49	33	32	26
High school diploma (*n* = 671)	66	44	38	32
Some college (*n* = 608)	73	57	48	42
Bachelor's degree (*n* = 429)	84	67	63	48
Graduate/professional degree (*n* = 240)	96	74	63	52
Science/mathematics education[c]				
Low (*n* = 1,248)	65	42	38	30
Middle (*n* = 398)	76	63	48	49
High (*n* = 484)	91	78	71	53
Family income (quartile)[d]				
Top (*n* = 446)	88	64	60	47
Second (*n* = 494)	78	59	55	38
Third (*n* = 521)	69	50	44	39
Bottom (*n* = 563)	60	43	35	32
Age (years)[d]				
18–24 (*n* = 140)	67	66	41	46
25–34 (*n* = 357)	63	56	44	42
35–44 (*n* = 385)	74	52	50	41
45–54 (*n* = 423)	75	54	51	38
55–64 (*n* = 420)	76	57	52	34
≥ 65 (*n* = 504)	76	42	44	33
Verbal ability[e]				
0–4 (*n* = 277)	47	39	31	30
5 (*n* = 217)	70	46	42	29
6 (*n* = 297)	76	48	52	35
7 (*n* = 220)	84	62	51	39
8–10 (*n* = 354)	89	69	69	53
Trend factual knowledge of science scale (quartile)[f]				
Top (*n* = 616)	98	88	90	56
Second (*n* = 655)	83	52	46	47
Third (*n* = 583)	60	41	28	22
Bottom (*n* = 402)	26	15	6	18

Appendix table 7-10

Correct answers to factual knowledge questions in physical and biological sciences, by respondent characteristic: 2012

(Percent)

Characteristic	Biological science		
	It is the father's gene that decides whether the baby is a boy or a girl. (True)	*Antibiotics kill viruses as well as bacteria.* (False)	*Human beings, as we know them today, developed from earlier species of animals.* [b] (True)
All adults (*n* = 2,256)	63	51	48
Sex			
Male (*n* = 1,011)	55	49	56
Female (*n* = 1,245)	70	52	41
Formal education			
< High school (*n* = 308)	43	18	39
High school diploma (*n* = 671)	59	39	40
Some college (*n* = 608)	66	54	51
Bachelor's degree (*n* = 429)	73	71	57
Graduate/professional degree (*n* = 240)	71	84	66
Science/mathematics education[c]			
Low (*n* = 1,248)	57	40	40
Middle (*n* = 398)	65	56	57
High (*n* = 484)	76	74	63
Family income (quartile)[d]			
Top (*n* = 446)	70	67	58
Second (*n* = 494)	66	54	46
Third (*n* = 521)	60	51	48
Bottom (*n* = 563)	57	35	42
Age (years)[d]			
18–24 (*n* = 140)	69	44	59
25–34 (*n* = 357)	65	52	51
35–44 (*n* = 385)	66	52	51
45–54 (*n* = 423)	60	47	46
55–64 (*n* = 420)	60	53	48
≥ 65 (*n* = 504)	59	54	39
Verbal ability[e]			
0–4 (*n* = 277)	45	20	39
5 (*n* = 217)	58	36	46
6 (*n* = 297)	64	50	38
7 (*n* = 220)	74	62	46
8–10 (*n* = 354)	75	82	63
Trend factual knowledge of science scale (quartile)[f]			
Top (*n* = 616)	84	88	62
Second (*n* = 655)	66	56	51
Third (*n* = 583)	54	29	41
Bottom (*n* = 402)	33	10	29

[a] Question was asked only of survey respondents who answered correctly that the Earth goes around the Sun. Individuals who responded incorrectly that the Sun goes around the Earth also count as having responded incorrectly to the question on the length of the Earth's revolution around the Sun.
[b] Question was asked of 1,152 survey respondents.
[c] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[d] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[e] Measure is based on correct responses to a 10-item, multiple-choice test of vocabulary knowledge, completed by 1,365 survey respondents. Categories represent the number of correct responses.
[f] See notes to appendix table 7-8 for an explanation of the trend factual knowledge of science scale.

NOTE: "Don't know" responses and refusals to respond count as incorrect.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-11

Correct answers to scientific process questions: 1990–2012

(Percent)

Question	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,454)	2012 (*n* = 2,256)
Understanding of scientific inquiry[a]	NA	NA	26	34	32	40	39	41	36	42	33
Components of understanding scientific inquiry scale											
Understanding of probability[b]	61	64	63	62	64	67	64	69	64	66	65
If the first three children are healthy, the fourth child will have illness.	78	80	77	78	78	78	NA	NA	NA	NA	NA
If the first child has illness, the next three will not.	81	83	81	80	82	84	82	86	82	81	82
Each of the couple's children will have the same risk of illness.	70	71	72	71	74	75	73	75	72	75	72
If the couple has only three children, none will have illness.	81	83	79	79	81	84	NA	NA	NA	NA	NA
Understanding of experiment[c]	NA	NA	26	36	34	40	46	42	38	51	34
Understanding of scientific study[d]	18	21	16	23	21	26	23	25	23	18	20

NA = not available, question not asked.

[a] To be classified as understanding scientific inquiry, the survey respondent had to (1) answer correctly the two probability questions stated in footnote b and (2) either provide a theory-testing response to the open-ended question about what it means to study something scientifically (see footnote d) or a correct response to the open-ended question about experiment (i.e., explain why it is better to test a drug using a control group [see footnote c]).

[b] To be classified as understanding probability, the survey respondent had to answer two questions correctly: *A doctor tells a couple that their genetic makeup means that they've got one in four chances of having a child with an inherited illness.* (1) *Does this mean that if their first child has the illness, the next three will not have the illness?* (No) and (2) *Does this mean that each of the couple's children will have the same risk of suffering from the illness?* (Yes).

[c] To be classified as understanding experiment, the survey respondent had to answer correctly (1) *Two scientists want to know if a certain drug is effective against high blood pressure. The first scientist wants to give the drug to 1,000 people with high blood pressure and see how many of them experience lower blood pressure levels. The second scientist wants to give the drug to 500 people with high blood pressure and not give the drug to another 500 people with high blood pressure, and see how many in both groups experience lower blood pressure levels. Which is the better way to test this drug?* and (2) *Why is it better to test the drug this way?* (The second way because a control group is used for comparison.)

[d] To be classified as understanding scientific study, the survey respondent had to answer (1) *When you read news stories, you see certain sets of words and terms. We are interested in how many people recognize certain kinds of terms. First, some articles refer to the results of a scientific study. When you read or hear the term scientific study, do you have a clear understanding of what it means, a general sense of what it means, or little understanding of what it means?* and (2) (If "clear understanding" or "general sense" response) *In your own words, could you tell me what it means to study something scientifically?* (Formulation of theories/test hypothesis, experiments/control group, or rigorous/systematic comparison.)

NOTE: "Don't know" responses and refusals to respond count as incorrect.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1990–2001); University of Michigan, Survey of Consumer Attitudes (2004); University of Chicago, National Opinion Research Center, General Social Survey (2006–12).

Science and Engineering Indicators 2014

Appendix table 7-12

Correct answers to scientific process questions, by respondent characteristic: 2012

(Percent)

Characteristic	Scientific inquiry	Probability	Experiment	Scientific study
All adults (*n* = 2,256)	33	65	34	20
Sex				
Male (*n* = 1,011)	33	66	33	22
Female (*n* = 1,245)	33	65	36	19
Formal education				
< High school (*n* = 308)	10	39	14	2
High school diploma (*n* = 671)	20	63	22	8
Some college (*n* = 608)	34	68	38	21
Bachelor's degree (*n* = 429)	55	78	53	39
Graduate/professional degree (*n* = 240)	57	78	56	45
Science/mathematics education[a]				
Low (*n* = 1,248)	20	59	23	10
Middle (*n* = 398)	44	71	44	27
High (*n* = 484)	58	80	57	42
Family income (quartile)[b]				
Top (*n* = 446)	49	74	51	30
Second (*n* = 494)	38	71	36	25
Third (*n* = 521)	29	64	34	16
Bottom (*n* = 563)	21	58	21	13
Age (years)[b]				
18–24 (*n* = 140)	39	69	42	24
25–34 (*n* =357)	38	73	39	24
35–44 (*n* = 385)	36	68	35	24
45–54 (*n* = 423)	35	62	36	19
55–64 (*n* = 420)	30	61	30	21
≥ 65 (*n* = 504)	23	61	26	12
Verbal ability[c]				
0–4 (*n* = 277)	11	40	13	4
5 (*n* = 217)	24	60	28	6
6 (*n* = 297)	27	68	29	17
7 (*n* = 220)	42	72	38	24
8–10 (*n* = 354)	58	81	56	43
Trend factual knowledge of science scale (quartile)[d]				
Top (*n* = 616)	59	85	54	43
Second (*n* = 655)	36	70	36	20
Third (*n* = 583)	17	55	23	7
Bottom (*n* = 402)	10	39	15	4

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Measure is based on correct responses to a 10-item, multiple-choice test of vocabulary knowledge completed by 1,365 survey respondents. Categories represent the number of correct responses.
[d] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.

NOTES: See footnotes to appendix table 7-11 for an explanation of understanding of probability, experiment, scientific inquiry, and scientific study. "Don't know" responses and refusals to respond count as incorrect.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

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Appendix table 7-13

Public assessment of astrology, by respondent characteristic: 1979–2012

(Percent)

Characteristic	1979 (*n* = 1,635)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,434)	2012 (*n* = 2,256)
All adults															
Very scientific	8	10	8	6	6	7	7	7	7	9	6	5	5	6	10
Sort of scientific	34	35	31	31	29	29	28	29	29	31	26	26	28	28	32
Not at all scientific	50	51	57	60	60	62	60	59	59	56	66	65	63	62	55
Don't know	9	4	4	3	5	3	5	5	5	4	3	4	4	3	4
Sex															
Male															
Very scientific	7	9	7	5	5	6	7	7	7	9	5	5	5	7	10
Sort of scientific	30	29	29	25	23	25	24	27	25	27	21	23	28	24	27
Not at all scientific	54	58	60	67	66	66	65	63	63	60	72	68	64	67	60
Don't know	9	4	3	3	5	2	4	2	5	4	2	4	4	2	3
Female															
Very scientific	8	10	9	7	6	7	7	7	7	8	6	5	5	6	10
Sort of scientific	37	41	32	36	35	32	32	31	32	36	30	29	28	32	36
Not at all scientific	46	44	55	53	55	58	56	55	56	52	61	63	63	58	50
Don't know	9	5	4	3	5	3	6	7	5	4	3	4	4	4	4
Formal education															
< High school															
Very scientific	11	13	14	11	7	12	11	11	13	14	10	10	7	10	14
Sort of scientific	34	37	38	35	31	34	30	37	34	35	38	41	40	37	42
Not at all scientific	39	40	42	50	49	49	46	42	41	45	50	42	42	48	34
Don't know	16	10	5	4	12	5	13	10	13	6	2	8	11	4	10
High school diploma															
Very scientific	7	10	8	6	6	6	8	7	7	9	7	5	6	7	11
Sort of scientific	37	38	29	32	32	31	28	30	30	35	29	29	31	32	33
Not at all scientific	50	50	60	59	60	61	61	60	60	52	62	62	61	58	52
Don't know	6	2	3	3	2	2	3	4	3	4	2	4	3	3	4
Bachelor's degree															
Very scientific	1	3	4	2	4	3	6	2	2	4	2	2	2	3	5
Sort of scientific	23	26	25	24	19	19	34	21	20	25	17	16	19	17	25
Not at all scientific	67	69	68	72	75	76	60	75	76	69	80	78	79	78	69
Don't know	9	3	3	1	2	3	*	2	3	2	1	4	1	2	1
Graduate/professional degree															
Very scientific	5	5	1	*	1	3	2	4	2	3	*	*	3	2	3
Sort of scientific	15	23	23	19	17	14	22	15	19	13	16	12	12	16	24
Not at all scientific	76	69	74	78	80	82	74	78	77	83	83	84	83	79	72
Don't know	4	3	2	2	2	*	2	2	2	*	1	4	3	3	1

Appendix table 7-13

Public assessment of astrology, by respondent characteristic: 1979–2012

(Percent)

Characteristic	1979 (*n* = 1,635)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,434)	2012 (*n* = 2,256)
Age (years)															
18–24															
Very scientific	9	13	10	10	5	14	9	11	7	17	10	5	5	11	14
Sort of scientific	40	43	39	36	37	37	33	38	40	39	36	34	38	43	44
Not at all scientific	47	42	51	54	56	49	53	50	50	42	52	56	55	46	42
Don't know	4	3	*	0	2	1	5	1	3	1	2	5	1	0	1
25–34															
Very scientific	7	7	6	6	6	4	9	6	5	10	6	8	6	8	10
Sort of scientific	36	39	32	32	32	33	30	32	30	33	33	28	30	33	35
Not at all scientific	52	51	60	60	61	62	59	59	61	54	60	60	62	58	52
Don't know	4	3	1	1	2	1	2	3	3	3	1	4	2	1	2
35–44															
Very scientific	6	11	8	6	5	7	4	4	7	7	4	5	5	8	10
Sort of scientific	37	32	29	31	26	27	32	26	32	32	24	28	31	27	33
Not at all scientific	53	54	61	60	68	64	61	66	59	58	69	65	61	64	51
Don't know	5	3	2	2	1	3	3	4	1	3	2	2	3	1	5
45–54															
Very scientific	8	7	5	4	7	6	4	4	5	5	4	3	4	5	10
Sort of scientific	28	40	32	26	25	27	26	28	23	27	18	24	24	23	28
Not at all scientific	54	50	59	66	64	63	67	65	67	66	74	70	68	69	58
Don't know	10	3	5	4	4	4	3	4	5	3	3	3	4	3	4
55–64															
Very scientific	10	8	11	5	5	3	8	7	10	6	6	3	4	6	8
Sort of scientific	32	33	24	33	25	18	20	17	27	27	25	24	26	24	31
Not at all scientific	44	56	56	56	59	77	66	69	58	62	66	68	67	65	57
Don't know	15	3	9	5	10	2	6	7	6	5	3	5	4	5	4
≥65															
Very scientific	5	12	11	6	5	7	10	11	11	6	6	5	5	2	8
Sort of scientific	26	24	26	27	29	27	22	31	20	31	26	21	21	24	25
Not at all scientific	50	52	55	60	53	60	55	47	57	54	64	68	65	67	62
Don't know	19	12	8	6	13	6	12	11	13	9	3	7	9	8	5
Trend factual knowledge of science scale (quartile)[a]															
Top															
Very scientific	NA	NA	NA	NA	NA	2	3	2	2	3	NA	2	3	1	6
Sort of scientific	NA	NA	NA	NA	NA	20	18	21	21	20	NA	14	18	18	19
Not at all scientific	NA	NA	NA	NA	NA	76	78	76	75	75	NA	82	78	79	74
Don't know	NA	NA	NA	NA	NA	2	1	1	1	2	NA	1	1	1	1

Appendix table 7-13

Public assessment of astrology, by respondent characteristic: 1979–2012

(Percent)

Characteristic	1979 (*n* = 1,635)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,434)	2012 (*n* = 2,256)
Second															
Very scientific	NA	NA	NA	NA	NA	5	6	6	6	13	NA	5	5	5	9
Sort of scientific	NA	NA	NA	NA	NA	30	28	25	27	31	NA	25	27	30	32
Not at all scientific	NA	NA	NA	NA	NA	63	64	66	65	54	NA	66	67	62	57
Don't know	NA	NA	NA	NA	NA	2	2	3	2	2	NA	4	2	3	2
Third															
Very scientific	NA	NA	NA	NA	NA	8	11	8	9	9	NA	7	6	11	14
Sort of scientific	NA	NA	NA	NA	NA	30	30	38	35	38	NA	33	37	33	40
Not at all scientific	NA	NA	NA	NA	NA	60	55	50	54	49	NA	55	55	53	44
Don't know	NA	NA	NA	NA	NA	2	4	3	2	4	NA	5	2	2	3
Bottom															
Very scientific	NA	NA	NA	NA	NA	10	8	11	13	10	NA	5	6	9	12
Sort of scientific	NA	NA	NA	NA	NA	34	34	31	31	38	NA	36	34	32	39
Not at all scientific	NA	NA	NA	NA	NA	50	45	44	38	42	NA	50	47	52	35
Don't know	NA	NA	NA	NA	NA	6	14	14	18	10	NA	8	13	6	13
Understanding of scientific inquiry[b]															
Understands scientific inquiry															
Very scientific	NA	NA	NA	NA	NA	NA	2	3	4	4	2	4	3	2	5
Sort of scientific	NA	NA	NA	NA	NA	NA	24	26	22	29	19	19	18	24	26
Not at all scientific	NA	NA	NA	NA	NA	NA	74	70	73	66	78	75	77	73	68
Don't know	NA	NA	NA	NA	NA	NA	1	1	2	1	1	2	2	1	1
Doesn't understand scientific inquiry															
Very scientific	NA	NA	NA	NA	NA	NA	9	9	9	12	8	5	6	11	12
Sort of scientific	NA	NA	NA	NA	NA	NA	29	31	32	33	31	31	33	32	35
Not at all scientific	NA	NA	NA	NA	NA	NA	55	53	53	49	58	58	56	54	48
Don't know	NA	NA	NA	NA	NA	NA	6	7	7	6	3	5	5	4	5

* = < 0.5% responded; NA = not available, question not asked.

[a] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.
[b] See notes to appendix table 7-11 for an explanation of scientific inquiry. Because 41 survey respondents in 2001 were not asked all of the questions related to understanding scientific inquiry, it is not possible to conclude whether they understood scientific inquiry.

NOTES: Responses to *Would you say that astrology is very scientific, sort of scientific, or not at all scientific?* Table includes all years for which data were collected. Percentages may not add to 100% because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1979–2001); University of Michigan, Survey of Consumer Attitudes (2004); University of Chicago, National Opinion Research Center, General Social Survey (2006–12).

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Appendix table 7-14

Public self-assessment of knowledge about causes of environmental problems, by country/economy: 2010

Country/economy	Number	Mean score[a]	Knowledge, on scale of 1–5 (%): Know nothing at all 1	2	3	4	Know a great deal 5	Can't choose/ no answer (%)
United States	1,380	2.9	12	17	41	20	7	3
Argentina	1,125	2.9	15	18	39	18	10	*
Australia	NA	NA	NA	NA	NA	NA	NA	NA
Austria	1,006	3.2	3	16	46	28	6	2
Belgium	1,076	3.1	5	16	43	23	6	7
Bulgaria	967	2.9	11	21	36	20	8	3
Canada	974	3.4	3	12	40	33	11	1
Chile	1,419	2.8	18	16	40	17	8	2
Croatia	1,192	3.2	6	15	41	25	11	1
Czech Republic	1,410	2.9	8	27	41	18	5	1
Denmark	1,255	3.2	3	13	45	27	8	4
Finland	1,151	3.4	2	10	38	35	10	5
France	2,098	3.3	6	13	36	27	13	5
Germany	1,370	3.2	5	14	41	29	9	3
Germany (East)	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,194	3.3	8	18	27	25	21	2
Italy	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,241	2.8	6	29	40	17	3	5
Latvia	955	3.0	6	22	39	21	7	5
Lithuania	993	2.8	9	28	39	19	3	3
Mexico	1,605	2.9	11	21	39	19	8	2
Netherlands	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,130	3.3	3	13	41	31	8	3
Northern Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,345	3.6	2	9	37	30	20	3
Philippines	1,175	3.2	11	16	30	22	17	2
Poland	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,569	2.8	16	19	37	19	7	3
Slovak Republic	1,111	2.7	13	23	41	15	4	4
Slovenia	1,071	3.4	3	10	45	30	11	1
South Africa	3,044	2.8	15	28	26	21	9	2
South Korea	1,566	2.8	10	23	43	19	4	1
Spain	2,539	2.8	12	22	42	20	4	1
Sweden	1,155	3.2	3	15	44	28	8	2
Switzerland	1,201	3.3	3	13	41	34	8	1
Taiwan	2,208	3.1	9	15	40	26	10	0
Turkey	1,608	2.9	11	18	37	23	7	3
United Kingdom	885	3.1	5	16	44	23	8	4

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = know nothing at all and 5 = know a great deal. It does not include respondents who said "can't choose" or did not answer the question.

NOTES: Responses to *How much do you feel you know about the causes of these sorts of environmental problems?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-15

Public self-assessment of knowledge about solutions to environmental problems, by country/economy: 2010

Country/economy	Number	Mean score[a]	Knowledge, on scale of 1–5 (%): Know nothing at all 1	2	3	4	Know a great deal 5	Can't choose/ no answer (%)
United States	1,378	3	19	26	38	11	3	4
Argentina	1,117	3	23	21	34	14	7	1
Australia	NA	NA	NA	NA	NA	NA	NA	NA
Austria	996	3	5	22	50	18	3	3
Belgium	1,036	3	8	24	40	14	3	11
Bulgaria	950	3	16	26	35	13	5	5
Canada	955	3	5	22	45	21	6	2
Chile	1,419	3	21	19	42	12	4	2
Croatia	1,183	3	11	22	40	18	7	2
Czech Republic	1,405	3	11	31	40	12	4	2
Denmark	1,245	3	6	26	42	16	5	5
Finland	1,136	3	3	17	42	26	6	6
France	2,067	3	10	21	36	21	6	6
Germany	1,340	3	9	24	42	17	4	5
Germany (East)	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,187	3	18	25	29	16	9	2
Italy	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,224	3	10	35	36	11	2	6
Latvia	938	3	9	29	39	13	3	6
Lithuania	985	3	12	36	35	12	2	3
Mexico	1,601	3	16	21	36	19	7	2
Netherlands	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,125	3	5	25	40	22	5	4
Northern Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,336	3	4	21	41	20	10	3
Philippines	1,167	3	11	18	34	19	14	3
Poland	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,550	2	28	24	30	11	2	4
Slovak Republic	1,103	2	21	25	37	11	2	5
Slovenia	1,063	3	4	16	49	24	6	2
South Africa	3,027	3	19	28	26	16	8	2
South Korea	1,568	3	14	27	42	14	3	1
Spain	2,529	3	18	29	36	13	2	1
Sweden	1,142	3	7	29	40	17	4	3
Switzerland	1,181	3	7	23	45	20	3	3
Taiwan	2,207	3	17	25	37	16	5	*
Turkey	1,665	NA	NA	NA	NA	NA	NA	NA
United Kingdom	875	3	6	24	42	18	4	5

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = know nothing at all and 5 = know a great deal. It does not include respondents who said "can't choose" or did not answer the question.

NOTES: Responses to *How much do you feel you know about solutions to these sorts of environmental problems?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-16

Public assessment of benefits and harms of scientific research, by respondent characteristic: 2012

(Percent)

Characteristic	Benefits strongly outweigh harmful results	Benefits slightly outweigh harmful results	Benefits are about equal to harmful results	Harmful results slightly outweigh benefits	Harmful results strongly outweigh benefits	Don't know
All adults (*n* = 2,256)	50	22	13	6	2	8
Sex						
Male (*n* = 1,011)	52	23	12	5	2	5
Female (*n* = 1,245)	48	20	14	6	1	9
Formal education						
< High school (*n* = 308)	24	31	18	7	2	18
High school diploma (*n* = 671)	43	22	15	7	2	10
Some college (*n* = 608)	48	21	17	6	2	6
Bachelor's degree (*n* = 429)	70	19	6	3	1	2
Graduate/professional degree (*n* = 240)	79	13	5	2	*	0
Science/mathematics education[a]						
Low (*n* = 1,248)	42	25	15	6	2	10
Middle (*n* = 398)	54	23	12	6	1	3
High (*n* = 484)	72	15	8	3	1	1
Family income (quartile)[b]						
Top (*n* = 446)	70	16	7	4	*	2
Second (*n* = 494)	54	23	14	3	1	5
Third (*n* = 521)	45	24	12	8	2	8
Bottom (*n* = 563)	35	25	18	9	3	9
Age (years)[b]						
18–24 (*n* = 140)	45	26	15	9	1	3
25–34 (*n* = 357)	45	24	18	6	1	5
35–44 (*n* = 385)	48	24	12	6	2	8
45–54 (*n* = 423)	53	22	13	4	2	7
55–64 (*n* = 420)	52	18	11	6	3	9
≥ 65 (*n* = 504)	56	18	11	4	1	10
Trend factual knowledge of science scale (quartile)[c]						
Top (*n* = 616)	70	17	8	2	1	2
Second (*n* = 655)	56	20	13	7	2	2
Third (*n* = 583)	38	26	19	7	2	8
Bottom (*n* = 402)	23	27	14	8	2	27

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.

NOTES: Responses to *People have frequently noted that scientific research has produced benefits and harmful results. Would you say that, on balance, the benefits of scientific research have outweighed the harmful results, or have the harmful results of scientific research been greater than its benefits?* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

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Appendix table 7-17

Public assessment of whether science and technology result in more opportunities for next generation, by respondent characteristic: 2012

(Percent)

Characteristic	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
All adults (*n* = 2,256)	26	61	9	1	3
Sex					
Male (*n* = 1,011)	27	59	10	2	2
Female (*n* = 1,245)	25	62	8	1	4
Formal education					
< High school (*n* = 308)	29	52	9	2	9
High school diploma (*n* = 671)	19	67	11	1	3
Some college (*n* = 608)	28	63	8	1	1
Bachelor's degree (*n* = 429)	31	56	11	*	1
Graduate/professional degree (*n* = 240)	30	59	5	1	5
Science/mathematics education[a]					
Low (*n* = 1,248)	24	62	9	1	4
Middle (*n* = 398)	31	55	12	*	2
High (*n* = 484)	30	62	7	1	1
Family income (quartile)[b]					
Top (*n* = 446)	30	58	8	1	2
Second (*n* = 494)	25	65	8	1	2
Third (*n* = 521)	23	65	9	0	2
Bottom (*n* = 563)	26	58	10	2	4
Age (years)[b]					
18–24 (*n* = 140)	25	63	9	3	*
25–34 (*n* = 357)	25	65	7	1	3
35–44 (*n* = 385)	28	59	9	1	3
45–54 (*n* = 423)	23	61	11	*	5
55–64 (*n* = 420)	28	57	11	1	2
≥ 65 (*n* = 504)	26	62	8	*	4
Trend factual knowledge of science scale (quartile)[c]					
Top (*n* = 616)	31	58	10	1	1
Second (*n* = 655)	25	63	9	1	2
Third (*n* = 583)	24	65	9	1	1
Bottom (*n* = 402)	23	56	9	2	11

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.

NOTES: Responses to *Because of science and technology, there will be more opportunities for the next generation.* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

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Appendix table 7-18

Public assessment of whether science makes life change too fast, by respondent characteristic: 2012

(Percent)

Characteristic	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
All adults (*n* = 2,256)	9	33	51	5	3
Sex					
Male (*n* = 1,011)	9	33	50	6	2
Female (*n* = 1,245)	9	34	51	4	3
Formal education					
< High school (*n* = 308)	12	43	33	4	8
High school diploma (*n* = 671)	7	38	49	3	2
Some college (*n* = 608)	10	31	53	4	2
Bachelor's degree (*n* = 429)	8	25	59	7	1
Graduate/professional degree (*n* = 240)	7	28	57	7	1
Science/mathematics education[a]					
Low (*n* = 1,248)	8	37	47	3	4
Middle (*n* = 398)	10	31	52	5	1
High (*n* = 484)	8	25	60	8	*
Family income (quartile)[b]					
Top (*n* = 446)	5	28	56	10	1
Second (*n* = 494)	8	31	56	3	2
Third (*n* = 521)	9	37	48	4	2
Bottom (*n* = 563)	13	34	47	3	3
Age (years)[b]					
18–24 (*n* = 140)	5	32	52	10	1
25–34 (*n* = 357)	7	36	53	3	2
35–44 (*n* = 385)	11	30	51	4	3
45–54 (*n* = 423)	10	34	49	3	5
55–64 (*n* = 420)	10	36	47	4	3
≥ 65 (*n* = 504)	7	33	54	4	2
Trend factual knowledge of science scale (quartile)[c]					
Top (*n* = 616)	6	25	60	8	1
Second (*n* = 655)	10	31	54	5	1
Third (*n* = 583)	9	44	44	1	2
Bottom (*n* = 402)	11	38	38	3	10

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.

NOTES: Responses to *Science makes our way of life change too fast.* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

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Appendix table 7-19

Public assessment of whether we believe too often in science, and not enough in feelings and faith, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
United States	1,472	2	1,184	3	1,375	3	9	33	26	23	7	4
Argentina	NA	NA	NA	NA	1,071	3	6	41	23	23	2	5
Australia	1,762	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	976	3	989	3	9	40	21	19	8	3
Belgium	NA	NA	NA	NA	1,093	3	4	26	34	24	7	5
Bulgaria	910	2	773	3	866	3	7	32	30	17	2	13
Canada	1,427	3	1,072	3	968	3	5	21	25	24	24	2
Chile	NA	NA	1,446	3	1,361	3	7	39	35	12	2	5
Croatia	NA	NA	NA	NA	1,184	3	8	26	32	25	8	2
Czech Republic	944	2	1,162	3	1,368	3	7	31	31	21	6	4
Denmark	NA	NA	988	3	1,234	3	7	24	20	21	23	5
Finland	NA	NA	1,371	3	1,141	3	3	23	26	31	11	5
France	NA	NA	NA	NA	2,100	3	7	23	30	18	17	6
Germany	NA	NA	NA	NA	1,309	3	8	30	26	21	8	7
Germany (East)	1,004	3	476	3	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	959	3	895	3	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,158	3	932	3	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,056	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	927	2	1,143	3	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,128	3	1,188	3	1,143	3	9	29	25	23	8	6
Italy	981	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,122	3	982	3	1,170	3	3	13	55	13	6	10
Latvia	NA	NA	925	3	915	3	10	32	26	20	4	9
Lithuania	NA	NA	NA	NA	913	3	5	27	33	23	3	10
Mexico	NA	NA	1,162	3	1,586	2	21	37	17	17	6	3
Netherlands	1,716	3	1,544	3	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,224	3	1,073	3	1,129	3	6	27	28	27	8	3
Northern Ireland[b]	699	2	701	2	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,339	3	1,369	3	1,329	3	3	24	25	32	13	4
Philippines	1,194	3	1,153	3	1,188	2	16	42	26	11	3	1
Poland	1,262	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	927	2	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,485	3	1,429	3	1,352	3	7	27	33	13	4	16
Slovak Republic	NA	NA	NA	NA	1,072	3	9	22	31	17	12	9
Slovenia	882	3	965	3	1,033	3	5	37	29	20	4	5
South Africa	NA	NA	NA	NA	2,967	2	18	45	14	15	4	4
South Korea	NA	NA	NA	NA	1,535	3	9	36	31	18	3	3
Spain	1,136	2	897	2	2,373	3	11	38	20	18	6	7
Sweden	NA	NA	989	3	1,125	3	3	24	30	24	14	5
Switzerland	NA	NA	971	2	1,190	3	7	41	27	20	3	2

Appendix table 7-19

Public assessment of whether we believe too often in science, and not enough in feelings and faith, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,162	3	2	36	15	43	1	2
Turkey	NA	NA	NA	NA	1,557	3	6	15	17	43	12	6
United Kingdom[b]	NA	NA	NA	NA	872	3	5	24	30	24	11	6

NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = strongly agree and 5 = strongly disagree. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *How much do you agree or disagree with the statement: We believe too often in science, and not enough in feelings and faith?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

Science and Engineering Indicators 2014

Appendix table 7-20

Public assessment of whether modern science does more harm than good, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
United States	1,459	4.0	1,150	3.0	1,358	4.0	3	11	21	45	15	4
Argentina	NA	NA	NA	NA	1,052	3.0	3	32	25	28	4	7
Australia	1,757	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	913	3.0	1,000	3.0	5	24	22	36	11	2
Belgium	NA	NA	NA	NA	1,090	3.0	3	12	33	40	8	5
Bulgaria	932	3.0	807	4.0	883	3.0	6	20	30	28	5	11
Canada	1,423	4.0	1,084	4.0	961	4.0	2	10	23	40	23	2
Chile	NA	NA	1,447	3.0	1,349	3.0	4	34	36	18	3	6
Croatia	NA	NA	NA	NA	1,180	3.0	6	20	36	28	8	2
Czech Republic	966	3.0	1,186	4.0	1,379	3.0	5	16	28	35	12	3
Denmark	NA	NA	983	4.0	1,226	4.0	3	10	17	27	37	6
Finland	NA	NA	1,367	4.0	1,143	4.0	3	11	16	40	26	5
France	NA	NA	NA	NA	2,103	3.0	5	15	28	31	15	6
Germany	NA	NA	NA	NA	1,318	4.0	4	12	19	40	18	6
Germany (East)	1,031	4.0	504	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	962	3.0	913	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,157	3.0	928	3.0	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,050	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	928	3.0	1,158	3.0	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,142	4.0	1,198	3.0	1,157	4.0	3	16	22	36	18	5
Italy	979	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,190	3.0	1,052	3.0	1,186	3.0	1	7	47	23	12	9
Latvia	NA	NA	922	3.0	915	3.0	5	16	26	35	10	9
Lithuania	NA	NA	NA	NA	930	3.0	3	16	28	38	8	8
Mexico	NA	NA	1,190	3.0	1,595	3.0	20	30	20	21	7	3
Netherlands	1,752	4.0	1,547	4.0	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,220	4.0	1,072	4.0	1,127	4.0	3	16	24	41	13	3
Northern Ireland[b]	700	3.0	676	3.0	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,316	4.0	1,367	4.0	1,301	4.0	1	5	18	44	27	6
Philippines	1,193	3.0	1,162	3.0	1,191	3	15	37	29	15	3	1
Poland	1,366	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	907	3.0	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,648	3.0	1,515	4.0	1,420	3.0	6	17	28	28	9	11
Slovak Republic	NA	NA	NA	NA	1,098	3.0	4	19	33	23	15	6
Slovenia	900	3.0	994	3.0	1,031	3.0	4	32	28	25	6	5
South Africa	NA	NA	NA	NA	2,891	3.0	11	32	23	22	5	7
South Korea	NA	NA	NA	NA	1,544	3.0	3	18	27	38	11	2
Spain	1,125	3.0	881	4.0	2,380	4.0	4	17	17	42	13	7
Sweden	NA	NA	956	4.0	1,092	4.0	2	6	27	33	25	8
Switzerland	NA	NA	962	3.0	1,187	3.0	3	19	29	39	8	2

Appendix table 7-20

Public assessment of whether modern science does more harm than good, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,173	3.0	2	28	14	53	2	2
Turkey	NA	NA	NA	NA	1,459	3.0	7	21	19	33	9	12
United Kingdom[b]	NA	NA	NA	NA	865	4.0	3	16	25	35	15	6

NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = strongly agree and 5 = strongly disagree. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *How much do you agree or disagree with the statement: Overall, modern science does more harm than good?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-21

Public attitudes toward science and technology in the United States and Europe, by country/economy: 2011

(Mean score)

Statement	United States	Total Europe	Czech Republic	Poland	Germany	Austria	Denmark	Spain	France	Italy	Netherlands	United Kingdom
Promises of science												
Thanks to science, people's health is improving all the time.	7.6	7.4	7.7	6.4	7.2	7.4	7.5	7.9	7.5	7.3	7.3	7.8
Science is the motor of progress.	6.9	7.4	7.9	7.9	7.8	7.5	7.4	7.4	7.3	7.3	7.1	6.9
Science is the best way to understand the world.	6.5	6.4	6.3	7.2	6.6	6.2	6.4	6.1	6.1	6.6	5.7	6.4
Science is central to a society's culture.	6.3	6.8	5.5	6.3	7.3	7.0	5.3	7.3	7.0	7.0	6.3	5.9
Science has reduced the fears and superstitions of the past.	6.2	6.7	6.9	6.6	7.1	6.8	7.5	6.5	6.4	6.8	6.6	6.2
Science promotes a freer society.	5.9	5.8	6.1	6.2	5.8	6.2	6.3	6.0	5.1	6.4	5.7	5.3
Science has an answer for all the major problems.	5.0	5.1	5.2	5.7	5.1	5.6	4.4	5.3	4.5	6.0	4.3	4.0
Reservations about science												
Scientists should not change the workings of nature.	6.7	7.0	7.9	6.6	7.6	7.4	6.5	7.2	7.3	7.0	5.7	6.6
Technological advances are among the main reasons for today's high unemployment.	5.0	5.3	5.4	6.0	5.1	4.9	4.6	5.7	5.6	5.2	4.9	5.1
Science has made everything more complex and hard to understand.	4.8	5.2	5.4	5.9	4.9	5.2	4.7	5.5	5.0	5.2	4.7	5.1
Science makes our way of life change too fast.	4.7	6.0	7.1	6.6	6.0	6.4	5.0	6.9	5.9	5.9	5.4	5.0
People would be better off if they lived a simpler life, without so much science and technology.	4.4	5.1	5.0	5.7	4.0	4.7	3.4	5.9	5.4	5.4	4.6	5.0
Technological progress creates an artificial and inhuman way of life.	4.3	4.9	4.8	5.3	4.4	4.9	3.9	5.4	5.3	5.1	4.3	4.6
Science increases the risk of war.	4.3	4.9	5.5	5.6	4.1	5.1	4.5	5.5	5.0	5.2	4.7	4.7
Science has created a world that is full of risks for people in their daily lives.	4.3	4.8	5.5	6.3	4.1	4.7	3.8	5.4	4.8	5.0	4.3	4.4
Science drives out religion.	3.9	4.9	5.0	4.9	4.7	5.1	5.1	4.3	5.6	5.1	5.0	4.3
Science harms rather than helps the environment.	3.4	4.1	4.3	4.3	3.8	4.6	3.3	4.5	4.2	4.7	4.2	3.5
Science destroys people's moral values.	3.3	3.8	3.7	4.0	3.4	4.4	3.3	4.3	3.8	4.5	3.7	3.2

NOTES: Responses to *I'm now going to read you some statements and would like you to tell me how much you agree or disagree with each.* Mean score is based on a scale from 0 to 10, where 0 = totally disagree and 10 = totally agree.

SOURCE: BBVA Foundation, Department of Social Studies and Public Opinion, *BBVA Foundation International Study on Scientific Culture: General Attitudes to Science* (2011), http://www.fbbva.es/TLFU/dat/culturacientificanotadeprensalarga.EN.pdf, accessed 29 March 2013.

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Appendix table 7-22

Public opinion on whether federal government should fund basic scientific research: 1985–2012

(Percent)

Opinion	1985 (*n* = 1,986)	1988 (*n* = 2,041)	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1995 (*n* = 2,006)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2004 (*n* = 2,025)	2006 (*n* = 1,864)	2008 (*n* = 2,021)	2010 (*n* = 1,434)	2012 (*n* = 2,256)
Strongly agree	9	16	18	14	17	22	21	19	29	32	24	23	21
Agree	70	65	63	63	61	57	61	62	53	55	60	59	62
Disagree	16	14	15	18	17	15	13	14	15	8	11	12	12
Strongly disagree	*	1	1	2	2	3	2	1	2	1	1	2	2
Don't know	5	4	4	3	3	3	3	4	1	3	4	4	4

* = < 0.5% responded.

NOTES: Responses to *Even if it brings no immediate benefits, scientific research that advances the frontiers of knowledge is necessary and should be supported by the federal government.* Percentages may not add to 100% because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1985–2001); University of Michigan, Survey of Consumer Attitudes (2004); University of Chicago, National Opinion Research Center, General Social Survey (2006–12).

Science and Engineering Indicators 2014

Appendix table 7-23

Public opinion on whether federal government should fund basic scientific research, by respondent characteristic: 2012

(Percent)

Characteristic	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
All adults (*n* = 2,256)	21	62	12	2	4
Sex					
Male (*n* = 1,011)	22	62	11	2	2
Female (*n* = 1,245)	21	62	12	1	5
Formal education					
< High school (*n* = 308)	19	56	12	2	11
High school diploma (*n* = 671)	15	64	14	2	5
Some college (*n* = 608)	21	63	13	1	1
Bachelor's degree (*n* = 429)	23	65	9	1	2
Graduate/professional degree (*n* = 240)	40	54	4	1	1
Science/mathematics education[a]					
Low (*n* = 1,248)	18	63	13	2	5
Middle (*n* = 398)	24	63	11	2	1
High (*n* = 484)	29	61	8	1	1
Family income (quartile)[b]					
Top (*n* = 446)	26	61	11	1	1
Second (*n* = 494)	22	67	8	1	3
Third (*n* = 521)	16	63	15	2	4
Bottom (*n* = 563)	23	59	11	2	5
Age (years)[b]					
18–24 (*n* = 140)	18	71	8	2	1
25–34 (*n* = 357)	17	67	10	2	3
35–44 (*n* = 385)	25	62	8	*	4
45–54 (*n* = 423)	25	59	11	1	5
55–64 (*n* = 420)	22	56	16	4	3
≥ 65 (*n* = 504)	19	62	14	1	5
Trend factual knowledge of science scale (quartile)[c]					
Top (*n* = 616)	28	60	8	2	2
Second (*n* = 655)	22	63	12	2	1
Third (*n* = 583)	17	64	15	1	3
Bottom (*n* = 402)	14	59	12	2	13

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] Quartiles are based on the percentage of the nine questions in the trend factual knowledge of science scale that were answered correctly. See notes to appendix table 7-8 for the questions.

NOTES: Responses to *Even if it brings no immediate benefits, scientific research that advances the frontiers of knowledge is necessary and should be supported by the federal government.* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-24

Public assessment of government spending, by policy area: 1981–2012

(Percent)

Policy area	1981 (*n* = 1,611)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)[a]	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2002 (*n* = 1,358)[b]	2004 (*n* = 1,401)[c]	2006 (*n* = 2,992)[d]	2008 (*n* = 3,559)[e]	2010 (*n* = 4,901)[f]	2012 (*n* = 4,820)[g]
Education															
Too little	62	71	73	76	77	81	76	75	76	75	75	73	74	74	75
About right	30	23	22	19	17	14	16	18	17	19	19	20	21	20	18
Too much	6	5	3	4	4	4	6	6	5	5	5	5	5	5	7
Don't know	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1
Assistance for the poor															
Too little	45	NA	54	55	57	56	43	49	53	66	69	68	68	61	61
About right	29	NA	29	30	25	26	30	30	29	24	23	22	23	27	26
Too much	24	NA	13	12	15	17	23	19	15	8	6	8	7	10	10
Don't know	2	NA	3	3	3	2	4	2	2	2	1	2	2	2	3
Health															
Too little	61	NA	68	67	75	79	68	71	70	73	77	72	75	58	61
About right	31	NA	26	28	20	15	23	22	24	21	17	19	17	22	23
Too much	6	NA	3	2	3	4	7	6	4	4	4	7	7	17	14
Don't know	2	NA	2	2	1	1	2	2	2	1	1	2	2	2	2
Developing alternative energy sources															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	61	60
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28	27
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	9
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	4
Environment															
Too little	52	54	69	76	76	72	65	65	63	60	63	67	66	57	58
About right	32	31	21	18	17	20	23	25	28	29	27	23	23	30	30
Too much	13	11	6	4	5	7	8	7	6	8	7	7	8	10	10
Don't know	3	4	3	2	2	2	4	3	3	2	3	3	3	2	3
Social Security															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	63	61	58	53	54
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	33	27	30	32	35	34
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	5	5	5	8	7
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	4	4	4	4	4
Law enforcement															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	56	56	57	54	53	52
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	35	36	33	35	36	36
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	5	8	8	9	9
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3	2	2	2	3
Drug rehabilitation															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	56	53	55	51	49	48
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	34	31	34	36	34
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	10	9	9	10	10	13
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	4	5	5	5	6

Appendix table 7-24

Public assessment of government spending, by policy area: 1981–2012

(Percent)

Policy area	1981 (*n* = 1,611)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)[a]	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2002 (*n* = 1,358)[b]	2004 (*n* = 1,401)[c]	2006 (*n* = 2,992)[d]	2008 (*n* = 3,559)[e]	2010 (*n* = 4,901)[f]	2012 (*n* = 4,820)[g]
Assistance for child care															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	56	54	51	49	46	45
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	34	35	39	41	39
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	6	7	6	7	8
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	6	7	6	6	7
Highways and bridges															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	35	29	35	43	43	43
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	55	52	45	45	43
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	13	11	9	10	12
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3	3	3	2	2
Mass transportation															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	34	35	39	45	40	38
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	50	47	42	46	46
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	10	10	8	8	9	10
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	6	6	5	4	6
Supporting scientific research															
Too little	31	NA	29	34	30	34	34	37	36	34	38	41	36	36	38
About right	47	NA	46	48	47	43	46	43	44	46	45	41	46	47	45
Too much	18	NA	18	15	16	19	14	14	14	13	12	11	11	12	12
Don't know	4	NA	7	4	6	4	7	6	7	6	5	7	7	5	6
Parks and recreation															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	34	31	33	30	32	31
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	58	60	59	63	60	61
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	7	6	5	6	6
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	2	2	2	2	2
Assistance to blacks															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	32	29	29	26	27
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	46	42	44	46	45
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	17	13	18	15	16	16
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	8	9	11	11	11	13
Assistance to big cities															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	41	40	32	31	28	27
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	38	36	38	38	38
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	12	22	20	24	24
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	10	10	11	10	11
National defense															
Too little	34	19	11	11	15	15	23	31	29	33	33	26	23	25	24
About right	38	31	36	35	42	42	42	40	41	44	38	33	34	39	40
Too much	26	47	50	52	40	40	32	25	25	20	26	39	40	33	32
Don't know	2	3	3	3	3	2	4	4	5	3	3	3	3	3	3

Appendix table 7-24

Public assessment of government spending, by policy area: 1981–2012

(Percent)

Policy area	1981 (*n* = 1,611)	1983 (*n* = 1,615)	1985 (*n* = 1,986)	1988 (*n* = 2,041)[a]	1990 (*n* = 2,005)	1992 (*n* = 1,995)	1997 (*n* = 2,000)	1999 (*n* = 1,882)	2001 (*n* = 1,574)	2002 (*n* = 1,358)[b]	2004 (*n* = 1,401)[c]	2006 (*n* = 2,992)[d]	2008 (*n* = 3,559)[e]	2010 (*n* = 4,901)[f]	2012 (*n* = 4,820)[g]
Space exploration															
Too little	18	17	9	17	9	12	14	15	11	12	14	14	14	16	22
About right	37	42	43	38	37	36	38	36	38	47	43	45	45	44	41
Too much	42	39	45	43	52	50	45	46	48	35	37	35	36	35	29
Don't know	2	2	2	2	2	1	3	3	3	6	6	6	6	5	7
Welfare															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	20	23	24	23	22	20
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	34	36	37	35	33
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	40	40	37	36	41	43
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	2	3	4	3	3
Assistance to other countries															
Too little	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	10	11	11	8	7
About right	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	26	24	26	28	23
Too much	NA	NA	NA	NA	NA	NA	NA	NA	NA	63	61	62	59	60	65
Don't know	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	4	4	4	3	4

NA = not available, question not asked.

[a] In 1988, "national defense" was asked of 1,021 survey respondents.
[b] In 2002, "assistance for the poor" was asked of 1,407 survey respondents; "education," "environment," "Social Security," "child care," "highways and bridges," "mass transportation," "parks and recreation," and "national defense" were asked of 2,765 respondents.
[c] In 2004, "assistance for the poor" was asked of 1,411 survey respondents; "education," "environment," "Social Security," "child care," "highways and bridges," "mass transportation," "parks and recreation," and "national defense" were asked of 2,812 respondents.
[d] In 2006, "assistance for the poor" was asked of 1,508 survey respondents; "welfare" was asked of 1,484 respondents.
[e] In 2008, "assistance for the poor" was asked of 1,781 survey respondents; "welfare" was asked of 1,778 respondents; "environment," "health," "law enforcement," "drug rehabilitation," "assistance to big cities," and "space exploration" were asked of 3,558 respondents.
[f] In 2010, "assistance for the poor" was asked of 2,480 survey respondents; "welfare" was asked of 2,421 respondents; "developing alternative energy sources" was asked of 2,044 respondents; "environment," "health," "law enforcement," and "national defense" were asked of 4,900 respondents; "assistance to big cities" was asked of 4,899 respondents; "assistance to blacks" was asked of 4,892 respondents.
[g] In 2012, "assistance for the poor" was asked of 2,435 survey respondents; "welfare" was asked of 2,385 respondents; "developing alternative energy sources" was asked of 1,974 respondents.

NOTES: Responses to *We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one, I'd like you to tell me if you think that the Government is spending too little money on it, about the right amount, or too much.* Beginning in 2002, two versions of the question were administered with different wording for some policy areas. Wording also varied for some policy areas in 1981–2001. Table combines data for policy areas with similar wording or meaning (see below). Percentages may not add to 100% because of rounding.

Policy areas with different wording in 1981–2001 or alternate wording in the second version of the question in 2002–12:

- *Education:* "improving education" in 1981–2001; alternate wording "improving the nation's education system" in 2002–12.
- *Assistance for the poor:* "helping low-income persons" in 1981–2001; no alternate wording in 2002–12.
- *Environment:* "reducing pollution" in 1981–2001; alternate wording "improving and protecting the environment" in 2002–12.
- *Health:* "improving health care" in 1981–2001; alternate wording "improving and protecting the nation's health" in 2002–12.
- *Law enforcement:* alternate wording "halting the rising crime rate" in 2002–12.
- *Drug rehabilitation:* alternate wording "dealing with drug addiction" in 2002–12.
- *Assistance to big cities:* alternate wording "solving the problems of the big cities" in 2002–12.
- *Assistance to blacks:* alternate wording "improving the conditions of blacks" in 2002–12.
- *National defense:* "improving national defense" in 1981–2001; alternate wording "military, armaments, and defense" in 2002–12.
- *Space exploration:* alternate wording "space exploration program" in 2002–12.
- *Assistance to other countries:* alternate wording "foreign aid" in 2002–12.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1981–2001); University of Chicago, National Opinion Research Center, General Social Survey (2002–12).

Science and Engineering Indicators 2014

Appendix table 7-25

Public confidence in institutional leaders, by type of institution: 2012–1973

(Percent)

Year (number)	Military	Scientific community	Medicine	U.S. Supreme Court	Education	Organized religion	Major companies	Executive branch of the federal government	Organized labor	Banks and financial institutions	Television	Press	Congress	Mean[a]
2012 (*n* = 3,258)	53	41	40	27	25	19	16	14	12	11	9	8	6	22.4
2010 (*n* = 3,278)	52	40	41	30	26	18	12	16	11	10	11	9	10	23.0
2008 (*n* = 2,390)	48	38	40	29	28	20	16	10	11	20	9	8	10	22.3
2006 (*n* = 1,989)	47	41	40	33	28	24	18	16	12	30	9	10	12	24.1
2004 (*n* = 876)	58	42	38	31	28	23	18	22	13	29	10	9	15	25.5
2002 (*n* = 912)	56	37	37	36	26	19	17	27	12	22	9	10	14	25.0
2000 (*n* = 1,896)	40	41	44	32	27	28	28	13	13	29	10	10	13	25.0
1998 (*n* = 1,911)	36	40	45	31	27	27	26	13	11	26	10	9	10	23.8
1996 (*n* = 1,925)	39	40	45	28	23	25	24	10	11	24	10	11	7	22.8
1994 (*n* = 2,011)	37	39	42	31	25	25	26	11	11	18	10	10	8	23.0
1993 (*n* = 1,057)	41	37	40	30	22	22	21	11	8	14	12	11	6	21.8
1991 (*n* = 1,017)	61	40	48	37	30	25	20	27	11	12	15	16	18	28.8
1990 (*n* = 899)	33	38	45	34	27	23	26	24	11	17	14	14	16	25.3
1989 (*n* = 1,035)	33	41	47	35	30	22	25	20	9	19	14	17	18	25.8
1988 (*n* = 997)	35	39	52	35	30	21	25	16	11	27	14	19	16	26.0
1987 (*n* = 1,819)	34	41	51	35	36	30	28	17	12	27	12	19	16	27.5
1986 (*n* = 1,470)	31	39	47	30	28	25	25	21	9	21	15	19	16	25.4
1984 (*n* = 989)	36	44	50	33	28	30	30	19	8	30	13	17	13	26.9
1983 (*n* = 1,599)	30	42	52	27	28	28	24	13	8	23	12	13	10	24.1
1982 (*n* = 1,860)	29	35	45	30	35	33	21	17	13	26	15	18	13	25.3
1980 (*n* = 1,468)	28	41	53	24	30	35	27	12	15	32	15	22	9	26.0
1978 (*n* = 1,532)	30	36	46	28	28	30	21	12	11	32	14	20	13	24.1
1977 (*n* = 1,530)	36	41	53	36	40	40	27	27	15	42	18	25	19	31.4
1976 (*n* = 1,499)	40	42	54	34	37	30	21	13	11	39	18	28	13	28.6
1975 (*n* = 1,490)	35	37	51	30	31	24	19	13	10	31	18	24	13	25.4
1974 (*n* = 1,484)	39	45	61	33	49	44	31	14	19	NA	23	25	17	33.4
1973 (*n* = 1,504)	32	37	54	31	37	34	29	29	15	NA	18	23	23	30.1

[a] Excludes banks and financial institutions.

NOTES: Data represent respondents expressing "great deal of confidence" when asked *As far as the people running these institutions are concerned, would you say that you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?* Sample size is not exact for all institutions. Table includes all years for which data were collected.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (1973–2012).

Science and Engineering Indicators 2014

Appendix table 7-26

Public self-assessment of knowledge of what scientists and engineers do day-to-day on their jobs, by respondent characteristic: 2012

(Percent)

Characteristic[b]	Knowledge of what scientists do[a]						Knowledge of what engineers do[a]					
	Excellent	Good	Fair	Poor	Very poor	Don't know	Excellent	Good	Fair	Poor	Very poor	Don't know
All adults (*n* = 1,152/1,104)	10	25	32	23	8	2	13	29	32	16	8	2
Sex												
Male (*n* = 521/490)	10	28	34	22	5	1	16	35	34	10	4	2
Female (*n* = 631/614)	9	23	31	24	10	3	10	24	31	22	11	3
Formal education												
< High school (*n* = 162/146)	11	25	24	20	13	8	16	32	21	11	11	10
High school diploma (*n* = 346/325)	9	19	33	30	9	1	9	19	38	22	10	2
Some college (*n* = 304/304)	8	27	33	22	8	2	12	32	31	17	8	1
Bachelor's degree (*n* = 224/205)	9	28	37	19	5	1	14	31	37	13	5	0
Graduate/professional degree (*n* = 116/124)	18	32	33	17	0	0	20	40	26	12	2	0
Science/mathematics education[c]												
Low (*n* = 626/622)	9	22	30	26	11	3	9	27	31	20	11	3
Middle (*n* = 207/191)	7	26	36	23	6	3	18	20	40	15	4	3
High (*n* = 251/233)	15	36	31	15	1	1	18	40	29	9	4	0
Family income (quartile)[d]												
Top (*n* = 240/206)	10	26	39	19	6	1	15	32	30	13	7	3
Second (*n* = 239/255)	7	22	33	28	9	2	13	31	35	14	6	1
Third (*n* = 281/240)	10	27	31	23	8	1	9	32	31	19	8	1
Bottom (*n* = 288/275)	14	24	28	23	9	1	13	26	30	18	11	2
Age (years)[d]												
18–24 (*n* = 76/64)	5	32	31	21	6	4	3	28	41	20	3	5
25–34 (*n* = 174/183)	8	33	24	28	4	3	7	29	30	21	12	1
35–44 (*n* = 201/184)	16	22	30	21	10	2	18	34	26	14	7	1
45–54 (*n* = 221/202)	12	20	31	24	11	3	17	25	35	13	7	3
55–64 (*n* = 229/191)	10	25	38	18	8	1	16	21	35	19	6	1
≥ 65 (*n* = 239/265)	7	22	38	27	6	2	11	34	31	13	8	2
Minor children at home[d]												
Yes (*n* = 344/339)	13	27	29	21	7	3	14	29	31	15	8	3
No (*n* = 787/752)	8	24	34	24	7	2	12	29	32	17	8	2
Trend factual knowledge of science scale (quartile)[e]												
Top (*n* = 333/283)	10	32	38	15	4	1	17	34	35	10	4	1

Appendix table 7-26

Public self-assessment of knowledge of what scientists and engineers do day-to-day on their jobs, by respondent characteristic: 2012

(Percent)

Characteristic[b]	Knowledge of what scientists do[a]						Knowledge of what engineers do[a]					
	Excellent	Good	Fair	Poor	Very poor	Don't know	Excellent	Good	Fair	Poor	Very poor	Don't know
Second (*n* = 329/326)	10	25	30	28	7	0	11	31	30	21	6	2
Third (*n* = 298/285)	11	25	31	24	8	1	10	28	32	16	12	2
Bottom (*n* = 192/210)	8	13	30	25	14	11	13	19	31	19	12	6

[a] Sample was split for this question: 1,152 survey respondents were asked about scientists, and 1,104 respondents were asked about engineers.
[b] First *n* is the number of survey respondents asked about scientists; second *n* is the number of respondents asked about engineers.
[c] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[d] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[e] See notes to appendix table 7-8 for an explanation of the trend factual knowledge of science scale.

NOTES: Responses to *Would you say your knowledge of what scientists/engineers do day-to-day on their jobs is excellent, good, fair, poor, or very poor?* Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-27

Public opinion on science and engineering careers for one's children, by respondent characteristic: 2012

(Percent)

Characteristic	How would you feel if your *daughter* wanted to be a *scientist*?				How would you feel if your *son* wanted to be a *scientist*?			
	Happy	Wouldn't care either way	Unhappy	Don't know	Happy	Wouldn't care either way	Unhappy	Don't know
All adults (*n* = 1,152)	80	18	1	1	80	18	1	1
Sex								
Male (*n* = 521)	81	17	1	*	82	17	1	1
Female (*n* = 631)	80	19	1	1	79	20	*	1
Formal education								
< High school (*n* = 162)	71	26	1	2	72	25	1	2
High school diploma (*n* = 346)	84	15	1	*	84	15	1	*
Some college (*n* = 304)	82	16	2	0	82	17	1	0
Bachelor's degree (*n* = 224)	80	19	0	1	80	19	0	1
Graduate/professional degree (*n* = 116)	80	17	2	0	80	20	0	0
Science/mathematics education[a]								
Low (*n* = 626)	81	18	1	1	81	18	1	1
Middle (*n* = 207)	79	18	2	*	78	21	*	1
High (*n* = 251)	80	19	1	0	80	20	0	*
Family income (quartile)[b]								
Top (*n* = 240)	80	17	2	*	80	19	*	1
Second (*n* = 239)	77	23	*	0	76	23	*	0
Third (*n* = 281)	81	18	1	1	81	17	1	1
Bottom (*n* = 288)	86	14	*	*	86	13	*	*
Age (years)[b]								
18–24 (*n* = 76)	75	21	3	0	75	25	0	0
25–34 (*n* = 174)	79	19	1	1	79	20	0	1
35–44 (*n* = 201)	88	12	*	0	87	13	*	0
45–54 (*n* = 221)	78	21	*	1	76	21	1	2
55–64 (*n* = 229)	79	19	2	0	79	19	2	0
≥ 65 (*n* = 239)	83	15	1	2	84	13	1	2
Minor children at home[b]								
Yes (*n* = 344)	83	15	1	1	82	17	*	1
No (*n* = 787)	79	19	1	1	79	19	1	1
Trend factual knowledge of science scale (quartile)[c]								
Top (*n* = 333)	81	17	2	*	81	18	*	*
Second (*n* = 329)	82	18	1	0	83	17	1	0
Third (*n* = 298)	80	20	1	0	79	20	1	0
Bottom (*n* = 192)	78	18	1	3	77	18	1	4

Appendix table 7-27

Public opinion on science and engineering careers for one's children, by respondent characteristic: 2012

(Percent)

Characteristic	How would you feel if your *daughter* wanted to be an *engineer*?				How would you feel if your *son* wanted to be an *engineer*?			
	Happy	Wouldn't care either way	Unhappy	Don't know	Happy	Wouldn't care either way	Unhappy	Don't know
All adults (*n* = 1,104)	84	15	*	1	85	14	*	1
Sex								
Male (*n* = 490)	86	13	1	*	88	12	*	*
Female (*n* = 614)	82	17	*	2	83	16	*	1
Formal education								
< High school (*n* = 146)	83	11	2	5	87	8	0	5
High school diploma (*n* = 325)	78	21	*	1	80	19	*	*
Some college (*n* = 304)	88	11	0	1	89	10	1	1
Bachelor's degree (*n* = 205)	84	15	0	*	84	16	0	0
Graduate/professional degree (*n* = 124)	87	12	1	0	86	14	0	0
Science/mathematics education[a]								
Low (*n* = 622)	84	15	1	1	85	14	*	1
Middle (*n* = 191)	87	11	0	3	87	10	0	3
High (*n* = 233)	85	15	*	0	88	12	0	0
Family income (quartile)[b]								
Top (*n* = 206)	87	10	0	2	87	11	0	2
Second (*n* = 255)	84	15	*	1	84	15	0	1
Third (*n* = 240)	84	14	1	*	88	12	0	0
Bottom (*n* = 275)	83	16	*	1	85	13	1	1
Age (years)[b]								
18–24 (*n* = 64)	58	37	0	5	65	30	0	5
25–34 (*n* = 183)	87	13	1	*	87	12	1	*
35–44 (*n* = 184)	88	12	0	0	89	11	*	0
45–54 (*n* = 202)	90	9	*	1	90	9	0	1
55–64 (*n* = 191)	84	15	*	1	85	14	0	1
≥ 65 (*n* = 265)	84	14	1	1	86	14	0	*
Minor children at home[b]								
Yes (*n* = 339)	89	10	0	2	90	8	0	2
No (*n* = 752)	81	18	1	1	83	16	*	*
Trend factual knowledge of science scale (quartile)[c]								
Top (*n* = 283)	88	11	0	1	88	12	0	1
Second (*n* = 326)	85	13	1	2	86	12	1	2
Third (*n* = 285)	82	17	*	*	85	15	0	0
Bottom (*n* = 210)	77	21	*	2	79	19	*	2

* = < 0.5% responded.

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses. Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[b] Categories do not add to total *n* because "don't know" responses and refusals to respond are not shown.
[c] See notes to appendix table 7-8 for an explanation of the trend factual knowledge of science scale.

NOTES: Responses to *If you had a daughter/son, how would you feel if she/he wanted to be a scientist/engineer—would you feel happy, unhappy, or would you not care one way or the other?* Sample was split for this question: 1,152 survey respondents were asked about scientists, and 1,104 respondents were asked about engineers. Percentages may not add to 100% because of rounding.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-28

Public perceptions of science and engineering occupations, by respondent characteristic: 1983, 2001, and 2012

(Mean agreement score)

Question/year	Formal education				Science/mathematics education[b]			Trend factual knowledge of science scale (quartile)[c]			
	< High school	High school diploma or associate degree[a]	Bachelor's degree	Graduate/ professional degree	Low	Middle	High	Top	Second	Third	Bottom
Scientists/engineers are helping to solve challenging problems.											
1983: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,557)	3.0	3.1	3.2	3.3	3.1	3.2	3.3	3.2	3.2	3.1	3.0
2012: scientists (*n* = 1,124)	3.0	3.2	3.3	3.3	3.2	3.3	3.3	3.2	3.2	3.2	3.1
2012: engineers (*n* = 1,037)	3.1	3.1	3.2	3.2	3.1	3.2	3.3	3.3	3.1	3.1	3.1
Scientific/engineering researchers are dedicated people who work for the good of humanity.											
1983: scientific researchers (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientific researchers (*n* = 1,503)	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0	3.0	3.0	3.0
2012: scientific researchers (*n* = 1,103)	3.0	3.1	3.1	3.2	3.1	3.1	3.1	3.0	3.1	3.2	3.2
2012: engineering researchers (*n* = 996)	3.0	3.0	3.0	2.9	3.0	3.0	2.9	2.9	3.0	3.0	3.1
Most scientists/engineers want to work on things that will make life better for the average person.											
1983: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,526)	3.0	3.0	3.0	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2012: scientists (*n* = 1,101)	2.9	3.1	3.0	3.0	3.1	3.0	3.0	3.0	3.1	3.1	3.0
2012: engineers (*n* = 1,025)	3.2	3.0	3.0	3.0	3.1	3.1	3.0	3.1	3.0	3.0	3.1
Scientific/engineering work is dangerous.											
1983: scientific work (*n* = 1,562)	2.9	2.6	2.3	2.2	NA	NA	NA	NA	NA	NA	NA
2001: scientific work (*n* = 1,519)	2.8	2.6	2.3	2.2	2.7	2.4	2.2	2.3	2.5	2.7	2.8
2012: scientific work (*n* = 1,084)	2.8	2.7	2.3	2.1	2.7	2.4	2.3	2.3	2.6	2.7	2.7
2012: engineering work (*n* = 998)	2.9	2.5	2.2	2.0	2.5	2.3	2.3	2.2	2.4	2.7	2.7
Scientists/engineers are apt to be odd and peculiar people.											
1983: scientists (*n* = 1,567)	2.4	2.3	2.1	2.1	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,514)	2.4	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.3	2.4
2012: scientists (*n* = 1,073)	2.5	2.4	2.3	2.2	2.4	2.3	2.2	2.3	2.3	2.5	2.4
2012: engineers (*n* = 989)	2.4	2.3	2.1	2.1	2.4	2.1	2.1	2.1	2.3	2.4	2.3
Scientists/engineers are not likely to be very religious.											
1983: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,381)	2.4	2.3	2.2	2.3	2.4	2.3	2.2	2.3	2.3	2.3	2.3
2012: scientists (*n* = 990)	2.3	2.4	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.5	2.3
2012: engineers (*n* = 869)	2.3	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.1	2.2

Appendix table 7-28

Public perceptions of science and engineering occupations, by respondent characteristic: 1983, 2001, and 2012

(Mean agreement score)

Question/year	Formal education				Science/mathematics education[b]			Trend factual knowledge of science scale (quartile)[c]			
	< High school	High school diploma or associate degree[a]	Bachelor's degree	Graduate/ professional degree	Low	Middle	High	Top	Second	Third	Bottom
Scientists/engineers have few other interests but their work.											
1983: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,437)	2.4	2.3	2.1	2.1	2.4	2.2	2.1	2.1	2.2	2.4	2.5
2012: scientists (*n* = 1,022)	2.5	2.3	2.1	2.1	2.4	2.3	2.1	2.1	2.3	2.4	2.5
2012: engineers (*n* = 947)	2.4	2.2	2.0	2.1	2.3	2.0	2.0	2.0	2.2	2.3	2.2
A scientist/engineer usually works alone.											
1983: scientist (*n* = 1,567)	2.3	2.2	2.1	2.0	NA	NA	NA	NA	NA	NA	NA
2001: scientist (*n* = 1,532)	2.2	2.0	1.9	2.0	2.1	1.9	1.9	1.9	2.1	2.1	2.2
2012: scientist (*n* = 1,075)	2.2	2.2	2.0	2.0	2.2	2.0	2.1	2.0	2.1	2.3	2.3
2012: engineer (*n* = 995)	2.3	2.2	2.1	2.0	2.2	2.1	2.1	2.0	2.2	2.3	2.2
Scientists/engineers don't get as much fun out of life as other people do.											
1983: scientists (*n* = 1,500)	2.4	2.2	2.0	2.0	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = 1,438)	2.4	2.1	2.0	2.0	2.2	2.1	2.0	2.0	2.1	2.2	2.4
2012: scientists (*n* = 1,032)	2.3	2.1	1.9	2.1	2.2	2.0	2.0	2.0	2.1	2.3	2.3
2012: engineers (*n* = 960)	2.4	2.1	2.0	2.0	2.2	2.0	2.0	1.9	2.1	2.2	2.2
Scientists/engineers earn less than other people with equally demanding jobs.											
1983: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientists (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2012: scientists (*n* = 937)	2.2	2.2	2.2	2.3	2.2	2.1	2.3	2.3	2.1	2.2	2.1
2012: engineers (*n* = 940)	2.2	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1

Appendix table 7-28

Public perceptions of science and engineering occupations, by respondent characteristic: 1983, 2001, and 2012

(Mean agreement score)

Question/year	Formal education				Science/mathematics education[b]			Trend factual knowledge of science scale (quartile)[c]			
	< High school	High school diploma or associate degree[a]	Bachelor's degree	Graduate/ professional degree	Low	Middle	High	Top	Second	Third	Bottom
A job as a scientist/engineer would be boring.											
1983: scientist (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2001: scientist (*n* = NA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2012: scientist (*n* = 1,090)	2.3	2.1	2.0	1.9	2.1	2.0	2.0	2.0	2.1	2.1	2.1
2012: engineer (*n* = 985)	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1

NA = not available, question not asked.

[a] Includes "some college" category in 2001 and 2012.
[b] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses.
[c] See notes to appendix table 7-8 for an explanation of the trend factual knowledge of science scale.

NOTES: Responses to *Now I'd like to read you some statements about scientists/engineers. Please tell me if you agree or disagree with each one. If you feel especially strongly about a statement, please say that you strongly agree or strongly disagree.* Mean agreement score is based on a 4-point scale, where 4 = strongly agree, 3 = agree, 2 = disagree, and 1 = strongly disagree.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (1983, 2001); University of Chicago, National Opinion Research Center, General Social Survey (2012).

Science and Engineering Indicators 2014

Appendix table 7-29

Public assessment of degree to which certain fields and work activities are scientific: 2006 and 2012

(Mean scientific score)

Field/work activity	Formal education					Science/mathematics education[a]			Trend factual knowledge of science scale (quartile)[b]			
	< High school	High school diploma	Some college	Bachelor's degree	Graduate/ professional degree	Low	Middle	High	Top	Second	Third	Bottom
Field												
Medicine												
2006 (*n* = 1,829)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
2012 (*n* = 1,091)	3.6	3.8	3.8	3.9	3.9	3.8	3.9	3.8	3.9	3.8	3.7	3.7
Physics												
2006 (*n* = 1,730)	3.4	3.6	3.7	3.8	3.9	3.6	3.8	3.9	3.9	3.7	3.5	3.4
2012 (*n* = 1,042)	3.3	3.5	3.7	3.9	3.9	3.5	3.7	3.9	3.9	3.7	3.5	3.4
Biology												
2006 (*n* = 1,800)	3.6	3.6	3.7	3.8	3.8	3.6	3.7	3.8	3.8	3.7	3.6	3.5
2012 (*n* = 1,069)	3.2	3.6	3.7	3.8	3.8	3.5	3.8	3.8	3.9	3.7	3.4	3.5
Engineering												
2006 (*n* = 1,785)	3.0	3.1	3.2	3.4	3.4	3.1	3.2	3.5	3.5	3.2	3.1	2.9
2012 (*n* = 1,071)	3.0	3.1	3.3	3.5	3.7	3.1	3.5	3.6	3.6	3.3	3.0	3.1
Economics												
2006 (*n* = 1,769)	2.7	2.5	2.5	2.6	2.7	2.5	2.5	2.7	2.6	2.6	2.5	2.6
2012 (*n* = 1,047)	2.5	2.2	2.5	2.5	2.9	2.4	2.6	2.6	2.7	2.4	2.2	2.5
Sociology												
2006 (*n* = 1,593)	2.7	2.5	2.6	2.6	2.6	2.6	2.6	2.5	2.6	2.5	2.6	2.6
2012 (*n* = 969)	2.5	2.4	2.6	2.6	2.7	2.5	2.6	2.7	2.7	2.4	2.5	2.5
History												
2006 (*n* = 1,799)	2.3	2.2	2.1	1.9	1.9	2.2	2.0	1.9	2.0	2.1	2.1	2.4
2012 (*n* = 1,074)	2.5	2.2	2.1	1.9	2.3	2.3	2.0	2.1	2.1	2.1	2.3	2.3
Accounting												
2006 (*n* = 1,785)	2.2	2.1	2.1	2.2	2.3	2.1	2.1	2.3	2.2	2.1	2.1	2.2
2012 (*n* = 2,152)	2.1	1.9	2.0	2.1	2.2	2.0	2.1	2.1	2.0	2.0	2.0	2.1
Work activity												
Medical treatment												
2012 (*n* = 1,115)	3.6	3.7	3.8	3.8	3.7	3.7	3.8	3.8	3.8	3.8	3.7	3.6
Engineering												
2012 (*n* = 1,107)	3.2	3.4	3.5	3.7	3.7	3.4	3.5	3.7	3.7	3.5	3.4	3.2
Computer programming												
2012 (*n* = 1,100)	3.2	3.3	3.4	3.5	3.6	3.3	3.4	3.5	3.5	3.4	3.3	3.3
Architecture												
2012 (*n* = 1,098)	3.1	2.9	3.0	3.2	3.2	3.0	3.0	3.2	3.2	3.1	3.0	2.8
Farming												
2012 (*n* = 1,113)	2.6	2.9	2.8	3.0	3.1	2.8	2.9	2.9	3.0	2.9	2.8	2.8
Firefighting												
2012 (*n* = 1,105)	2.5	2.6	2.6	2.8	2.7	2.6	2.6	2.7	2.6	2.7	2.6	2.5

Appendix table 7-29

Public assessment of degree to which certain fields and work activities are scientific: 2006 and 2012

(Mean scientific score)

Field/work activity	Formal education					Science/mathematics education[a]			Trend factual knowledge of science scale (quartile)[b]			
	< High school	High school diploma	Some college	Bachelor's degree	Graduate/ professional degree	Low	Middle	High	Top	Second	Third	Bottom
Law enforcement												
2012 (*n* = 1,104)	2.4	2.3	2.2	2.5	2.4	2.4	2.2	2.4	2.3	2.4	2.4	2.2
Financial counseling												
2012 (*n* = 1,100)	2.0	2.2	2.0	2.4	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.1
Journalism												
2012 (*n* = 1,086)	2.1	2.0	1.9	1.9	2.0	2.0	2.0	1.8	1.9	1.9	2.1	2.1
Marriage counseling												
2012 (*n* = 1,091)	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9
Salesmanship												
2012 (*n* = 1,103)	1.8	1.7	1.6	2.0	1.8	1.7	1.8	1.9	1.7	1.8	1.8	1.8

[a] Low = ≤ 5 high school and college science/mathematics courses; middle = 6–8 courses; high = ≥ 9 courses.
[b] See notes to appendix table 7-8 for an explanation of the trend factual knowledge of science scale.

NOTES: Responses to *How scientific are each of the following fields/work activities? If you have not heard of a particular field/work activity, just say you haven't heard of it. Is [field/work activity] very scientific, pretty scientific, not too scientific, or not scientific?* Mean scientific score is based on a 4-point scale, where 4 = very scientific, 3 = pretty scientific, 2 = not too scientific, and 1 = not scientific.

SOURCE: University of Chicago, National Opinion Research Center, General Social Survey (2006, 2012).

Science and Engineering Indicators 2014

Appendix table 7-30

Public concern about environmental issues, by country/economy: 2010

(Mean score and percent)

Country/economy	Number	Mean score[a]	Concern about environment, on scale of 1–5 (%) Not at all concerned 1	2	3	4	Very concerned 5	Can't choose/ no answer (%)
United States	1,404	3.8	4	6	25	29	34	2
Argentina	1,122	4.0	5	4	23	18	49	1
Australia	NA	NA	NA	NA	NA	NA	NA	NA
Austria	1,019	3.5	4	14	29	31	21	0
Belgium	1,108	3.8	2	6	28	35	25	3
Bulgaria	978	3.6	5	10	29	28	26	3
Canada	958	4.0	1	7	17	37	36	2
Chile	1,418	3.7	6	7	32	20	35	1
Croatia	1,204	3.2	7	15	36	28	13	*
Czech Republic	1,417	2.9	14	22	34	20	9	1
Denmark	1,264	3.4	4	15	33	33	12	3
Finland	1,179	3.7	3	9	23	42	21	3
France	2,173	3.8	4	8	24	31	30	2
Germany	1,380	3.7	4	9	27	36	23	2
Germany (East)	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,208	3.7	4	10	28	27	31	1
Italy	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,278	3.9	2	5	25	41	26	2
Latvia	974	3.6	5	9	29	31	24	3
Lithuania	974	3.3	3	20	33	23	17	4
Mexico	1,603	3.6	4	13	29	23	28	2
Netherlands	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,151	3.9	2	6	20	38	32	2
Northern Ireland	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,351	3.4	4	11	35	34	13	2
Philippines	1,179	3.8	8	7	22	21	41	2
Poland	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,601	3.5	6	12	31	25	26	1
Slovak Republic	1,134	3.0	12	14	41	19	11	2
Slovenia	1,079	4.1	2	4	20	34	40	*
South Africa	3,035	3.1	11	23	25	22	17	2
South Korea	1,564	3.8	3	9	25	36	27	1
Spain	2,545	3.8	3	6	25	39	26	1
Sweden	1,169	3.4	5	14	34	33	14	1
Switzerland	1,204	3.8	2	7	21	47	24	1
Taiwan	2,207	3.9	1	5	29	33	32	*
Turkey	1,609	3.5	8	13	25	27	24	3
United Kingdom	898	3.6	4	10	29	31	22	3

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not at all concerned and 5 = very concerned. Mean score does not include respondents who said "can't choose" or did not answer the question.

NOTES: Responses to *Generally speaking, how concerned are you about environmental issues?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (2010). For methodology and additional information, see http://www.issp.org/.

Science and Engineering Indicators 2014

Appendix table 7-31

Public assessment of whether modern science will solve environmental problems with little change to our way of life, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
United States	1,444	3.5	1,139	3.3	1,331	3.3	2	21	26	37	8	6
Argentina	NA	NA	NA	NA	1,024	3.0	3	31	23	29	4	9
Australia	1,761	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	845	3.3	989	3.2	5	27	23	28	14	3
Belgium	NA	NA	NA	NA	1,061	3.3	2	14	37	32	7	8
Bulgaria	863	2.6	752	3.0	848	3.0	4	21	35	21	5	14
Canada	1,427	3.7	1,079	3.6	952	3.6	1	13	23	46	14	2
Chile	NA	NA	1,408	2.7	1,299	3.1	1	21	40	25	3	9
Croatia	NA	NA	NA	NA	1,158	3.2	2	21	38	26	9	4
Czech Republic	946	3.6	1,164	3.5	1,353	3.3	3	15	35	30	11	5
Denmark	NA	NA	965	3.3	1,184	3.0	6	27	24	24	9	9
Finland	NA	NA	1,345	3.8	1,120	3.7	2	10	19	42	20	7
France	NA	NA	NA	NA	2,109	3.7	2	14	24	29	26	5
Germany	NA	NA	NA	NA	1,281	3.2	4	22	25	31	8	9
Germany (East)	995	3.1	480	3.0	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	922	3.2	863	3.2	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,151	3.4	917	3.3	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,045	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	917	3.4	1,118	3.3	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,122	3.2	1,173	3.1	1,087	3.0	3	25	33	23	5	11
Italy	942	3.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,181	4.1	1,023	4.2	1,171	3.9	1	5	26	27	31	10
Latvia	NA	NA	872	3.1	885	3.3	3	17	27	32	9	12
Lithuania	NA	NA	NA	NA	843	2.9	3	25	37	17	2	15
Mexico	NA	NA	1,159	2.9	1,574	3.0	12	25	21	28	11	4
Netherlands	1,742	3.8	1,505	3.6	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,213	3.6	1,056	3.5	1,116	3.4	3	15	31	37	10	4
Northern Ireland[b]	684	3.4	640	3.2	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,227	3.5	1,312	3.2	1,246	3.1	2	22	32	30	5	10
Philippines	1,194	2.6	1,164	2.7	1,187	2.5	13	40	32	11	2	1
Poland	1,241	2.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	871	2.5	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,595	2.8	1,448	2.6	1,348	2.8	9	27	29	14	5	16
Slovak Republic	NA	NA	NA	NA	1,081	3.5	2	12	32	29	18	7
Slovenia	869	3.5	957	3.4	1,026	3.5	1	14	24	45	11	5
South Africa	NA	NA	NA	NA	2,894	2.4	15	40	23	11	3	7
South Korea	NA	NA	NA	NA	1,523	3.4	4	18	23	37	15	3
Spain	1,048	3.0	790	3.2	2,232	3.1	3	26	21	29	8	13
Sweden	NA	NA	957	3.8	1,108	3.9	1	7	22	37	26	6
Switzerland	NA	NA	919	3.5	1,180	3.6	1	13	20	49	14	3

Appendix table 7-31

Public assessment of whether modern science will solve environmental problems with little change to our way of life, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Agreement, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Strongly agree 1	Agree 2	Neither agree nor disagree 3	Disagree 4	Strongly disagree 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,153	3.0	2	41	12	41	2	3
Turkey	NA	NA	NA	NA	1,411	2.7	7	31	26	17	3	15
United Kingdom[b]	NA	NA	NA	NA	853	3.1	4	20	36	26	6	8

NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = strongly agree and 5 = strongly disagree. It does not include respondents who said "can't choose" or did not answer the question.

[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *How much do you agree or disagree with the statement: Modern science will solve our environmental problems with little change to our way of life?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-32

Public assessment of danger to environment of river, lake, and stream pollution, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,497	4.0	1,181	4.0	1,389	3.9	1	4	25	39	29	2
Argentina	NA	NA	NA	NA	1,121	4.3	*	1	10	47	41	1
Australia	1,758	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	989	3.7	1,000	4	3	13	26	37	19	2
Belgium	NA	NA	NA	NA	1,098	3.6	1	9	38	32	16	5
Bulgaria	1,118	4.1	941	4.0	973	4.1	0	1	19	45	32	3
Canada	1,439	4.1	1,102	4.1	968	4.1	*	2	23	37	36	2
Chile	NA	NA	1,478	4.3	1,414	4.4	*	1	9	38	50	1
Croatia	NA	NA	NA	NA	1,205	4.0	*	5	21	37	36	*
Czech Republic	986	4.2	1,215	3.9	1,411	3.8	1	8	24	45	21	1
Denmark	NA	NA	1,019	3.4	1,233	3.6	1	8	35	34	16	6
Finland	NA	NA	1,474	3.6	1,181	3.7	1	9	31	39	18	2
France	NA	NA	NA	NA	2,210	4.1	*	3	24	33	38	2
Germany	NA	NA	NA	NA	1,339	3.9	1	6	21	46	22	5
Germany (East)	1,075	4.1	521	4.1	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	995	4.0	943	3.9	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,224	3.9	954	3.9	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,143	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	953	4.0	1,204	3.8	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,168	3.7	1,196	4.0	1,165	3.9	1	5	25	36	30	4
Italy	998	4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,281	3.9	1,133	3.9	1,253	3.8	*	4	31	39	22	4
Latvia	NA	NA	981	3.7	976	3.6	1	11	33	33	19	2
Lithuania	NA	NA	NA	NA	1,013	3.9	*	3	23	52	20	1
Mexico	NA	NA	1,223	4.2	1,591	4.1	3	4	12	42	36	3
Netherlands	1,803	3.5	1,535	3.3	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,255	3.9	1,094	4.0	1,144	4.0	*	5	25	34	33	2
Northern Ireland[b]	744	3.8	684	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,372	3.5	1,410	3.4	1,313	3.3	1	13	46	28	7	5
Philippines	1,199	3.7	1,193	4.1	1,198	3.9	3	9	22	32	34	*
Poland	1,598	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	988	4.3	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,865	4.3	1,694	4.5	1,601	4.4	*	3	11	30	55	1
Slovak Republic	NA	NA	NA	NA	1,136	3.9	*	5	23	45	24	2
Slovenia	1,004	4.0	1,058	4.0	1,071	3.9	*	3	23	50	22	1
South Africa	NA	NA	NA	NA	2,976	3.9	4	9	18	29	36	4
South Korea	NA	NA	NA	NA	1,557	3.6	*	6	38	39	16	1
Spain	1,197	3.9	946	4.1	2,521	4.1	*	2	13	52	32	2
Sweden	NA	NA	1,048	3.7	1,145	3.7	*	6	32	40	18	3
Switzerland	NA	NA	987	3.6	1,188	3.3	1	17	37	33	9	2

Appendix table 7-32

Public assessment of danger to environment of river, lake, and stream pollution, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,186	3.9	*	3	20	54	21	1
Turkey	NA	NA	NA	NA	1,616	4.3	1	3	11	36	46	3
United Kingdom[b]	NA	NA	NA	NA	873	3.5	1	9	39	32	14	5

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that pollution of [country's] rivers, lakes, and streams is not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-33

Public assessment of danger to environment of air pollution from industry, by country/economy: 1993, 2000, and 2010

Country/economy	1993 Number	1993 Mean score[a]	2000 Number	2000 Mean score[a]	2010 Number	2010 Mean score[a]	2010 Danger to environment, on scale of 1–5 (%): Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,491	3.9	1,190	3.9	1,391	3.9	*	4	31	37	25	3
Argentina	NA	NA	NA	NA	1,116	4.2	*	1	11	55	31	1
Australia	1,755	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	991	4.1	1,009	4.1	*	2	17	53	27	1
Belgium	NA	NA	NA	NA	1,106	3.8	0	3	32	39	22	4
Bulgaria	1,085	4.0	930	3.8	973	4.0	*	3	21	42	30	3
Canada	1,451	4.2	1,097	4.1	970	4.1	0	1	23	38	36	2
Chile	NA	NA	1,481	4.3	1,417	4.5	*	1	5	38	55	1
Croatia	NA	NA	NA	NA	1,203	4.2	*	2	18	40	39	1
Czech Republic	985	4.0	1,218	3.9	1,411	4.0	1	3	19	49	27	1
Denmark	NA	NA	1,015	3.7	1,238	3.7	*	6	35	38	16	5
Finland	NA	NA	1,471	3.6	1,178	3.7	*	6	31	43	17	3
France	NA	NA	NA	NA	2,208	4.0	*	2	27	38	32	2
Germany	NA	NA	NA	NA	1,352	4.1	*	2	14	50	30	4
Germany (East)	1,080	4.1	520	4.2	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	1,003	4.1	947	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,212	3.8	954	3.9	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,135	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	951	3.8	1,196	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,176	3.9	1,196	4.1	1,192	4.2	*	2	16	41	39	2
Italy	995	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,264	3.8	1,142	4.0	1,270	4.0	*	1	23	46	26	3
Latvia	NA	NA	991	3.9	979	3.6	1	8	35	37	18	2
Lithuania	NA	NA	NA	NA	1,012	4.1	0	1	16	58	24	1
Mexico	NA	NA	1,217	4.1	1,586	4.1	3	3	14	40	38	3
Netherlands	1,820	3.8	1,559	3.7	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,252	3.9	1,096	4.0	1,144	3.7	*	4	37	35	21	2
Northern Ireland[b]	743	3.8	715	3.9	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,388	3.8	1,431	3.7	1,350	3.5	*	6	43	38	10	2
Philippines	1,197	3.8	1,196	4.4	1,197	4.3	1	3	14	34	47	*
Poland	1,579	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	988	4.3	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,882	4.4	1,693	4.5	1,597	4.3	*	2	11	35	50	1
Slovak Republic	NA	NA	NA	NA	1,145	4.2	*	2	16	45	36	1
Slovenia	1,016	4.0	1,066	4.0	1,068	4.0	*	1	23	53	21	1
South Africa	NA	NA	NA	NA	2,996	4.2	2	4	11	35	45	3
South Korea	NA	NA	NA	NA	1,563	3.9	*	2	28	48	21	1
Spain	1,200	3.8	937	4.1	2,521	4.1	*	2	16	55	26	2
Sweden	NA	NA	1,045	3.7	1,155	3.8	*	5	29	43	21	2
Switzerland	NA	NA	992	4.0	1,208	3.8	*	3	32	50	14	*

Appendix table 7-33

Public assessment of danger to environment of air pollution from industry, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,200	4.2	*	1	12	52	34	*
Turkey	NA	NA	NA	NA	1,633	4.4	*	3	9	35	51	2
United Kingdom[b]	NA	NA	NA	NA	879	3.6	*	7	41	33	15	5

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.

[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that air pollution caused by industry is not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-34

Public assessment of danger to environment of air pollution from cars, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,437	3.6	1,174	3.6	1,384	3.5	1	8	45	28	15	3
Argentina	NA	NA	NA	NA	1,115	3.9	*	3	25	51	19	1
Australia	1,733	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	995	3.6	1,008	3.5	1	9	39	40	10	1
Belgium	NA	NA	NA	NA	1,093	3.3	1	12	49	25	8	5
Bulgaria	1,067	3.6	935	3.6	984	3.8	1	6	29	37	25	2
Canada	1,447	3.8	1,091	3.7	972	3.6	*	6	46	32	14	2
Chile	NA	NA	1,494	4.1	1,419	4.2	*	2	12	48	38	1
Croatia	NA	NA	NA	NA	1,203	3.8	*	7	33	38	22	1
Czech Republic	993	3.7	1,224	3.8	1,402	3.6	1	10	34	41	13	2
Denmark	NA	NA	1,016	3.5	1,240	3.4	*	9	48	28	10	5
Finland	NA	NA	1,478	3.2	1,183	3.1	1	17	53	23	3	2
France	NA	NA	NA	NA	2,193	3.4	1	10	50	25	11	3
Germany	NA	NA	NA	NA	1,341	3.6	*	7	37	39	11	5
Germany (East)	1,077	3.7	517	3.4	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	1,001	3.7	947	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,228	3.6	955	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,151	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	948	3.5	1,195	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,177	3.4	1,200	3.8	1,188	3.7	*	6	37	33	21	2
Italy	997	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,270	3.9	1,152	4.0	1,269	3.6	*	4	41	38	15	3
Latvia	NA	NA	964	3.5	982	3.4	1	13	45	27	12	2
Lithuania	NA	NA	NA	NA	1,020	3.8	0	4	27	55	13	*
Mexico	NA	NA	1,198	4.0	1,538	4.1	1	4	19	36	34	6
Netherlands	1,809	3.1	1,560	3.2	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,257	3.5	1,103	3.8	1,142	3.3	1	11	51	24	11	2
Northern Ireland[b]	741	3.5	715	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,390	3.3	1,434	3.4	1,347	3.2	1	14	54	25	4	3
Philippines	1,199	3.8	1,191	4.3	1,197	4.2	*	3	18	36	43	*
Poland	1,560	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	993	4.1	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,840	3.7	1,685	4.1	1,594	4.0	1	3	24	39	31	1
Slovak Republic	NA	NA	NA	NA	1,146	3.9	*	4	23	48	24	1
Slovenia	1,008	3.4	1,070	3.7	1,072	3.4	*	7	50	36	7	1
South Africa	NA	NA	NA	NA	2,989	3.9	3	8	19	32	35	3
South Korea	NA	NA	NA	NA	1,562	3.7	*	3	39	42	15	1
Spain	1,192	3.6	942	3.9	2,529	3.8	*	3	28	54	14	1
Sweden	NA	NA	1,053	3.5	1,157	3.4	*	9	46	34	9	2
Switzerland	NA	NA	960	3.7	1,202	3.4	*	7	55	31	6	1

Appendix table 7-34

Public assessment of danger to environment of air pollution from cars, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,200	3.7	*	3	39	46	11	*
Turkey	NA	NA	NA	NA	1,639	4.2	1	4	16	35	42	2
United Kingdom[b]	NA	NA	NA	NA	883	3.2	1	15	51	20	8	4

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.

[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that air pollution caused by cars is not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-35

Public assessment of danger to environment of pesticides and chemicals used in farming, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,489	3.4	1,179	3.6	1,376	3.6	*	8	37	33	18	3
Argentina	NA	NA	NA	NA	1,092	4.1	*	2	15	49	30	3
Australia	1,752	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	993	3.9	992	3.8	1	8	22	47	20	3
Belgium	NA	NA	NA	NA	1,098	3.6	1	7	40	31	16	4
Bulgaria	1,075	3.8	917	3.7	981	4.1	*	4	19	41	34	2
Canada	1,426	3.7	1,093	3.7	972	3.8	*	6	31	35	27	2
Chile	NA	NA	1,476	4.2	1,413	4.3	*	1	9	42	46	1
Croatia	NA	NA	NA	NA	1,202	4.1	*	3	21	39	37	1
Czech Republic	978	3.8	1,194	3.8	1,385	3.9	*	6	24	42	25	3
Denmark	NA	NA	1,010	3.8	1,229	3.8	*	7	29	34	23	6
Finland	NA	NA	1,467	3.4	1,172	3.5	1	13	35	37	11	3
France	NA	NA	NA	NA	2,226	4.1	*	5	20	29	45	2
Germany	NA	NA	NA	NA	1,346	3.8	*	5	25	47	18	4
Germany (East)	1,068	3.6	522	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	995	3.9	942	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,210	3.4	945	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,139	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	949	3.7	1,199	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,156	3.5	1,179	3.6	1,141	3.8	1	7	27	36	23	6
Italy	996	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,273	3.5	1,141	3.7	1,259	3.5	1	10	39	33	15	4
Latvia	NA	NA	985	3.8	975	3.8	2	6	27	40	22	3
Lithuania	NA	NA	NA	NA	1,016	4.2	0	1	12	55	32	1
Mexico	NA	NA	1,191	3.8	1,560	4.0	3	5	16	40	31	5
Netherlands	1,791	3.4	1,538	3.4	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,248	3.4	1,087	3.6	1,141	3.6	1	8	41	28	21	3
Northern Ireland[b]	739	3.5	718	3.8	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,354	3.2	1,411	3.4	1,316	3.3	1	14	43	30	8	5
Philippines	1,196	3.7	1,188	4.2	1,193	3.8	1	8	28	33	29	1
Poland	1,564	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	980	4.1	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,804	3.9	1,676	4.3	1,582	4.2	*	3	16	36	43	2
Slovak Republic	NA	NA	NA	NA	1,131	4.0	*	2	23	41	31	3
Slovenia	1,000	3.6	1,060	3.9	1,070	4.0	*	3	18	47	30	1
South Africa	NA	NA	NA	NA	2,895	3.6	5	12	21	29	26	7
South Korea	NA	NA	NA	NA	1,565	3.9	*	4	29	44	22	1
Spain	1,181	3.6	929	3.9	2,491	4.0	1	3	20	47	26	3
Sweden	NA	NA	1,037	3.7	1,142	3.6	1	7	34	39	15	3
Switzerland	NA	NA	986	3.7	1,190	3.6	*	7	35	42	14	2

Appendix table 7-35

Public assessment of danger to environment of pesticides and chemicals used in farming, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,200	3.9	*	2	23	51	23	*
Turkey	NA	NA	NA	NA	1,623	4.2	1	5	11	37	44	3
United Kingdom[b]	NA	NA	NA	NA	870	3.4	1	10	46	26	12	5

* = < 0.5% responded; NA = not available, country/economy not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.

[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that pesticides and chemicals used in farming are not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-36

Public assessment of danger to environment of climate change, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,363	3.5	1,071	3.5	1,325	3.4	7	13	29	25	20	7
Argentina	NA	NA	NA	NA	1,096	4.1	*	1	18	51	27	3
Australia	1,716	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	913	4.0	971	3.8	2	8	23	38	25	5
Belgium	NA	NA	NA	NA	1,049	3.4	2	12	39	24	13	9
Bulgaria	803	4.0	757	3.9	947	3.9	1	5	22	39	29	5
Canada	1,366	3.8	1,036	3.8	945	3.7	2	11	25	30	28	5
Chile	NA	NA	1,342	4.2	1,396	4.4	*	2	9	37	50	2
Croatia	NA	NA	NA	NA	1,191	4.0	*	5	22	35	35	2
Czech Republic	889	3.9	1,126	4.0	1,349	3.5	2	13	30	34	15	6
Denmark	NA	NA	944	3.4	1,160	3.5	1	14	31	25	18	11
Finland	NA	NA	1,397	3.3	1,141	3.5	2	15	28	29	19	5
France	NA	NA	NA	NA	2,119	3.6	1	10	36	28	19	6
Germany	NA	NA	NA	NA	1,323	3.9	1	5	21	38	28	6
Germany (East)	1,043	4.2	504	4.2	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	975	4.2	896	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,157	3.7	909	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	904	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	878	3.8	1,147	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Israel	872	3.6	1,131	3.8	1,118	3.8	1	7	27	33	24	8
Italy	945	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,176	3.8	1,093	4.0	1,256	4.1	1	3	17	38	38	4
Latvia	NA	NA	881	3.7	932	3.3	4	15	35	25	15	7
Lithuania	NA	NA	NA	NA	962	3.7	2	8	29	39	18	5
Mexico	NA	NA	1,099	3.9	1,568	4.2	2	4	12	35	42	4
Netherlands	1,695	3.3	1,487	3.4	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,198	3.6	1,060	3.8	1,092	3.4	4	14	31	23	21	7
Northern Ireland[b]	692	3.7	670	3.8	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,259	3.5	1,324	3.3	1,291	3.3	3	18	34	26	12	7
Philippines	1,187	3.8	1,146	4.2	1,194	4.0	1	5	22	31	40	1
Poland	1,363	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	912	4.2	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,438	3.8	1,313	3.7	1,509	3.9	2	7	24	31	30	7
Slovak Republic	NA	NA	NA	NA	1,100	3.8	1	5	26	37	24	6
Slovenia	871	4.0	947	3.9	1,027	3.8	1	5	26	44	19	5
South Africa	NA	NA	NA	NA	2,907	3.9	2	10	20	28	34	6
South Korea	NA	NA	NA	NA	1,539	3.9	1	3	26	40	26	2
Spain	1,098	3.8	846	4.1	2,416	4.0	1	3	18	44	28	6
Sweden	NA	NA	975	3.5	1,086	3.5	2	12	31	29	17	8
Switzerland	NA	NA	948	4.0	1,191	3.7	1	6	33	44	15	2

Appendix table 7-36

Public assessment of danger to environment of climate change, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,173	4.1	*	2	16	47	34	1
Turkey	NA	NA	NA	NA	1,580	4.2	1	4	13	34	44	5
United Kingdom[b]	NA	NA	NA	NA	847	3.5	2	10	36	27	16	8

* = < 0.5% responded; NA = not available, country/economy not asked or not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that a rise in the world's temperature caused by climate change is not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-37

Public assessment of danger to environment of nuclear power stations, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	1,403	3.4	1,276	NA	1,331	3.4	5	15	30	24	20	6
Argentina	NA	NA	NA	NA	1,046	4.1	1	3	13	41	35	7
Australia	1,739	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	NA	NA	1,001	4.3	1,003	4.4	1	3	8	28	58	2
Belgium	NA	NA	NA	NA	1,084	3.4	4	18	32	21	20	6
Bulgaria	1,026	3.9	872	3.2	944	3.7	2	8	29	28	27	6
Canada	1,384	3.6	1,061	3.6	933	3.5	3	16	30	22	24	6
Chile	NA	NA	1,503	NA	1,359	4.3	0	1	11	36	47	5
Croatia	NA	NA	NA	NA	1,199	4.3	1	3	15	26	55	1
Czech Republic	955	3.3	1,171	3.0	1,370	3.0	8	25	34	19	11	4
Denmark	NA	NA	1,031	3.8	1,172	3.3	6	25	18	16	24	10
Finland	NA	NA	1,428	3.4	1,130	3.4	5	22	23	20	23	6
France	NA	NA	NA	NA	2,148	3.4	3	20	29	21	23	4
Germany	NA	NA	NA	NA	1,317	3.9	2	9	18	30	35	6
Germany (East)	1,041	3.8	506	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	980	3.9	910	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	1,188	3.5	972	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	1,112	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	945	4.4	1,197	4.2	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,144	4.0	1,205	NA	1,144	4.2	2	6	13	26	47	6
Italy	987	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	1,242	3.6	1,119	3.8	1,201	3.3	3	17	36	20	17	8
Latvia	NA	NA	981	3.9	952	4.0	2	7	18	28	40	5
Lithuania	NA	NA	NA	NA	972	3.8	3	10	19	38	25	4
Mexico	NA	NA	1,262	NA	1,532	4.2	2	5	10	29	48	6
Netherlands	1,771	3.5	1,549	3.4	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,237	4.1	1,086	4.0	1,101	3.6	5	16	25	18	31	6
Northern Ireland[b]	732	3.9	659	3.9	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,374	4.0	1,452	NA	1,335	3.7	3	12	21	29	31	3
Philippines	1,188	3.9	1,156	4.3	1,182	4.1	1	5	18	29	45	2
Poland	1,533	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	970	4.4	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,806	3.9	1,643	4.3	1,557	4.0	1	4	22	31	38	3
Slovak Republic	NA	NA	NA	NA	1,093	3.5	3	14	30	25	21	6
Slovenia	994	4.1	1,077	NA	1,059	4.0	1	8	16	36	37	2
South Africa	NA	NA	NA	NA	2,757	4.0	2	7	14	26	38	12
South Korea	NA	NA	NA	NA	1,517	3.3	2	20	32	25	16	4
Spain	1,178	3.9	917	4.2	2,404	3.9	3	7	18	35	31	6
Sweden	NA	NA	1,067	NA	1,106	3.0	9	33	20	16	15	6
Switzerland	NA	NA	948	3.7	1,201	4.2	*	5	15	30	49	1

Appendix table 7-37

Public assessment of danger to environment of nuclear power stations, by country/economy: 1993, 2000, and 2010

	1993		2000		2010							
							Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	NA	NA	2,119	3.6	2	11	30	33	21	4
Turkey	NA	NA	NA	NA	1,549	4.3	1	4	9	31	49	7
United Kingdom[b]	NA	NA	NA	NA	852	3.2	4	21	32	22	14	7

* = < 0.5% responded; NA = not available, country/economy not asked or not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that nuclear power stations are not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 7-38

Public assessment of danger to environment of modifying genes of crops, by country/economy: 2000 and 2010

	2000		2010							
					Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
United States	981	3.0	1,185	3.0	5	20	34	16	9	16
Argentina	NA	NA	1,025	3.7	2	6	24	42	17	9
Australia	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Austria	857	3.9	964	3.9	3	8	18	35	31	6
Belgium	NA	NA	935	2.9	3	23	35	14	6	19
Bulgaria	615	3.4	891	3.9	1	6	20	34	29	10
Canada	950	3.1	896	3.2	5	20	32	22	14	6
Chile	1,308	3.8	1,329	4.1	1	3	14	40	34	7
Croatia	NA	NA	1,167	3.8	2	8	25	37	25	4
Czech Republic	1,051	3.3	1,253	3.3	5	14	30	25	14	12
Denmark	878	3.2	1,070	3.0	5	24	26	18	9	18
Finland	1,217	3.1	1,072	3.2	5	23	24	24	12	11
France	NA	NA	2,042	3.7	4	13	23	24	28	9
Germany	NA	NA	1,254	3.7	2	11	19	34	23	11
Germany (East)	436	3.7	NA	NA	NA	NA	NA	NA	NA	NA
Germany (West)	810	3.5	NA	NA	NA	NA	NA	NA	NA	NA
Great Britain[b]	863	3.4	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ireland	1,066	3.5	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1,128	2.8	998	3.3	5	17	23	26	12	18
Italy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Japan	960	3.6	1,128	3.4	2	12	35	24	13	14
Latvia	1,000	NA	888	3.6	2	12	26	31	19	11
Lithuania	NA	NA	936	4.0	1	4	18	40	30	8
Mexico	1,045	3.3	1,533	3.8	2	9	20	39	24	6
Netherlands	1,329	2.9	NA	NA	NA	NA	NA	NA	NA	NA
New Zealand	1,006	3.3	1,077	3.2	5	22	29	20	16	8
Northern Ireland[b]	602	3.6	NA	NA	NA	NA	NA	NA	NA	NA
Norway	1,229	3.1	1,187	3.0	4	24	31	20	7	14
Philippines	1,106	3.9	1,158	3.4	4	13	32	30	17	3
Poland	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	865	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Russia	1,197	3.8	1,478	4.2	1	3	18	30	41	8
Slovak Republic	NA	NA	1,019	3.5	3	11	28	30	16	13
Slovenia	909	3.4	1,013	3.7	1	6	28	38	20	6
South Africa	NA	NA	2,693	3.3	8	16	23	21	19	13
South Korea	NA	NA	1,517	3.6	1	11	32	35	18	4
Spain	753	3.6	2,184	3.5	3	9	28	32	14	15
Sweden	915	3.4	1,035	3.3	2	20	30	22	13	12
Switzerland	878	3.6	1,122	3.5	1	14	32	33	13	7

Appendix table 7-38

Public assessment of danger to environment of modifying genes of crops, by country/economy: 2000 and 2010

	2000		2010							
					Danger to environment, on scale of 1–5 (%)					
Country/economy	Number	Mean score[a]	Number	Mean score[a]	Not dangerous at all for the environment 1	Not very dangerous 2	Somewhat dangerous 3	Very dangerous 4	Extremely dangerous 5	Can't choose/ no answer (%)
Taiwan	NA	NA	2,000	3.2	2	16	40	27	6	9
Turkey	NA	NA	1,592	4.4	1	3	9	33	51	4
United Kingdom[b]	NA	NA	814	3.1	5	21	33	22	7	11

NA = not available, country/economy not asked or not part of the survey population.

[a] Mean score is based on a 5-point scale, where 1 = not dangerous at all for the environment and 5 = extremely dangerous for the environment. It does not include respondents who said "can't choose" or did not answer the question.
[b] In 1993 and 2000, Great Britain (England, Scotland, Wales) reported separately from Northern Ireland. In 2010, the four countries reported together as the United Kingdom.

NOTES: Responses to *Do you think that modifying the genes of certain crops is not dangerous at all for the environment, not very dangerous, somewhat dangerous, very dangerous, or extremely dangerous for the environment?* Percentages may not add to 100% because of rounding.

SOURCE: International Social Survey Program, Environment Module (1993, 2000, 2010). For methodology and additional information, see http://www.issp.org/.

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Appendix table 8-1

Average mathematics NAEP scores and achievement-level results for white students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	58	243	42	52	249	52	62	287	36	54	293	43
Alabama	61	232	27	60	240	37	62	274	23	59	280	28
Alaska	56	242	41	50	248	50	58	290	41	52	296	47
Arizona	50	241	39	43	246	49	50	284	32	45	294	46
Arkansas	69	237	34	65	244	45	72	275	24	66	287	37
California	32	243	42	25	252	57	37	283	34	26	290	41
Colorado	65	243	44	56	254	60	70	292	43	59	302	55
Connecticut	67	250	53	59	253	60	71	293	44	66	297	48
Delaware	56	244	43	48	250	53	60	287	35	52	294	43
District of Columbia	4	262	71	8	272	84	3	S	S	5	319	76
Florida	50	243	43	40	250	52	50	286	34	45	287	37
Georgia	50	241	40	45	249	51	53	284	32	46	291	40
Hawaii	16	238	35	15	248	53	15	273	25	13	290	41
Idaho	83	238	34	78	244	44	85	284	31	79	291	41
Illinois	59	244	44	53	249	51	62	289	40	51	294	44
Indiana	80	242	40	72	249	51	82	286	35	73	290	40
Iowa	87	241	39	80	246	47	90	287	35	82	288	37
Kansas	78	246	47	68	251	56	79	290	39	70	295	47
Kentucky	85	231	24	84	243	41	88	277	25	84	284	33
Louisiana	44	242	39	47	241	40	51	281	28	54	283	31
Maine	97	238	34	92	246	47	97	282	30	93	290	40
Maryland	51	244	44	43	258	64	58	289	40	45	303	56
Massachusetts	73	247	49	68	258	67	77	292	44	73	304	58
Michigan	70	244	43	71	242	41	70	286	35	74	286	35
Minnesota	81	246	47	73	255	60	83	295	49	78	302	55
Mississippi	44	236	30	50	241	38	49	275	22	48	283	30
Missouri	77	240	35	75	246	48	82	284	32	78	288	36
Montana	86	238	34	82	247	50	87	289	37	84	297	49
Nebraska	80	241	39	70	247	48	84	287	36	74	290	39
Nevada	53	236	32	36	247	48	57	278	27	39	292	43
New Hampshire	94	244	43	91	252	59	95	287	35	91	293	45
New Jersey	58	248	51	54	256	64	61	292	42	56	304	59
New Mexico	31	237	33	27	247	48	34	282	31	28	290	40
New York	54	246	45	48	245	46	56	293	44	51	291	40
North Carolina	58	251	55	54	253	58	59	294	44	55	296	48
North Dakota	88	240	37	84	249	52	90	290	39	85	296	47
Ohio	77	243	42	72	249	53	79	287	35	74	295	46
Oklahoma	59	235	29	55	243	41	63	278	25	55	286	34
Oregon	75	240	36	66	243	43	79	284	35	66	287	37

Appendix table 8-1

Average mathematics NAEP scores and achievement-level results for white students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	74	243	44	73	251	56	80	285	35	70	294	47
Rhode Island	70	239	37	64	249	53	76	280	29	68	292	42
South Carolina	55	246	46	54	248	52	56	291	39	56	293	43
South Dakota	84	241	38	77	246	46	89	288	37	82	295	47
Tennessee	71	235	30	68	239	36	74	277	26	71	281	28
Texas	40	248	49	30	253	60	44	290	38	32	304	58
Utah	82	238	35	79	247	49	86	285	34	78	289	41
Vermont	95	242	42	92	248	50	97	286	35	93	295	47
Virginia	62	246	46	56	251	56	64	290	40	56	297	48
Washington	71	242	40	58	249	53	75	285	36	62	294	46
West Virginia	95	231	24	92	235	32	96	271	20	92	274	22
Wisconsin	76	243	43	75	251	55	84	290	40	77	295	47
Wyoming	86	243	42	80	246	47	89	286	35	82	291	41

S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-2

Average science NAEP scores and achievement-level results for white students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	54	162	46	56	161	41	54	163	43
Alabama	61	155	39	60	152	28	59	152	28
Alaska	NA	NA	NA	NA	NA	NA	52	166	47
Arizona	40	155	37	45	157	35	44	158	37
Arkansas	66	157	38	69	154	32	66	158	36
California	28	157	41	28	157	38	26	159	39
Colorado	61	166	53	60	166	48	59	171	55
Connecticut	66	167	53	70	164	44	66	165	45
Delaware	51	166	50	53	159	35	52	161	40
District of Columbia	NA	NA	NA	NA	NA	NA	5	174	60
Florida	46	163	46	46	158	36	45	161	39
Georgia	46	159	42	47	161	41	46	166	46
Hawaii	14	159	43	14	153	30	13	157	37
Idaho	82	159	40	81	162	42	79	163	43
Illinois	51	164	48	58	162	41	51	161	39
Indiana	77	158	41	76	159	38	73	160	40
Iowa	84	161	45	86	160	38	82	161	39
Kansas	NA	NA	NA	NA	NA	NA	70	163	43
Kentucky	84	164	49	85	159	36	84	160	37
Louisiana	47	159	42	52	155	31	54	156	32
Maine	94	161	43	94	159	36	93	160	37
Maryland	48	164	48	47	164	44	45	167	49
Massachusetts	68	169	56	73	167	48	73	169	52
Michigan	71	160	43	74	162	42	75	165	45
Minnesota	76	166	51	79	166	46	77	168	49
Mississippi	45	152	31	47	150	27	47	156	33
Missouri	77	164	47	80	161	40	78	162	42
Montana	83	164	47	85	166	46	84	167	48
Nebraska	NA	NA	NA	NA	NA	NA	74	164	45
Nevada	42	156	37	44	153	30	39	157	35
New Hampshire	91	165	49	92	161	40	91	164	43
New Jersey	55	166	52	59	165	44	56	166	46
New Mexico	29	163	48	29	163	39	27	161	40
New York	52	161	44	54	164	45	51	163	42
North Carolina	54	162	45	55	158	36	55	160	38
North Dakota	86	165	49	88	166	46	85	168	49
Ohio	72	165	50	78	164	43	75	165	45
Oklahoma	58	156	37	59	155	33	55	156	33
Oregon	69	157	40	72	160	40	67	162	43

Appendix table 8-2

Average science NAEP scores and achievement-level results for white students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	White 4th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)	White 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	71	164	48	77	162	42	70	163	43
Rhode Island	69	161	44	71	155	33	68	161	40
South Carolina	55	163	49	54	158	35	55	163	42
South Dakota	80	162	46	84	165	45	82	166	47
Tennessee	69	159	43	70	157	36	71	160	38
Texas	31	168	53	37	167	47	31	167	50
Utah	77	161	45	80	164	45	78	167	49
Vermont	NA	NA	NA	NA	NA	NA	93	164	44
Virginia	57	172	59	59	166	48	57	169	51
Washington	62	160	44	68	161	41	62	163	43
West Virginia	92	150	29	93	146	23	92	150	25
Wisconsin	75	164	49	79	165	44	77	166	47
Wyoming	83	159	41	84	162	40	83	164	43

NA = not available.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Appendix table 8-3

Average mathematics NAEP scores and achievement-level results for black students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	17	216	10	16	224	17	17	252	7	16	262	13
Alabama	36	208	5	32	215	9	36	240	3	33	250	7
Alaska	5	221	15	4	225	15	5	263	11	4	273	17
Arizona	4	215	11	5	224	22	4	256	7	6	269	18
Arkansas	25	206	5	21	219	16	24	239	3	21	257	9
California	7	213	9	7	225	19	9	246	6	7	254	12
Colorado	5	217	12	4	225	21	5	255	9	5	270	17
Connecticut	14	217	10	13	220	15	13	255	7	13	262	11
Delaware	33	223	12	33	227	19	31	260	8	33	266	14
District of Columbia	87	202	4	77	215	13	87	240	3	82	256	13
Florida	25	215	8	25	226	18	27	249	7	22	258	11
Georgia	39	217	11	36	224	18	39	250	7	39	262	12
Hawaii	3	221	16	3	233	32	2	S	S	3	277	26
Idaho	1	S	S	1	S	S	1	S	S	1	S	S
Illinois	20	210	7	19	219	14	20	249	6	18	260	10
Indiana	12	215	7	11	223	15	12	251	7	14	264	11
Iowa	5	215	9	6	224	18	4	257	11	5	258	11
Kansas	11	217	13	7	227	18	9	252	8	7	269	16
Kentucky	12	214	8	9	225	17	9	250	5	10	261	12
Louisiana	53	213	6	46	219	12	46	250	5	40	259	10
Maine	1	S	S	3	212	10	1	S	S	3	265	18
Maryland	37	216	11	35	230	23	31	256	9	34	267	18
Massachusetts	11	222	13	9	235	27	8	260	10	8	275	26
Michigan	21	209	7	16	211	8	22	245	4	16	250	7
Minnesota	8	219	16	9	225	23	6	251	9	8	266	18
Mississippi	55	212	6	45	217	10	48	246	3	49	255	8
Missouri	18	216	9	17	216	14	15	250	6	16	254	8
Montana	1	S	S	1	S	S	1	S	S	1	S	S
Nebraska	7	211	7	8	213	7	5	247	7	6	255	8
Nevada	10	215	10	10	226	23	9	248	9	9	259	12
New Hampshire	2	S	S	2	235	27	1	S	S	2	S	S
New Jersey	18	217	11	14	231	24	18	253	7	16	272	21
New Mexico	3	216	10	2	226	19	3	254	5	2	265	16
New York	19	219	12	20	224	17	20	255	10	19	264	13
North Carolina	30	225	14	27	229	18	30	260	11	26	267	15
North Dakota	1	S	S	2	S	S	1	S	S	3	S	S
Ohio	19	217	10	17	226	20	17	257	8	17	263	12
Oklahoma	12	211	6	11	224	14	10	249	5	11	262	11
Oregon	3	223	20	2	215	14	3	265	17	3	263	18

Appendix table 8-3

Average mathematics NAEP scores and achievement-level results for black students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	20	212	8	13	224	17	15	247	4	19	257	9
Rhode Island	9	210	7	8	225	20	7	244	5	7	256	12
South Carolina	40	222	13	36	220	13	40	258	8	35	263	14
South Dakota	1	S	S	3	227	21	1	S	S	2	270	21
Tennessee	26	208	6	22	216	12	23	242	5	22	252	9
Texas	13	226	15	13	232	25	16	260	8	13	277	21
Utah	1	S	S	2	S	S	1	S	S	1	S	S
Vermont	2	S	S	2	S	S	1	S	S	2	S	S
Virginia	26	223	13	21	229	20	27	262	11	22	268	18
Washington	6	222	17	5	227	20	5	262	13	5	265	15
West Virginia	4	221	13	5	227	20	4	253	6	6	260	10
Wisconsin	12	209	8	9	217	12	8	241	5	9	256	11
Wyoming	1	S	S	1	S	S	1	S	S	1	S	S

S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-4

Average science NAEP scores and achievement-level results for black students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	16	127	10	16	125	8	16	128	9
Alabama	33	121	6	35	115	4	33	118	5
Alaska	NA	NA	NA	NA	NA	NA	4	133	8
Arizona	6	129	13	5	126	8	6	128	6
Arkansas	24	117	6	21	111	4	22	119	3
California	7	122	9	6	122	8	7	124	8
Colorado	5	128	12	6	135	13	5	149	26
Connecticut	12	129	9	11	126	9	12	128	9
Delaware	33	135	11	34	133	10	33	134	10
District of Columbia	NA	NA	NA	NA	NA	NA	82	107	4
Florida	22	131	10	22	126	7	22	127	9
Georgia	36	126	10	37	129	10	39	133	12
Hawaii	3	134	16	3	133	15	3	S	S
Idaho	1	S	S	1	S	S	1	S	S
Illinois	19	120	9	19	118	4	18	120	4
Indiana	11	129	9	12	126	8	14	125	8
Iowa	5	130	14	5	127	9	5	128	10
Kansas	NA	NA	NA	NA	NA	NA	8	129	9
Kentucky	10	135	15	10	137	16	11	135	12
Louisiana	48	123	8	43	120	5	40	125	8
Maine	3	139	26	2	126	11	3	S	S
Maryland	35	131	12	36	127	8	35	131	11
Massachusetts	8	138	17	8	132	13	8	133	15
Michigan	20	118	6	18	121	6	16	124	6
Minnesota	9	129	12	7	128	11	8	129	10
Mississippi	52	116	4	50	114	3	49	119	5
Missouri	17	127	12	14	129	9	16	130	10
Montana	1	S	S	1	S	S	1	S	S
Nebraska	NA	NA	NA	NA	NA	NA	6	126	11
Nevada	10	122	8	11	127	9	9	123	7
New Hampshire	2	S	S	2	S	S	2	S	S
New Jersey	16	133	12	16	127	8	16	131	9
New Mexico	3	134	16	3	S	S	2	S	S
New York	19	127	9	19	123	7	19	130	11
North Carolina	28	126	9	28	121	5	26	125	7
North Dakota	2	S	S	1	S	S	3	S	S
Ohio	19	129	10	15	126	6	17	132	8
Oklahoma	12	125	8	10	124	7	10	126	9
Oregon	4	131	12	2	135	13	3	S	S

Appendix table 8-4

Average science NAEP scores and achievement-level results for black students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Black 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Black 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	15	121	7	13	123	7	19	120	5
Rhode Island	9	126	10	8	125	8	7	122	10
South Carolina	35	128	10	39	124	6	36	128	8
South Dakota	2	S	S	2	141	24	2	S	S
Tennessee	24	121	8	25	122	6	22	121	7
Texas	13	139	18	14	133	13	13	137	16
Utah	2	S	S	1	S	S	1	S	S
Vermont	NA	NA	NA	NA	NA	NA	1	S	S
Virginia	26	141	18	26	135	11	22	138	15
Washington	6	127	8	5	135	16	5	133	15
West Virginia	6	130	11	5	127	10	6	136	11
Wisconsin	11	121	8	10	120	6	10	121	8
Wyoming	1	S	S	1	S	S	1	S	S

NA = not available; S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Appendix table 8-5

Average mathematics NAEP scores and achievement-level results for Hispanic students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	19	221	15	24	229	24	15	258	11	23	269	20
Alabama	1	S	S	5	227	21	1	S	S	5	255	9
Alaska	5	228	24	6	239	36	3	263	11	6	277	25
Arizona	38	217	11	43	227	21	37	258	9	41	266	18
Arkansas	4	221	15	10	233	28	3	248	7	9	272	20
California	49	216	11	54	222	17	39	250	8	52	260	13
Colorado	25	217	13	33	230	26	21	259	12	28	271	20
Connecticut	15	223	15	21	222	19	12	259	11	17	262	13
Delaware	7	226	17	13	231	25	6	257	11	10	274	21
District of Columbia	8	205	7	12	223	21	9	246	3	11	261	17
Florida	21	232	27	29	236	31	19	264	16	27	274	22
Georgia	7	219	13	13	233	29	4	262	14	9	277	25
Hawaii	3	219	17	5	237	39	3	263	16	4	263	19
Idaho	13	217	11	16	223	17	11	251	7	16	267	16
Illinois	18	218	13	20	226	20	15	259	9	24	272	19
Indiana	4	226	18	10	234	29	3	261	9	8	275	21
Iowa	5	222	14	9	229	24	4	255	10	8	269	14
Kansas	8	230	19	16	235	26	9	263	16	14	274	22
Kentucky	1	S	S	4	236	30	1	S	S	3	269	18
Louisiana	1	S	S	4	230	20	2	S	S	4	269	16
Maine	1	S	S	2	S	S	1	S	S	1	S	S
Maryland	6	227	21	11	245	43	6	262	15	11	273	27
Massachusetts	12	222	13	15	236	32	10	255	9	13	273	21
Michigan	4	223	17	6	228	21	3	267	14	4	274	23
Minnesota	4	220	14	9	230	28	3	262	16	6	270	18
Mississippi	1	S	S	3	229	22	1	S	S	3	273	20
Missouri	3	220	14	5	231	24	2	S	S	3	267	16
Montana	2	236	25	4	237	31	2	S	S	3	285	31
Nebraska	9	213	9	16	226	20	7	255	10	15	261	11
Nevada	30	216	10	42	229	24	25	250	7	38	266	15
New Hampshire	3	225	19	4	235	30	2	S	S	3	266	15
New Jersey	16	224	18	23	234	28	14	262	14	20	274	24
New Mexico	53	217	10	60	228	23	51	254	7	61	269	18
New York	20	221	15	21	226	20	17	262	16	22	263	13
North Carolina	6	235	30	12	238	33	5	263	16	11	275	23
North Dakota	1	S	S	3	233	24	1	S	S	2	S	S
Ohio	2	225	16	4	233	27	2	270	18	3	273	26
Oklahoma	7	220	11	12	227	19	6	258	9	11	264	14

Appendix table 8-5

Average mathematics NAEP scores and achievement-level results for Hispanic students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Oregon	14	218	15	21	220	15	10	258	12	20	268	17
Pennsylvania	5	216	12	9	226	20	3	253	6	7	269	22
Rhode Island	16	207	6	22	224	21	13	245	5	19	261	13
South Carolina	3	232	26	6	234	28	2	S	S	5	273	25
South Dakota	2	223	20	3	226	18	1	S	S	3	274	20
Tennessee	2	218	14	7	228	19	2	S	S	5	266	15
Texas	44	230	21	53	235	29	38	267	14	51	283	31
Utah	11	216	11	14	223	17	9	249	7	15	257	9
Vermont	1	S	S	1	S	S	*	S	S	2	S	S
Virginia	7	230	20	11	237	31	5	268	17	11	279	27
Washington	12	223	18	21	226	22	9	263	17	17	269	22
West Virginia	1	S	S	1	S	S	*	S	S	1	S	S
Wisconsin	8	221	13	10	228	22	4	262	16	8	270	21
Wyoming	8	229	20	14	235	31	7	265	13	12	271	20

* = rounds to zero; S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-6

Average science NAEP scores and achievement-level results for Hispanic students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	22	130	13	21	131	12	22	136	16
Alabama	4	125	9	3	129	10	5	136	15
Alaska	NA	NA	NA	NA	NA	NA	6	147	23
Arizona	45	124	9	42	127	10	41	132	11
Arkansas	8	136	15	7	134	12	9	138	13
California	51	121	8	51	122	7	51	128	11
Colorado	28	134	15	28	137	14	28	141	18
Connecticut	17	128	11	15	128	9	17	129	11
Delaware	12	142	20	9	141	16	11	139	13
District of Columbia	NA	NA	NA	NA	NA	NA	11	116	9
Florida	25	144	23	26	139	17	27	144	24
Georgia	11	133	15	10	137	15	9	143	21
Hawaii	3	134	22	3	148	25	4	144	18
Idaho	14	128	10	14	137	14	15	139	15
Illinois	22	129	10	18	131	10	23	135	11
Indiana	6	136	15	7	135	16	8	136	14
Iowa	8	134	15	7	133	12	8	143	15
Kansas	NA	NA	NA	NA	NA	NA	14	134	12
Kentucky	3	150	31	2	145	24	3	149	27
Louisiana	4	144	23	2	S	S	4	142	22
Maine	1	S	S	1	S	S	2	S	S
Maryland	11	143	21	10	136	12	11	142	18
Massachusetts	17	132	12	11	131	14	13	130	12
Michigan	5	138	20	4	139	20	4	146	24
Minnesota	7	134	16	5	132	14	6	137	18
Mississippi	2	142	21	2	S	S	2	S	S
Missouri	4	141	21	3	150	29	3	S	S
Montana	3	149	26	3	155	33	3	S	S
Nebraska	NA	NA	NA	NA	NA	NA	14	135	13
Nevada	39	128	12	35	129	10	38	133	12
New Hampshire	4	139	20	3	131	12	3	137	14
New Jersey	21	136	15	17	138	13	20	134	12
New Mexico	58	134	15	58	135	14	61	139	16
New York	20	130	13	20	125	11	21	129	12
North Carolina	11	132	11	10	132	11	11	138	15
North Dakota	2	S	S	2	S	S	2	S	S
Ohio	3	140	26	2	140	18	3	151	31
Oklahoma	9	131	12	11	127	9	11	135	14

Appendix table 8-6

Average science NAEP scores and achievement-level results for Hispanic students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Hispanic 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Hispanic 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Oregon	17	128	12	16	130	12	20	135	14
Pennsylvania	9	125	12	6	121	7	7	118	8
Rhode Island	18	124	9	17	119	5	19	120	5
South Carolina	6	140	23	5	129	13	5	139	16
South Dakota	3	145	23	2	135	10	3	151	25
Tennessee	5	134	17	4	139	21	5	137	18
Texas	51	136	16	45	141	17	50	146	23
Utah	16	129	12	14	129	13	15	137	15
Vermont	NA	NA	NA	NA	NA	NA	2	S	S
Virginia	8	152	32	8	144	20	11	145	24
Washington	18	125	10	15	132	9	17	141	17
West Virginia	1	S	S	1	S	S	1	S	S
Wisconsin	9	138	17	7	134	15	7	140	24
Wyoming	11	140	18	10	137	12	12	143	16

NA = not available; S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-7

Average mathematics NAEP scores and achievement-level results for Asian or Pacific Islander students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	4	246	48	5	256	62	4	289	42	6	302	55
Alabama	1	S	S	1	S	S	1	S	S	1	S	S
Alaska	7	230	27	8	234	29	7	280	29	10	282	32
Arizona	2	244	41	3	249	53	2	S	S	3	302	58
Arkansas	1	S	S	2	247	53	1	S	S	2	S	S
California	11	246	49	13	256	63	13	287	39	15	298	50
Colorado	3	242	44	3	246	55	4	290	38	4	313	67
Connecticut	3	249	52	5	255	62	3	296	51	4	307	60
Delaware	3	250	59	4	262	69	2	S	S	3	311	67
District of Columbia	1	S	S	2	S	S	1	S	S	1	S	S
Florida	2	249	53	3	257	64	2	287	41	3	312	65
Georgia	2	248	53	4	263	70	3	286	40	4	302	52
Hawaii	67	225	21	69	237	37	69	265	15	72	277	29
Idaho	1	S	S	2	247	52	1	S	S	2	S	S
Illinois	2	252	58	4	257	63	3	302	58	5	314	67
Indiana	1	S	S	1	S	S	1	S	S	1	S	S
Iowa	2	S	S	2	248	52	1	S	S	3	291	45
Kansas	2	S	S	3	253	59	2	284	34	3	300	53
Kentucky	1	S	S	1	261	66	1	S	S	1	S	S
Louisiana	1	S	S	2	S	S	1	S	S	2	S	S
Maine	1	S	S	2	246	48	1	S	S	1	S	S
Maryland	6	254	58	6	267	74	5	302	56	7	311	65
Massachusetts	4	248	49	6	267	76	4	304	57	4	320	72
Michigan	2	248	47	3	263	71	2	S	S	3	310	63
Minnesota	5	229	27	5	253	57	5	284	32	6	282	35
Mississippi	1	S	S	1	S	S	1	S	S	1	S	S
Missouri	1	S	S	2	252	57	1	S	S	2	S	S
Montana	1	S	S	1	S	S	1	S	S	1	S	S
Nebraska	1	S	S	2	241	40	2	S	S	2	S	S
Nevada	5	237	34	7	252	58	7	280	31	8	287	41
New Hampshire	1	S	S	3	264	70	1	S	S	3	303	60
New Jersey	7	256	61	8	265	75	6	306	61	8	318	73
New Mexico	1	S	S	1	254	63	1	S	S	1	S	S
New York	6	250	51	10	252	58	6	290	41	8	302	55
North Carolina	2	255	60	3	263	71	2	297	48	3	314	71
North Dakota	1	S	S	1	S	S	1	S	S	1	S	S
Ohio	1	S	S	2	254	58	1	S	S	2	S	S

Appendix table 8-7

Average mathematics NAEP scores and achievement-level results for Asian or Pacific Islander students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Oklahoma	2	247	45	3	252	55	1	S	S	2	304	60
Oregon	4	245	46	4	249	51	4	292	41	5	297	49
Pennsylvania	2	S	S	3	264	75	2	S	S	3	310	62
Rhode Island	4	225	22	3	251	49	3	265	20	3	287	41
South Carolina	1	S	S	2	S	S	1	S	S	2	S	S
South Dakota	1	S	S	1	S	S	1	S	S	1	S	S
Tennessee	1	S	S	2	249	51	1	S	S	2	S	S
Texas	3	258	62	3	263	69	3	303	58	4	316	69
Utah	4	224	16	3	236	31	3	275	25	4	284	35
Vermont	2	S	S	2	S	S	1	S	S	2	S	S
Virginia	5	255	60	7	262	70	4	297	48	6	313	65
Washington	7	244	44	8	256	62	8	285	37	9	302	55
West Virginia	1	S	S	*	S	S	*	S	S	1	S	S
Wisconsin	3	230	26	4	242	42	4	273	17	4	290	43
Wyoming	1	S	S	1	S	S	1	S	S	1	S	S

* = rounds to zero; S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-8

Average science NAEP scores and achievement-level results for Asian or Pacific Islander students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	5	160	45	5	159	40	5	159	41
Alabama	1	S	S	1	S	S	1	S	S
Alaska	NA	NA	NA	NA	NA	NA	10	145	22
Arizona	3	156	43	3	159	43	3	S	S
Arkansas	2	152	34	1	S	S	2	S	S
California	11	160	45	13	154	34	15	157	39
Colorado	4	162	48	4	161	41	4	162	49
Connecticut	4	164	48	4	169	52	4	170	56
Delaware	3	169	53	3	160	40	4	168	54
District of Columbia	NA	NA	NA	NA	NA	NA	1	S	S
Florida	2	158	44	3	163	40	3	161	44
Georgia	3	167	50	3	172	58	3	168	51
Hawaii	65	138	21	68	136	14	72	139	18
Idaho	2	156	39	2	S	S	2	S	S
Illinois	5	166	51	4	167	48	5	163	42
Indiana	2	S	S	2	S	S	1	S	S
Iowa	2	156	43	2	S	S	3	S	S
Kansas	NA	NA	NA	NA	NA	NA	3	156	37
Kentucky	1	172	65	1	S	S	1	S	S
Louisiana	1	S	S	2	S	S	2	S	S
Maine	1	S	S	2	S	S	1	S	S
Maryland	6	164	47	6	169	51	6	164	48
Massachusetts	5	167	53	6	168	49	4	170	55
Michigan	3	162	49	2	S	S	3	166	50
Minnesota	6	147	31	6	141	23	6	149	29
Mississippi	1	S	S	1	S	S	1	S	S
Missouri	2	S	S	2	167	48	2	S	S
Montana	1	S	S	1	S	S	1	S	S
Nebraska	NA	NA	NA	NA	NA	NA	2	S	S
Nevada	8	151	32	8	148	26	8	154	31
New Hampshire	3	171	57	2	S	S	3	S	S
New Jersey	8	173	63	7	174	58	8	173	56
New Mexico	2	S	S	1	S	S	1	S	S
New York	9	156	38	7	161	43	8	154	34
North Carolina	2	163	52	2	165	44	3	160	34
North Dakota	1	S	S	1	S	S	1	S	S

Appendix table 8-8

Average science NAEP scores and achievement-level results for Asian or Pacific Islander students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Asian or Pacific Islander 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Asian or Pacific Islander 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Ohio	2	S	S	1	S	S	1	S	S
Oklahoma	2	S	S	2	S	S	2	S	S
Oregon	6	159	44	5	160	45	5	159	40
Pennsylvania	4	166	53	3	159	41	3	163	48
Rhode Island	3	152	37	3	146	21	3	151	35
South Carolina	1	S	S	1	S	S	1	S	S
South Dakota	1	S	S	1	S	S	1	S	S
Tennessee	2	S	S	1	S	S	2	S	S
Texas	4	163	47	4	170	55	4	172	54
Utah	4	147	28	3	147	31	4	153	35
Vermont	NA	NA	NA	NA	NA	NA	2	S	S
Virginia	6	174	61	6	168	49	6	172	56
Washington	9	156	41	8	157	39	9	156	37
West Virginia	1	S	S	1	S	S	#	S	S
Wisconsin	3	153	37	4	152	28	4	149	24
Wyoming	1	S	S	1	S	S	1	S	S

NA = not available; S = data are suppressed because reporting standards were not met.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-9

Average mathematics NAEP scores and achievement-level results for female students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	49	233	29	49	239	39	50	275	26	49	282	33
Alabama	49	223	18	49	232	27	49	261	14	49	269	19
Alaska	48	231	27	48	235	35	49	278	28	49	284	35
Arizona	50	227	23	49	234	31	49	271	21	50	276	29
Arkansas	49	230	25	49	238	37	48	267	18	50	278	28
California	49	225	22	50	234	33	49	266	21	49	273	25
Colorado	49	233	31	49	243	45	49	283	34	49	292	43
Connecticut	49	238	37	48	241	44	51	283	33	50	286	37
Delaware	50	235	29	49	239	37	49	276	25	50	284	33
District of Columbia	50	206	7	50	223	22	53	244	5	52	262	17
Florida	48	233	29	49	240	36	49	269	21	49	277	27
Georgia	49	229	25	49	239	37	50	269	20	50	278	27
Hawaii	50	226	22	50	240	40	50	266	16	48	279	30
Idaho	49	233	27	49	239	38	49	279	27	49	286	36
Illinois	48	232	29	48	238	37	50	276	28	49	283	32
Indiana	50	237	34	49	242	42	50	280	29	50	285	34
Iowa	48	236	32	49	242	42	48	283	31	49	284	33
Kansas	48	240	39	49	246	47	49	284	34	49	289	40
Kentucky	48	227	20	49	240	38	50	274	23	49	281	29
Louisiana	50	226	20	49	231	26	51	266	15	49	274	22
Maine	49	236	31	48	243	42	50	281	28	49	289	39
Maryland	49	232	29	49	246	45	50	276	27	50	287	38
Massachusetts	49	239	38	50	252	57	49	284	35	49	298	51
Michigan	48	233	30	50	235	33	51	276	26	49	279	29
Minnesota	47	240	38	50	248	52	50	292	44	49	295	48
Mississippi	52	223	16	48	231	25	51	260	11	50	272	20
Missouri	50	235	29	49	241	41	51	278	26	49	281	30
Montana	48	235	29	50	242	43	49	286	34	49	293	45
Nebraska	49	235	31	50	239	37	48	281	30	49	282	31
Nevada	48	226	21	49	236	33	51	268	19	49	277	28
New Hampshire	48	240	39	48	251	56	49	286	33	49	292	44
New Jersey	48	237	36	49	247	49	49	281	33	49	294	46
New Mexico	49	221	14	50	232	28	51	263	15	49	274	24
New York	50	235	31	49	237	34	49	279	31	49	281	30
North Carolina	50	241	40	50	244	44	50	282	32	49	287	37
North Dakota	48	235	30	49	244	44	47	287	36	49	291	40
Ohio	49	237	34	50	243	44	50	281	29	50	288	37
Oklahoma	50	228	20	48	238	33	48	272	18	51	278	26
Oregon	48	235	31	50	237	36	50	280	30	49	280	30

Appendix table 8-9

Average mathematics NAEP scores and achievement-level results for female students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	50	234	32	49	245	46	50	277	27	49	285	38
Rhode Island	50	229	27	48	242	42	48	271	22	48	283	33
South Carolina	50	234	29	50	238	36	49	274	23	49	282	32
South Dakota	49	235	31	49	240	37	49	284	34	49	290	41
Tennessee	49	228	22	48	232	29	49	268	20	49	272	22
Texas	49	236	31	49	241	39	49	276	23	50	290	39
Utah	48	233	28	49	241	40	48	280	29	50	281	33
Vermont	50	240	39	49	245	46	49	286	35	49	294	46
Virginia	49	239	35	49	244	44	50	280	30	49	289	40
Washington	49	237	33	49	242	43	50	281	31	49	288	40
West Virginia	48	230	22	49	234	29	49	271	18	49	272	21
Wisconsin	48	235	32	48	244	45	48	284	34	49	287	39
Wyoming	48	240	36	49	243	42	47	283	30	49	285	34

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-10

Average science NAEP scores and achievement-level results for female students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	49	148	31	49	147	26	49	148	27
Alabama	48	142	25	49	136	15	49	139	16
Alaska	NA	NA	NA	NA	NA	NA	49	153	32
Arizona	49	138	21	49	139	18	49	142	19
Arkansas	49	146	27	49	142	20	50	147	23
California	48	137	22	49	135	17	49	138	20
Colorado	49	153	37	49	153	32	49	159	40
Connecticut	49	155	38	49	153	32	50	153	33
Delaware	49	152	32	49	146	21	49	149	26
District of Columbia	NA	NA	NA	NA	NA	NA	51	113	7
Florida	50	150	31	50	144	21	49	147	26
Georgia	50	143	25	50	144	24	50	148	27
Hawaii	48	143	25	49	137	15	48	141	20
Idaho	50	153	34	49	155	33	49	156	33
Illinois	50	147	30	49	146	25	49	144	21
Indiana	49	152	34	49	150	28	50	149	27
Iowa	49	157	40	49	154	31	49	155	33
Kansas	NA	NA	NA	NA	NA	NA	49	153	30
Kentucky	49	160	43	49	154	30	49	155	31
Louisiana	48	141	24	51	138	18	49	141	19
Maine	49	158	39	49	156	33	49	158	34
Maryland	50	149	32	49	146	25	50	151	32
Massachusetts	50	159	43	50	158	38	49	159	40
Michigan	50	149	32	49	152	31	49	154	34
Minnesota	49	158	41	49	157	36	49	158	38
Mississippi	49	132	16	51	130	13	50	133	15
Missouri	48	158	40	49	154	33	49	155	33
Montana	49	160	42	49	159	38	49	160	39
Nebraska	NA	NA	NA	NA	NA	NA	49	155	35
Nevada	50	139	21	50	140	19	49	141	18
New Hampshire	48	163	48	49	157	33	49	160	38
New Jersey	49	154	37	49	153	31	49	152	30
New Mexico	49	141	23	50	140	18	49	142	19
New York	49	147	29	49	147	27	49	147	27
North Carolina	49	146	27	49	143	22	49	147	23
North Dakota	49	160	42	49	159	37	49	161	38
Ohio	50	155	38	49	154	32	49	155	33
Oklahoma	50	148	28	49	144	22	50	147	23
Oregon	48	151	34	49	152	32	49	154	32

Appendix table 8-10

Average science NAEP scores and achievement-level results for female students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Female 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Female 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	48	151	36	50	151	31	49	147	28
Rhode Island	48	149	32	49	143	22	48	146	27
South Carolina	49	149	33	50	142	22	49	147	24
South Dakota	48	156	38	49	157	35	49	159	36
Tennessee	48	148	33	49	146	24	49	147	25
Texas	49	147	28	50	148	26	50	151	29
Utah	49	153	36	49	156	36	50	159	38
Vermont	NA	NA	NA	NA	NA	NA	49	160	39
Virginia	49	162	47	49	155	33	49	158	38
Washington	49	151	35	49	153	30	49	154	33
West Virginia	49	147	26	50	142	18	49	145	19
Wisconsin	48	156	40	49	155	33	49	156	36
Wyoming	48	154	36	49	154	30	49	157	34

NA = not available.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-11

Average mathematics NAEP scores and achievement-level results for male students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	51	235	34	51	241	41	50	277	29	51	283	34
Alabama	51	223	19	51	231	28	51	263	18	51	269	21
Alaska	52	235	33	52	237	38	51	280	32	51	283	36
Arizona	50	231	28	51	237	36	51	271	21	50	282	34
Arkansas	51	228	27	51	238	37	52	265	19	50	280	31
California	51	229	28	50	235	35	51	268	23	51	273	26
Colorado	51	237	37	51	246	49	51	284	35	51	291	44
Connecticut	51	243	45	52	243	46	49	285	37	50	288	39
Delaware	50	237	34	51	241	40	51	278	27	50	282	31
District of Columbia	50	204	8	50	220	21	47	242	7	48	259	17
Florida	52	235	33	51	240	38	51	273	26	51	278	29
Georgia	51	231	29	51	238	37	50	270	24	50	279	29
Hawaii	50	227	24	50	238	39	50	265	17	52	277	30
Idaho	51	237	34	51	241	41	51	281	30	51	287	37
Illinois	52	234	34	52	240	39	50	278	31	51	283	33
Indiana	50	239	37	51	245	46	50	282	33	50	285	34
Iowa	52	240	39	51	244	44	52	285	35	51	286	34
Kansas	52	244	44	51	247	48	51	284	34	51	291	41
Kentucky	52	230	24	51	242	39	50	275	25	51	282	32
Louisiana	50	227	22	51	231	26	49	267	19	51	272	22
Maine	51	239	37	52	246	48	50	283	31	51	288	38
Maryland	51	235	33	51	248	50	50	279	33	50	289	42
Massachusetts	51	244	44	50	255	60	51	289	42	51	299	52
Michigan	52	238	38	50	238	37	49	277	30	51	282	33
Minnesota	53	244	45	50	250	54	50	289	43	51	295	47
Mississippi	48	223	18	52	229	25	49	262	14	50	267	18
Missouri	50	235	30	51	240	42	49	280	30	51	283	33
Montana	52	236	33	50	245	48	51	286	36	51	293	46
Nebraska	51	238	36	50	241	41	52	284	35	51	284	35
Nevada	52	229	25	51	238	38	49	268	21	51	279	29
New Hampshire	52	246	46	52	252	58	51	287	36	51	292	44
New Jersey	52	240	41	51	249	53	51	282	34	51	294	48
New Mexico	51	224	21	50	234	31	49	264	16	51	275	24
New York	50	237	35	51	238	37	51	281	33	51	280	30
North Carolina	50	243	42	50	245	44	50	281	32	51	285	37
North Dakota	52	240	38	51	246	49	53	287	37	51	293	45
Ohio	51	239	37	50	245	47	50	283	32	50	290	40
Oklahoma	50	230	25	52	237	34	52	272	22	49	280	29
Oregon	52	237	35	50	237	37	50	282	33	51	285	35

Appendix table 8-11

Average mathematics NAEP scores and achievement-level results for male students in grades 4 and 8 in public schools, by state: 2003 and 2011

	4th grade						8th grade					
	2003			2011			2003			2011		
State	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	50	238	39	51	247	49	50	280	33	51	287	40
Rhode Island	50	231	29	52	242	43	52	273	26	52	283	35
South Carolina	50	237	34	50	237	36	51	280	29	51	280	31
South Dakota	51	239	37	51	242	42	51	286	35	51	291	42
Tennessee	51	228	25	52	233	30	51	268	22	51	276	26
Texas	51	239	35	51	241	39	51	278	27	50	291	41
Utah	52	236	34	51	244	46	52	282	33	50	285	37
Vermont	50	244	44	51	248	52	51	286	35	51	294	46
Virginia	51	240	38	51	247	48	50	283	33	51	289	40
Washington	51	240	39	51	244	46	50	282	33	51	288	41
West Virginia	52	232	26	51	235	33	51	271	21	51	274	22
Wisconsin	52	238	38	52	245	49	52	284	36	51	290	43
Wyoming	52	242	41	51	245	46	53	284	34	51	290	41

NAEP = National Assessment of Educational Progress.

SOURCE: National Center for Education Statistics, NAEP (various years).

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Appendix table 8-12

Average science NAEP scores and achievement-level results for male students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)
United States	51	149	34	51	151	32	51	153	34
Alabama	52	144	29	51	142	24	51	141	22
Alaska	NA	NA	NA	NA	NA	NA	51	154	35
Arizona	51	137	23	51	143	26	51	146	26
Arkansas	51	146	30	51	145	28	50	149	30
California	52	136	22	51	138	22	51	143	25
Colorado	51	156	40	51	158	39	51	162	44
Connecticut	51	156	42	51	157	38	50	156	38
Delaware	51	153	35	51	151	29	51	151	29
District of Columbia	NA	NA	NA	NA	NA	NA	49	110	8
Florida	50	151	33	50	148	28	51	150	31
Georgia	50	145	29	50	150	30	50	153	34
Hawaii	52	137	24	51	140	19	52	143	23
Idaho	50	154	37	51	160	42	51	162	42
Illinois	50	148	34	51	150	32	51	150	30
Indiana	51	153	36	51	155	35	50	157	38
Iowa	51	158	42	51	158	38	51	159	38
Kansas	NA	NA	NA	NA	NA	NA	51	159	41
Kentucky	51	161	46	51	159	37	51	158	37
Louisiana	52	141	26	49	141	22	51	144	25
Maine	51	161	44	51	160	38	51	162	40
Maryland	50	151	33	51	150	32	50	152	32
Massachusetts	50	162	47	50	162	44	51	164	47
Michigan	50	151	37	51	155	38	51	160	42
Minnesota	51	159	45	51	161	43	51	163	46
Mississippi	51	134	18	49	134	17	50	142	22
Missouri	52	155	40	51	158	38	51	158	39
Montana	51	160	43	51	165	47	51	166	49
Nebraska	NA	NA	NA	NA	NA	NA	51	158	40
Nevada	50	142	26	50	142	21	51	148	28
New Hampshire	52	163	47	51	164	44	51	165	46
New Jersey	51	156	41	51	156	37	51	157	38
New Mexico	51	142	25	50	147	24	51	147	25
New York	51	148	31	51	150	34	51	150	31
North Carolina	51	149	33	51	145	25	51	149	30
North Dakota	51	164	49	51	166	47	51	167	51
Ohio	50	159	45	51	161	41	51	161	43
Oklahoma	50	148	29	51	149	28	50	150	30
Oregon	52	151	34	51	156	37	51	157	38

Appendix table 8-12

Average science NAEP scores and achievement-level results for male students in grades 4 and 8 in public schools, by state: 2009 and 2011

	4th grade			8th grade					
	2009			2009			2011		
State	Male 4th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)	Male 8th grade students (%)	Average scale score	Students ≥ proficient (%)
Pennsylvania	52	156	41	50	157	39	51	155	38
Rhode Island	52	151	36	51	149	30	52	151	34
South Carolina	51	150	34	50	144	24	51	150	32
South Dakota	52	158	42	51	164	45	51	165	47
Tennessee	52	149	33	51	149	32	51	154	36
Texas	51	148	30	50	152	32	50	155	35
Utah	51	155	39	51	159	43	50	164	47
Vermont	NA	NA	NA	NA	NA	NA	51	165	47
Virginia	51	161	45	51	157	39	51	161	43
Washington	51	151	34	51	156	38	51	159	38
West Virginia	51	149	30	50	148	26	51	153	30
Wisconsin	52	157	41	51	160	43	51	162	44
Wyoming	52	157	38	51	162	42	51	163	42

NA = not available.

NAEP = National Assessment of Educational Progress.

NOTE: Data for 2011 for grade 4 are not available.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

www.nsf.gov/statistics/indicators/

NSB 14–01A