

## Diversity in Science and Engineering Employment in Industry

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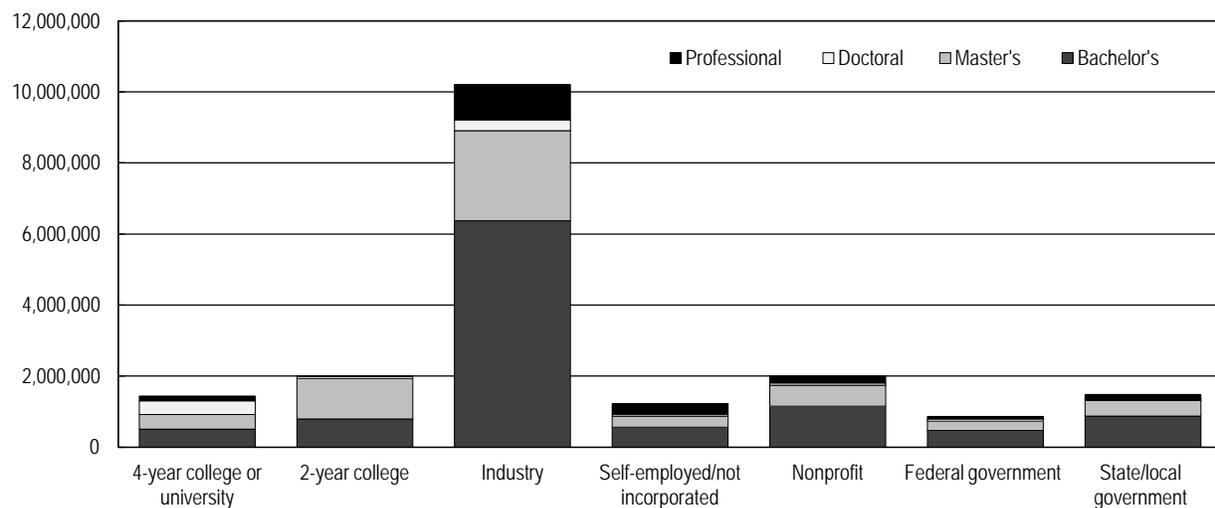
In 2008, 19 million scientists and engineers were employed in the United States.<sup>2</sup> This figure includes 4.9 million employed in science and engineering (S&E) occupations, 5.5 million employed in S&E related occupations, and 8.8 million employed in non-S&E occupations with S&E related degrees.<sup>3</sup> More than half (53%) of these scientists and engineers worked in industry (figure 1).

This InfoBrief examines sex, racial/ethnic, and disability characteristics of scientists and engineers employed in industry, including breakouts by highest educational degree, occupation, primary and secondary work activity, and management occupations.

Compared with their proportions in the U.S. population, women, blacks,

Hispanics (regardless of racial background), American Indians and Alaska Natives, and persons with disabilities are underrepresented in the industrial S&E workforce; Asians and whites are overrepresented.<sup>4</sup> White men who are not of Hispanic origin account for half of the scientists and engineers working in industry, and white women who are not of Hispanic origin account for

FIGURE 1. Employed scientists and engineers, by sector of employment and level of highest degree: 2008



NOTES: Scientists and engineers include persons who have ever received a U.S. bachelor's or higher degree in a science and engineering (S&E) or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003. Industry includes private for-profit noneducational institutions, persons who are self-employed and incorporated, and other for-profit noneducational employers. Numbers are rounded to the nearest thousand. 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): 2008.

another 25% (table 1). Minority women account for 10% and minority men account for 15% of scientists and engineers working in industry, with about half of all minorities being Asian.<sup>5</sup> Six percent of scientists and engineers employed in industry have disabilities.

## Highest Educational Degree

Most scientists and engineers (63%) employed in industry have a bachelor's degree as their highest degree (figure 1, table 1). Another 25% have master's

degrees, and 3% have doctoral degrees. Although the percentage with doctoral degrees is small, the number of scientists and engineers with doctorates in industry (300,000) is second only to the number of scientists and engineers with doctorates who are employed by 4-year colleges and universities (381,000).

Male scientists and engineers employed in industry have higher levels of education than their female counterparts. Among scientists and engineers

employed in industry, women are more likely than men to have a bachelor's as their highest degree and men are more likely than women to have a doctoral degree. Black, Hispanic, and white scientists and engineers in industry have fairly similar educational attainment, but Asians, Asian men in particular, are more likely than any other group to have master's or doctoral degrees (table 1). Compared with scientists and engineers without disabilities, those with disabilities are more likely

TABLE 1. Scientists and engineers employed in industry, by sex, race/ethnicity, disability status, and level of highest degree: 2008

Sex, race/ethnicity, and disability status	All degree levels <sup>a</sup>		Bachelor's		Master's		Doctoral	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Both sexes	10,204,000	100.0	6,374,000	62.5	2,536,000	24.9	300,000	2.9
White	7,639,000	100.0	4,886,000	64.0	1,792,000	23.5	196,000	2.6
Asian	1,311,000	100.0	646,000	49.3	471,000	35.9	84,000	6.4
Black or African American	470,000	100.0	313,000	66.6	112,000	23.8	8,000	1.7
Hispanic	542,000	100.0	351,000	64.8	121,000	22.3	8,000	1.5
American Indian or Alaska Native	36,000	100.0	26,000	72.2	7,000	19.4	*	*
Native Hawaiian or Other Pacific Islander	44,000	100.0	34,000	77.3	6,000	13.6	1,000	2.3
Multiple race	161,000	100.0	118,000	73.3	26,000	16.1	3,000	1.9
Without disability	9,561,000	100.0	5,940,000	62.1	2,396,000	25.1	283,000	3.0
With disability	643,000	100.0	434,000	67.5	140,000	21.8	17,000	2.6
Female	3,587,000	100.0	2,310,000	64.4	872,000	24.3	70,000	2.0
White	2,575,000	100.0	1,687,000	65.5	607,000	23.6	45,000	1.7
Asian	471,000	100.0	258,000	54.8	148,000	31.4	17,000	3.6
Black or African American	232,000	100.0	156,000	67.2	54,000	23.3	4,000	1.7
Hispanic	208,000	100.0	136,000	65.4	48,000	23.1	3,000	1.4
American Indian or Alaska Native	13,000	100.0	10,000	76.9	2,000	15.4	*	*
Native Hawaiian or Other Pacific Islander	16,000	100.0	12,000	75.0	1,000	6.3	*	*
Multiple race	72,000	100.0	52,000	72.2	12,000	16.7	1,000	1.4
Without disability	3,397,000	100.0	2,176,000	64.1	832,000	24.5	68,000	2.0
With disability	190,000	100.0	134,000	70.5	41,000	21.6	2,000	1.1
Male	6,617,000	100.0	4,064,000	61.4	1,664,000	25.1	229,000	3.5
White	5,063,000	100.0	3,200,000	63.2	1,185,000	23.4	151,000	3.0
Asian	840,000	100.0	389,000	46.3	323,000	38.5	67,000	8.0
Black or African American	238,000	100.0	156,000	65.5	59,000	24.8	4,000	1.7
Hispanic	334,000	100.0	216,000	64.7	73,000	21.9	5,000	1.5
American Indian or Alaska Native	23,000	100.0	16,000	69.6	5,000	21.7	*	*
Native Hawaiian or Other Pacific Islander	29,000	100.0	21,000	72.4	5,000	17.2	*	*
Multiple race	89,000	100.0	67,000	75.3	13,000	14.6	2,000	2.2
Without disability	6,164,000	100.0	3,764,000	61.1	1,564,000	25.4	215,000	3.5
With disability	453,000	100.0	301,000	66.4	99,000	21.9	15,000	3.3

\* = estimate < 500.

<sup>a</sup>Total includes professional degrees not broken out separately.

NOTES: Scientists and engineers include persons who have ever received a U.S. bachelor's or higher degree in a science and engineering (S&E) or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003. American Indians or Alaska Natives, Asians, blacks or African Americans, Native Hawaiians or Other Pacific Islanders, whites, and persons reporting more than one race refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race. Numbers are rounded to the nearest thousand. 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): 2008.

to have a bachelor's as their highest degree and are less likely to have a master's as their highest degree.

## Occupation

Of the 10 million scientists and engineers employed in industry, about 3 million work in S&E occupations, over 2 million work in S&E-related occupa-

tions (primarily doctors and nurses), and nearly 5 million work in non-S&E occupations (primarily top-level management, management-related occupations, and sales). Among those employed in S&E occupations, by far the largest numbers are employed as computer and mathematical scientists and engineers (table 2).

Men and women differ in occupation within the industry sector. Men are more likely than women to be engineers and computer and mathematical scientists, and women are more likely than men to work in S&E-related occupations. With the exception of Asians, most racial/ethnic groups differ little in occupation within industry. Asians

TABLE 2. Scientists and engineers employed in industry, by sex, race/ethnicity, disability status, and occupation: 2008 (Percent)

Sex, race/ethnicity, and disability status	All occupations (n)	S&E occupations					S&E-related occupations	Non-S&E occupations
		Computer and mathematical scientists	Biological, agricultural, and other life scientists	Physical and related scientists	Social and related scientists	Engineers		
Both sexes	10,204,000	14.1	1.4	1.5	1.1	12.1	24.4	45.4
White	7,639,000	12.4	1.3	1.5	1.2	12.0	24.3	47.4
Asian	1,311,000	26.3	2.1	1.8	0.8	14.7	23.6	30.7
Black or African American	470,000	12.6	1.1	0.9	0.9	7.2	27.2	50.4
Hispanic	542,000	10.0	1.7	1.3	0.9	11.8	26.4	48.0
American Indian or Alaska Native	36,000	13.9	D	S	S	8.3	33.3	41.7
Native Hawaiian or Other Pacific Islander	44,000	13.6	*	D	D	15.9	27.3	40.9
Multiple race	161,000	13.7	1.2	1.9	1.2	12.4	22.4	47.8
Without disability	9,561,000	14.1	1.4	1.5	1.2	12.1	24.7	45.1
With disability	643,000	12.8	0.9	1.7	0.8	12.6	21.2	49.9
Female	3,587,000	9.3	1.8	1.3	1.4	4.2	33.8	48.1
White	2,575,000	7.9	1.7	1.2	1.6	3.5	34.6	49.3
Asian	471,000	18.5	2.8	1.9	1.1	7.4	29.5	38.9
Black or African American	232,000	9.9	1.3	0.9	0.4	3.0	37.5	47.0
Hispanic	208,000	5.8	1.9	1.0	1.0	4.8	30.3	55.3
American Indian or Alaska Native	13,000	S	D	D	D	7.7	46.2	38.5
Native Hawaiian or Other Pacific Islander	16,000	D	D	D	D	S	37.5	43.8
Multiple race	72,000	8.3	S	S	1.4	5.6	29.2	52.8
Without disability	3,397,000	9.3	1.9	1.3	1.4	4.3	34.0	47.9
With disability	190,000	8.9	1.6	1.6	1.6	2.1	31.1	53.2
Male	6,617,000	16.6	1.2	1.6	1.0	16.4	19.4	43.9
White	5,063,000	14.6	1.1	1.6	1.0	16.3	19.0	46.4
Asian	840,000	30.7	1.7	1.7	0.8	18.8	20.4	26.1
Black or African American	238,000	15.1	0.8	0.8	S	11.3	17.2	53.8
Hispanic	334,000	12.6	1.5	1.8	0.6	16.2	24.0	43.4
American Indian or Alaska Native	23,000	17.4	D	*	D	8.7	26.1	43.5
Native Hawaiian or Other Pacific Islander	29,000	13.8	D	D	D	20.7	20.7	37.9
Multiple race	89,000	18.0	S	2.2	S	16.9	16.9	43.8
Without disability	6,164,000	16.8	1.2	1.6	1.0	16.4	19.5	43.5
With disability	453,000	14.3	0.9	1.8	0.4	17.0	17.0	48.6

\* = estimate < 500; D = suppressed for confidentiality; S = suppressed for reliability.

S&E = science and engineering.

NOTES: Scientists and engineers include persons who have ever received a U.S. bachelor's or higher degree in an S&E or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003. See <http://sestat.nsf.gov/docs/occ03maj.html> for a detailed description of the occupational classification. American Indians or Alaska Natives, Asians, blacks or African Americans, Native Hawaiians or Other Pacific Islanders, whites, and persons reporting more than one race refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race. Numbers are rounded to the nearest thousand. 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): 2008.

are more likely than other racial/ethnic groups to be computer and mathematical scientists and less likely to work in non-S&E occupations. Persons with and without disabilities work in largely similar occupations.

## Primary or Secondary Work Activity

In contrast to academia, where most scientists and engineers are engaged in teaching and research, the majority

of scientists and engineers working in industry reported that their primary or secondary work activity was management, sales, or administration (69%). Another 30% reported research and development, 15% reported computer applications, and 6% reported teaching (table 3).<sup>6</sup>

Partly reflecting differences in occupation discussed above, men are more likely than women to report research

and development or computer applications as their primary or secondary work activity, whereas women are more likely to name teaching, regardless of race/ethnicity or disability status. Asians are more likely than any other racial/ethnic group to report research and development or computer applications as their primary or secondary work activity, and they are less likely than most other racial/ethnic groups to report management, sales, or admin-

TABLE 3. Scientists and engineers employed in industry, by sex, race/ethnicity, disability status, and primary/secondary work activity: 2008 (Percent)

Sex, race/ethnicity, and disability status	All work activities (n) <sup>a</sup>	Research and development	Management, sales, or administration <sup>b</sup>	Computer applications	Teaching
Both sexes	10,204,000	30.0	68.8	15.2	5.7
White	7,639,000	28.8	71.0	13.5	5.6
Asian	1,311,000	39.7	55.8	27.3	4.0
Black or African American	470,000	24.7	68.5	12.3	10.0
Hispanic	542,000	28.2	69.7	12.4	7.4
American Indian or Alaska Native	36,000	27.8	63.9	8.3	S
Native Hawaiian or Other Pacific Islander	44,000	27.3	70.5	11.4	6.8
Multiple race	161,000	29.8	69.6	13.7	5.6
Without disability	9,561,000	30.1	68.8	15.2	5.7
With disability	643,000	29.1	69.4	14.0	5.4
Female	3,587,000	22.2	66.6	9.9	10.2
White	2,575,000	20.7	68.5	8.6	10.6
Asian	471,000	30.8	56.7	18.9	6.2
Black or African American	232,000	20.3	64.2	8.6	14.2
Hispanic	208,000	23.1	69.2	7.7	10.1
American Indian or Alaska Native	13,000	S	61.5	S	S
Native Hawaiian or Other Pacific Islander	16,000	25.0	62.5	D	D
Multiple race	72,000	22.2	66.7	11.1	6.9
Without disability	3,397,000	22.3	66.7	9.9	10.2
With disability	190,000	19.5	65.8	10.5	8.9
Male	6,617,000	34.3	70.0	18.0	3.2
White	5,063,000	33.0	72.3	16.0	3.0
Asian	840,000	44.8	55.2	31.9	2.6
Black or African American	238,000	29.0	72.7	16.0	6.3
Hispanic	334,000	31.4	70.1	15.3	5.7
American Indian or Alaska Native	23,000	30.4	65.2	8.7	D
Native Hawaiian or Other Pacific Islander	29,000	31.0	72.4	17.2	D
Multiple race	89,000	36.0	71.9	15.7	4.5
Without disability	6,164,000	34.3	69.9	18.2	3.1
With disability	453,000	33.1	70.9	15.5	4.0

D = suppressed for confidentiality; S = suppressed for reliability.

<sup>a</sup> Total includes other work activities (production, operations, or maintenance; professional services; or other) not broken out separately.

<sup>b</sup> Includes respondents who reported the following work activities: accounting, finance or contracts, employee relations, quality or productivity management, sales and marketing, or managing and supervising.

NOTES: Scientists and engineers include persons who have ever received a U.S. bachelor's or higher degree in a science and engineering (S&E) or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003. See <http://sestat.nsf.gov/docs/occ03maj.html> for a detailed description of the occupational classification. American Indians or Alaska Natives, Asians, blacks or African Americans, Native Hawaiians or Other Pacific Islanders, whites, and persons reporting more than one race refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race. Numbers are rounded to the nearest thousand. Detail may not add to total because of rounding and multiple response to work activity. Totals sum to more than 100% because respondents could select both a primary and a secondary work activity.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT): 2008.

istration. Compared with most other racial ethnic groups, blacks are less likely to report research and development and more likely to report teaching as their primary/secondary work activity. Persons with and without disabilities differ little in work activity.

## Management

Just over 1 in 10 scientists and engineers working in industry are managers. Men

and women and the various racial/ethnic groups differ in their propensity to be managers, partly reflecting differences in age distributions. Among scientists and engineers in the United States, women are younger on average than men, and minorities are younger on average than whites.<sup>7</sup> Among scientists and engineers within industry, men are more likely than women to be managers, both mid-level and top-level managers, executives,

and administrators within most racial/ethnic groups and regardless of disability status (table 4). Asians, blacks, and persons who reported multiple races are less likely than whites to be managers. Similar proportions of persons with and without disabilities are managers.

## Data Source and Availability

Data presented here are from the 2008 Scientists and Engineers Statis-

TABLE 4. Scientists and engineers employed in industry, by sex, race/ethnicity, disability status, and management occupation: 2008 (Percent)

Sex, race/ethnicity, and disability status	All occupations (n)	All managers (n)	Top-level managers, executives, or administrators	Mid-level S&E managers	Mid-level non-S&E managers	Nonmanagers (n)
Both sexes	10,204,000	1,108,000	5.8	3.1	2.0	9,095,000
White	7,639,000	900,000	6.4	3.1	2.3	6,738,000
Asian	1,311,000	97,000	3.6	2.9	0.7	1,214,000
Black or African American	470,000	36,000	3.0	3.0	1.7	434,000
Hispanic	542,000	54,000	5.2	3.0	1.8	488,000
American Indian or Alaska Native	36,000	5,000	8.3	5.6	D	32,000
Native Hawaiian or Other Pacific Islander	44,000	5,000	S	D	D	39,000
Multiple race	161,000	10,000	4.3	1.2	0.6	151,000
Without disability	9,561,000	1,044,000	5.8	3.1	2.0	8,517,000
With disability	643,000	64,000	5.0	2.6	2.2	579,000
Female	3,587,000	206,000	2.4	1.8	1.6	3,381,000
White	2,575,000	160,000	2.4	1.9	1.8	2,416,000
Asian	471,000	20,000	2.8	1.1	0.4	451,000
Black or African American	232,000	12,000	1.7	2.2	1.3	221,000
Hispanic	208,000	12,000	2.9	1.0	1.9	196,000
American Indian or Alaska Native	13,000	S	D	D	D	12,000
Native Hawaiian or Other Pacific Islander	16,000	D	D	D	D	15,000
Multiple race	72,000	2,000	D	S	D	70,000
Without disability	3,397,000	196,000	2.5	1.7	1.6	3,201,000
With disability	190,000	10,000	S	2.6	S	180,000
Male	6,617,000	902,000	7.6	3.8	2.3	5,715,000
White	5,063,000	741,000	8.4	3.8	2.5	4,322,000
Asian	840,000	77,000	4.0	3.9	1.3	763,000
Black or African American	238,000	25,000	4.6	3.8	2.1	213,000
Hispanic	334,000	42,000	6.6	4.2	1.8	292,000
American Indian or Alaska Native	23,000	4,000	13.0	D	D	19,000
Native Hawaiian or Other Pacific Islander	29,000	5,000	S	D	D	24,000
Multiple race	89,000	8,000	7.9	1.1	S	81,000
Without disability	6,164,000	848,000	7.7	3.9	2.2	5,316,000
With disability	453,000	54,000	6.4	2.9	2.6	399,000

D = suppressed for confidentiality; S = suppressed for reliability.

S&E = science and engineering.

NOTES: Scientists and engineers include persons who have ever received a U.S. bachelor's or higher degree in an S&E or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003. See <http://sestat.nsf.gov/docs/occ03maj.html> for a detailed description of the occupational classification. American Indians or Alaska Natives, Asians, blacks or African Americans, Native Hawaiian or Other Pacific Islanders, whites, and persons reporting more than one race refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race. Numbers are rounded to the nearest thousand. 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): 2008.

tical Data System (SESTAT), which comprises three large demographic and workforce surveys of individuals conducted by the National Science Foundation: the National Survey of College Graduates, the National Survey of Recent College Graduates, and the Survey of Doctorate Recipients. The 2008 SESTAT included 100,313 individuals representing a population of about 19 million scientists and engineers, including people trained in S&E or S&E-related fields or working in S&E or S&E-related occupations. The 2008 SESTAT surveys had a reference week of 1 October 2008. All demographic, employment, and education data on scientists and engineers represent the status of these individuals during the reference week. The full set of detailed tables from the SESTAT integrated database will be available in the forthcoming report *Characteristics of Scientists and Engineers in the United States: 2008* at <http://www.nsf.gov/statistics/us-workforce/>.

## Definitions

*Scientists and engineers:* Persons who have ever received a U.S. bachelor's or higher degree in an S&E or S&E-related field through 30 June 2007, persons holding a non-S&E bachelor's or higher degree who were employed in an S&E or S&E-related occupation on 1 October 2003, and persons who held a non-U.S. S&E degree and were in the United States on 1 October 2003.

*S&E fields:* Biological/agricultural/environmental life sciences, computer and information sciences, mathematics and statistics, physical sciences, psychology, social sciences, and engineering. S&E-related fields include health, science and mathematics teacher education, technology and technical fields, and other S&E-related fields, such as architecture/environmental design and actuarial

science. See <http://sestat.nsf.gov/docs/ed03maj.html> for a detailed description of the educational classification.

*S&E occupations:* Computer and mathematical scientists; biological, agricultural, and other life scientists; physical and related scientists; social and related scientists; and engineers. S&E-related occupations include health-related occupations, S&E managers, S&E pre-college teachers, S&E technicians and technologists, and other S&E-related occupations, such as architects and actuaries. See <http://sestat.nsf.gov/docs/occ03maj.html> for a detailed description of the occupational classification.

*Race/ethnicity:* All graduates, both U.S. citizens and non-U.S. citizens, are included in the race/ethnicity data presented in this report. American Indians or Alaska Natives, Asians, blacks or African Americans, Native Hawaiians or Other Pacific Islanders, whites, and persons reporting more than one race refer to individuals who are not of Hispanic origin. Persons of Hispanic origin may be of any race.

*Disability:* The SESTAT surveys ask the degree of difficulty—none, slight, moderate, severe, unable to do—an individual has in seeing (with glasses/contact lenses), hearing (with hearing aid), walking without assistance, or lifting 10 pounds. Respondents who answered “moderate,” “severe,” or “unable to do” for any activity were classified as having a disability.

*Primary and secondary work activities:* These activities were self-defined by the respondent in response to the following question: “On which two activities... did you work the most hours during a typical week on this job?” Numbers for work activities sum to more than 100% because of multiple responses.

## Notes

1. Jaquelina C. Falkenheim (jfalkenh@nsf.gov; 703-292-7798) and Joan S. Burrelli (retired), Science and Engineering Indicators Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230.
2. In this report, “industry” includes private for-profit noneducational institutions, persons who are self-employed and incorporated, and other for-profit noneducational employers.
3. National Science Board (NSB). 2012. Science and Engineering Indicators 2010. NSB 12-01. Arlington, VA: National Science Foundation.
4. For data on demographic characteristics of the U.S. population, see National Science Foundation, Division of Science Resources Statistics (NSF/SRS). 2011. *Women, Minorities, and Persons with Disabilities in Science and Engineering*. Special Report NSF 11-309. Arlington, VA. Available at <http://www.nsf.gov/statistics/wmpd/>.
5. A minority is a racial/ethnic group that is a small percentage of the U.S. population. Minority groups include blacks or African Americans, Hispanics, American Indians or Alaska Natives, Native Hawaiians or Other Pacific Islanders, Asians, and persons who reported multiple races.
6. Totals sum to more than 100% because respondents could select both a primary and a secondary work activity.
7. National Science Board (NSB). 2010. Science and Engineering Indicators 2010. NSB 10-01. Arlington, VA: National Science Foundation.



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