Please see chapter errata

Chapter 8
State Indicators

Elementary and Secondary Education

Higher Education

Workforce

Financial Research and Development Inputs

Research and Development Outputs

Science and Technology in the Economy

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Introduction

Chapter Overview

To address the interest of the policy and research communities in the role of science and technology (S&T) in state and regional economic development, this chapter presents findings on state trends in S&T education, the employed workforce, finance, and research and development. This chapter includes 59 indicators for individual states, the District of Columbia, and Puerto Rico.

The indicators are designed to present information about various aspects of state S&T infrastructure. The data used to calculate the indicators were gathered from public and private sources. When possible, data covering a 10-year span are presented to assist in identifying trends. However, consistent data were not always available for the 10-year period; in these cases, data are given only for the years in which comparisons are appropriate. Most indicators contain data for 2010–11; some contain data for 2012.

Ready access to accurate and timely information is an important tool for formulating effective S&T policies at the state level. By studying the programs and performance of their peers, state policymakers may be able to better assess and enhance their own programs and performance. Corporations and other organizations considering investments at the state level may also benefit from this information. The tables are intended to provide quantitative data that may be relevant to technology-based economic development. More generally, the chapter aims to foster further consideration of the appropriate uses of state-level indicators.

Types of Indicators

The 59 indicators are divided into six categories.

1. *Elementary and secondary education*
   Indicators in this area cover three topics:
   - ♦ Student achievement at elementary and secondary levels
   - ♦ Public school expenditures
   - ♦ Persons with high school credentials

Student achievement is expressed in terms of performance, which refers to the average state score on a standardized test, and proficiency, which is expressed as the percentage of students who have achieved at least an expected level of competence on the test.

State-level performance data are not available for high school students. Performance and proficiency data in mathematics are available for students in grade 12 at the national level but for students in fewer than one-quarter of the states at the state level. Performance and proficiency data in science are only available at the national level for students in grade 12. Instead, mastery of college-level material through performance on Advanced Placement Exams has been included as a measure of the skills being developed by top-performing high school students.

2. *Higher education*
   Indicators in this area cover three topics:
   - ♦ Credentials awarded and sought in S&E
   - ♦ Persons with higher education credentials
   - ♦ State and student resources supporting higher education

These indicators measure the higher education different states provide, the level of education in their populations, the cost of college attendance at the undergraduate level, and state expenditures to public universities.

3. *Workforce*
   Indicators in this area cover two topics:
   - ♦ Higher education credentials of the workforce
   - ♦ S&E workers in the labor force

Workforce indicators focus on the level of S&E training and occupations of the employed labor force. These indicators reflect the higher education level of the labor force and the extent of S&E employment.

4. *Financial R&D inputs*
   Indicators in this area cover two topics:
   - ♦ Level of R&D activity
   - ♦ Public-sector support for R&D activities

Financial indicators present the sources and level of funding for R&D. They show how much R&D is being performed relative to the size of a state's business base. The indicators also present the extent to which R&D is conducted by industrial and academic performers.

5. *Research and development outputs*
   Indicators in this area cover two topics:
   - ♦ Human capital outputs
   - ♦ Research-based outputs

These indicators show the number of new doctorates conferred, the publication of academic articles, and patent activity from the academic community and from all sources in the state.

6. *S&T in the economy*
   Indicators in this area cover two topics:
   - ♦ High-technology business activity
   - ♦ Early-stage, high-risk capital investments

These indicators include venture capital activity, Small Business Innovation Research (SBIR) awards, and high-technology business activity.

Unlike other chapters in this volume, this chapter presents indicators individually. Indicators are normalized to enable comparisons among states of different sizes, but indicators are presented discretely rather than in a continuous text that describes the relationships among them. Because these indicators span a broad range of topics across the entire S&E landscape—inputs and outputs, people and dollars, businesses and universities, R&D and education—a validated model synthesizing interrelationships among these specific indicators does not exist. Moreover, states are both heterogeneous, with hubs of intense S&E activity alongside areas without substantial S&E infrastructure, and porous, with limited control over movements

of people and funds across their borders. As a result, smaller regions, which form more tightly coupled economic systems, and nations, which create stronger barriers to movement, are often considered to be better units of analysis for studying geographic variation in S&E activity.

Nonetheless, state governments and other state-based actors have significant leverage and can affect S&T-related economic development in their states and regions. The data in this chapter offer ample opportunities for exploratory analysis of variations among states and the interplay of education, R&D, and economic activity. The online state data tool (http://www.nsf.gov/statistics/seind14/c8/interactive/)—which includes the state data in this chapter plus, when available, additional data on state S&T over the past 20 years—enables readers to examine the relationships among the different indicators in the chapter.

Some examples of possible issues that could be explored with the current set of indicators include the following:

- What is the relationship between K–12 student achievement and the S&E workforce within a state?
- How do state commitments of resources for education at different levels relate to R&D performance?
- Do states whose universities provide advanced S&E training to large numbers of students have correspondingly large segments of their workforces in S&E occupations?
- How do indicators of educational attainment within a state's population relate to R&D performance and high-technology business activity?
- What state characteristics are associated with relatively high investments of tax dollars in S&E?
- Are states whose universities produce more articles and patents also involved in more high-technology business activity?

The data in this chapter cannot be expected to provide definitive answers to any of these questions. Additional data, well-defined theoretical models, and more refined geographical comparisons will be required as social scientists grapple with these complex relationships. But exploring relationships in the existing data via the online state data tool can stimulate policymakers and other stakeholders to think more broadly and deeply about the possible implications of strategies used to address state-level S&E policy topics.

The tool offers users the following capabilities:

- Long-term trend data on each indicator are available for download. This provides users with the option to combine data from existing indicators to produce new indicators. Visualizations of the trend data—such as quartile maps, histograms, and charts—are also available.
- Standard error tables for each indicator with sample-based data are available for download.
- Financial information can be translated from current into constant dollars.

Data Sources and Considerations

The tables present estimates for the components that make up each indicator. Each table provides an average value for all states, labeled "United States." For census-based data, the national average is the sum of numerator values for the 50 states and the District of Columbia divided by the sum of the denominator values. For sample-based data, the national totals were estimated directly, and the national average is the ratio of the estimated totals.

The values for most indicators are expressed as ratios or percentages to facilitate comparison between states that differ substantially in size. For example, an indicator of higher education achievement is not defined as the absolute number of degrees conferred in a state because less populous states are unlikely to have or need as extensive a higher education system as states with larger populations. Instead, the indicator is defined as the number of degrees per number of residents in the college-age cohort, which measures the intensity of educational services relative to the size of the resident population.

Although data for Puerto Rico are reported whenever available, they frequently were collected by a different source, making it unclear whether the methodology used for data collection and analysis is comparable with that used for the states. For this reason, Puerto Rico was not listed with the states, not assigned a quartile value, and not displayed on the maps. Data for United States territories and protectorates—such as American Samoa, Guam, Northern Mariana Islands, and Virgin Islands—were available only on a sporadic basis and thus are not included.

Readers must exercise caution when evaluating the indicator values for the District of Columbia. Frequently, the indicator value for the District of Columbia is appreciably different from the indicator values for any of the states. The District of Columbia is unique because it is an urban region with a large federal presence and many universities. In addition, it has a large student population and provides employment for many individuals who live in neighboring states. Indicator values can be quite different depending on whether data attributed to the District of Columbia are based on where people live or where they work.

Key Elements for Indicators

Six key elements are provided for each indicator. The first element is a map color coded to show in which quartile each state placed on that indicator for the latest year that data were available. This helps the reader quickly grasp geographic patterns. On the indicator maps, the darkest color indicates states that rank in the first or highest quartile, and white indicates states that rank in the fourth or lowest quartile. Cross-hatching indicates states for which no data are available.

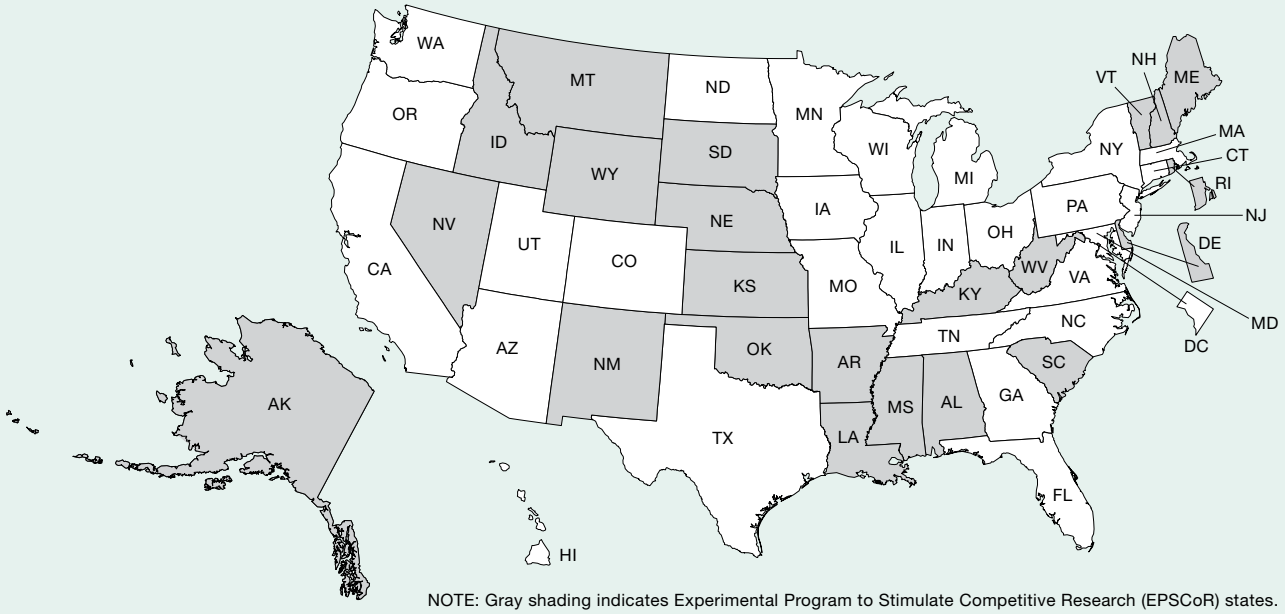
The sample map (figure 8-A) shows the outline of each state. Each state is identified by its U.S. Postal Service abbreviation. In 1978, Congress initiated the Experimental Program to Stimulate Competitive Research (EPSCoR) at the National Science Foundation to build R&D capacity in states that have historically been less competitive in receiving federal R&D funding. Subsequently, several federal agencies established similar programs, the largest of which is the Institutional Development Award program at the National Institutes of Health. Four other agencies with programs used for the EPSCoR-like programs are the National Science Foundation, the Department of Energy, the National Aeronautics and Space Administration, and the U.S. Department of Agriculture. States shown with a gray background in figure 8-A were eligible for EPSCoR-like programs at four of the five federal agencies or departments in 2012. The 22 states in the EPSCoR group are Alabama, Alaska, Arkansas, Delaware, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Oklahoma, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming. The remaining 28 states are considered states in the non-EPSCoR group. Puerto Rico (an EPSCoR jurisdiction), and the District of Columbia (a non-EPSCoR jurisdiction) are not included in EPSCoR tabulations in the tables. The EPSCoR Program is discussed in greater depth in chapter 5, "Academic Research and Development," in the sidebar "Experimental Program to Stimulate Competitive Research."

The second element is a state distribution chart below the map, illustrating state values for the latest data year for that indicator (figure 8-B). States are listed alphabetically by U.S. Postal Service abbreviation and are centered over the midpoint of the range for their indicator values. Indicator values are presented along the x-axis of the chart. States stacked together have indicator values that are in the same range but are not necessarily identical. The reader is referred to the table for values of the indicators. All of the indicators are broad measures, and several rely on sample estimates that have a margin of error. Small differences in state values generally carry little useful information.

The third element, at the bottom of the map box, is a short citation for the data source. The full citation appears under the table on the facing page.

The fourth element, in a shaded box on the lower left side of the page, is a summary of findings that includes the national average and comments on national and state trends and patterns for the particular indicator. Only statistically significant findings are presented; adjustments in the testing to account for multiple comparisons have been made, when appropriate. Although most of the findings are directly related to the data, some represent interpretations that are meant to stimulate further investigation and discussion.

Figure 8-A
U.S. map and list of abbreviations



NOTE: Gray shading indicates Experimental Program to Stimulate Competitive Research (EPSCoR) states.

AK	Alaska	HI	Hawaii	ME	Maine	NJ	New Jersey	SD	South Dakota
AL	Alabama	IA	Iowa	MI	Michigan	NM	New Mexico	TN	Tennessee
AR	Arkansas	ID	Idaho	MN	Minnesota	NV	Nevada	TX	Texas
AZ	Arizona	IL	Illinois	MO	Missouri	NY	New York	UT	Utah
CA	California	IN	Indiana	MS	Mississippi	OH	Ohio	VA	Virginia
CO	Colorado	KS	Kansas	MT	Montana	OK	Oklahoma	VT	Vermont
CT	Connecticut	KY	Kentucky	NC	North Carolina	OR	Oregon	WA	Washington
DC	District of Columbia	LA	Louisiana	ND	North Dakota	PA	Pennsylvania	WI	Wisconsin
DE	Delaware	MA	Massachusetts	NE	Nebraska	RI	Rhode Island	WV	West Virginia
FL	Florida	MD	Maryland	NH	New Hampshire	SC	South Carolina	WY	Wyoming
GA	Georgia								

The fifth element, on the lower right side of the page, is a description of the indicator and includes information pertaining to the underlying data.

The final element is the data table, which appears on the facing page. Up to 3 years of data and the calculated values of the indicator are presented for each state, the District of Columbia, and Puerto Rico. Puerto Rico is included in the data table only when data are available.

For selected indicators, the data table has been expanded to include the average data and indicator value for the 50 states and the District of Columbia, and the averages for the EPSCoR and non-EPSCoR states. These averages have been calculated in two ways. The first two lines, "EPSCoR states" and "Non-EPSCoR states," treat each group as a single geographical unit, ignoring the division of that unit into separate states. The ratio for the group is calculated by totaling the numerator value of each of the states in the group and the denominator value of each of the states in the group and dividing to compute an average. For example, the EPSCoR states' average of R&D by gross domestic product by state, shown in table 8-40, is calculated by summing the R&D of all the EPSCoR states, summing the gross domestic product of these states, and dividing to compute an average. States with more R&D and a larger gross domestic product affect this average more than smaller ones do, just as data on California affect U.S. totals more than data on Wyoming do.

The third and fourth lines, "Average EPSCoR state value" and "Average non-EPSCoR state value," represent the average of the individual state ratios for an indicator. The average EPSCoR state value for R&D by gross domestic product by state is calculated by summing the ratios for the 22 EPSCoR states and dividing by 22. All state ratios count equally in this computation. Examples of this calculation are shown in tables 8-5 and 8-18.

Technical Note: High-Technology Industries

To define high-technology industries, this chapter uses a modification of the approach employed by the Bureau of Labor Statistics (BLS) (Hecker 2005). BLS's approach is based on the intensity of high-technology employment within an industry.

High-technology occupations include scientific, engineering, and technician occupations. These occupations employ workers who possess an in-depth knowledge of the theories and principles of science, engineering, and mathematics, which is generally acquired through postsecondary education in some field of technology. An industry is considered a high-technology industry if employment in technology-oriented occupations accounts for a proportion of that industry's total employment that is at least twice the 4.9% average for all industries (i.e., 9.8% or higher).

In this chapter, the category "high-technology industries" refers only to private-sector businesses. In contrast, BLS includes the "Federal Government, excluding Postal Service" in its listing of high-technology industries.

Each industry is defined by a four-digit code that is based on the listings in the North American Industry Classification System (NAICS). The NAICS codes change over time, thereby affecting the trend data presented in the tables. For data years up through 2008, the 2002 NAICS codes were used to define business establishments. Subsequent data years reflect the use of the 2007 NAICS codes. The list of high-technology industries used in this chapter includes the four-digit codes from the 2002 and 2007 NAICS listings shown in table 8-A.

Appendix Tables

Additional data tables pertaining to the indicators in this chapter have been included in the appendix. These tables provide supplemental information to assist the reader in evaluating the data used in an indicator. The appendix tables contain state-level data on the performance of students in different racial/ethnic and gender groups on the National Assessment of Educational Progress evaluations.

Reference

Hecker D. 2005. High-technology employment: A NAICS-based update. *Monthly Labor Review* 128(7):57–72.

Figure 8-B
Example state distribution chart

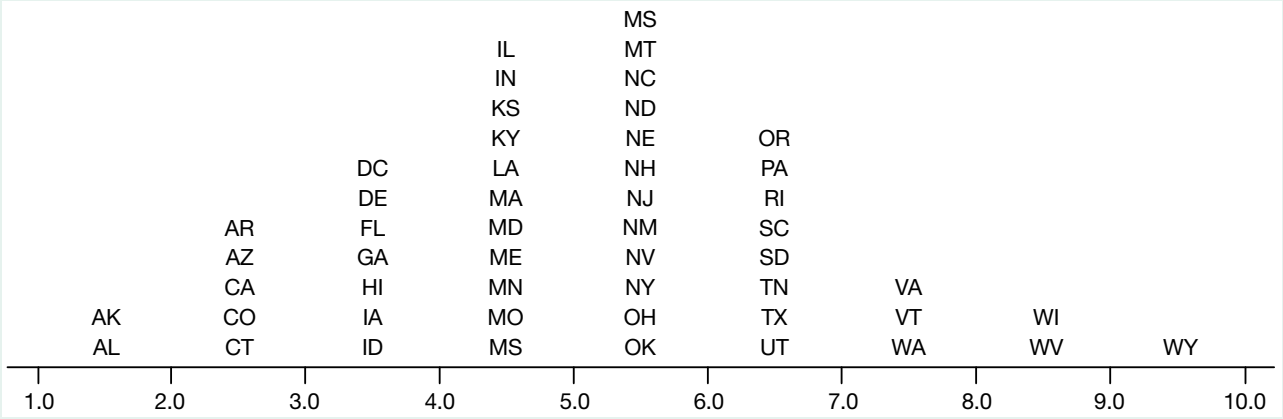


Table 8-A
NAICS codes that constitute high-technology industries

2002 NAICS code	2007 NAICS code	Industry
1131	1131	Timber track operations
1132	1132	Forest nurseries and gathering of forest products
2111	2111	Oil and gas extraction
2211	2211	Electric power generation, transmission, and distribution
3241	3241	Petroleum and coal products manufacturing
3251	3251	Basic chemical manufacturing
3252	3252	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing
3253	3253	Pesticide, fertilizer, and other agricultural chemical manufacturing
3254	3254	Pharmaceutical and medicine manufacturing
3255	3255	Paint, coating, and adhesive manufacturing
3259	3259	Other chemical product and preparation manufacturing
3332	3332	Industrial machinery manufacturing
3333	3333	Commercial and service industry machinery manufacturing
3336	3336	Engine, turbine, and power transmission equipment manufacturing
3339	3339	Other general purpose machinery manufacturing
3341	3341	Computer and peripheral equipment manufacturing
3342	3342	Communications equipment manufacturing
3343	3343	Audio and video equipment manufacturing
3344	3344	Semiconductor and other electronic component manufacturing
3345	3345	Navigational, measuring, electromedical, and control instruments manufacturing
3346	3346	Manufacturing and reproducing magnetic and optical media
3353	3353	Electrical equipment manufacturing
3364	3364	Aerospace product and parts manufacturing
3369	3369	Other transportation equipment manufacturing
4234	4234	Professional and commercial equipment and supplies, merchant wholesalers
4861	4861	Pipeline transportation of crude oil
4862	4862	Pipeline transportation of natural gas
4869	4869	Other pipeline transportation
5112	5112	Software publishers
5161	na	Internet publishing and broadcasting
na	519130	Internet publishing and broadcasting and Web search portals
5171	5171	Wired telecommunications carriers
5172	5172	Wireless telecommunications carriers (except satellite)
5173	na	Telecommunications resellers
5174	5174	Satellite telecommunications
5179	5179	Other telecommunications
5181	na	Internet service providers and Web search portals
5182	5182	Data processing, hosting, and related services
5211	5211	Monetary authorities, central bank
5232	5232	Securities and commodity exchanges
5413	5413	Architectural, engineering, and related services
5415	5415	Computer systems design and related services
5416	5416	Management, scientific, and technical consulting services
5417	5417	Scientific research and development services
5511	5511	Management of companies and enterprises
5612	5612	Facilities support services
na	561312	Executive search services
8112	8112	Electronic and precision equipment repair and maintenance

na = not applicable.

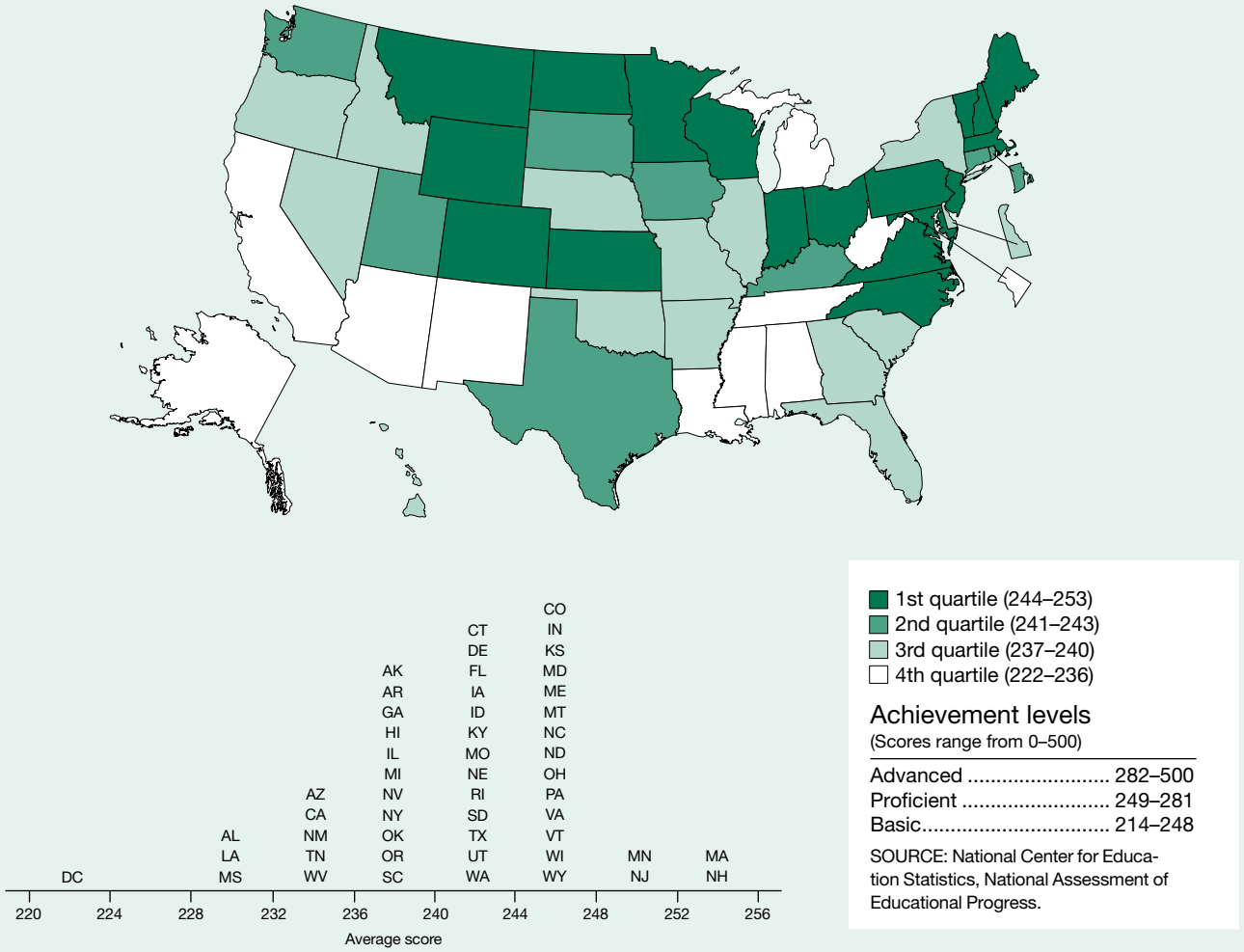
NAICS = North American Industry Classification System.

NOTES: Data on high-tech industries for 2008 and earlier years were compiled using the 2002 NAICS codes. Data for 2009 and 2010 were compiled using the 2007 NAICS codes.

Science and Engineering Indicators 2014

Fourth Grade Mathematics Performance

Figure 8-1
Average fourth grade mathematics performance: 2011



Findings

- In 2011, the nationwide average mathematics score of fourth grade public school students was 240, an increase from 234 in 2003. Fourth graders scored higher in mathematics in 2011 than in any previous assessment year.
- The states with the highest average fourth grade performance scores are concentrated in the northern United States.
- Nationally, the 2011 average mathematics score for white public school fourth grade students was 249 compared to 224 for black students, a gap of 25 points, and 229 for Hispanic students, a gap of 20 points, based upon racial classifications provided by the schools. In 2003, these score gaps were 27 and 22 points, respectively, indicating that these demographic gaps are not shrinking.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its fourth grade students in public schools. The NAEP mathematics assessment, conducted by the National Center for Education Statistics, is part of a legally mandated federal effort to measure student performance. It measures students' knowledge and skills in mathematics and their ability to apply that knowledge in the content areas of number properties and operations; measurement; geometry; data analysis, statistics, and probability; and algebra. Student performance is presented in terms of average scores on a scale from 0 to 500.

All 50 states and the District of Columbia participated in the 2011 NAEP mathematics assessment. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-1
Average fourth grade mathematics performance, by state: 2003, 2007, and 2011
(Score out of 500)

State	2003	2007	2011
United States	234	239	240
Alabama	223	229	231
Alaska	233	237	236
Arizona	229	232	235
Arkansas	229	238	238
California	227	230	234
Colorado	235	240	244
Connecticut	241	243	242
Delaware	236	242	240
District of Columbia	205	214	222
Florida	234	242	240
Georgia	230	235	238
Hawaii	227	234	239
Idaho	235	241	240
Illinois	233	237	239
Indiana	238	245	244
Iowa	238	243	243
Kansas	242	248	246
Kentucky	229	235	241
Louisiana	226	230	231
Maine	238	242	244
Maryland	233	240	247
Massachusetts	242	252	253
Michigan	236	238	236
Minnesota	242	247	249
Mississippi	223	228	230
Missouri	235	239	240
Montana	236	244	244
Nebraska	236	238	240
Nevada	228	232	237
New Hampshire	243	249	252
New Jersey	239	249	248
New Mexico	223	228	233
New York	236	243	238
North Carolina	242	242	245
North Dakota	238	245	245
Ohio	238	245	244
Oklahoma	229	237	237
Oregon	236	236	237
Pennsylvania	236	244	246
Rhode Island	230	236	242
South Carolina	236	237	237
South Dakota	237	241	241
Tennessee	228	233	233
Texas	237	242	241
Utah	235	239	243
Vermont	242	246	247
Virginia	239	244	245
Washington	238	243	243
West Virginia	231	236	235
Wisconsin	237	244	245
Wyoming	241	244	244
Puerto Rico	NA	NA	NA

NA = not available.

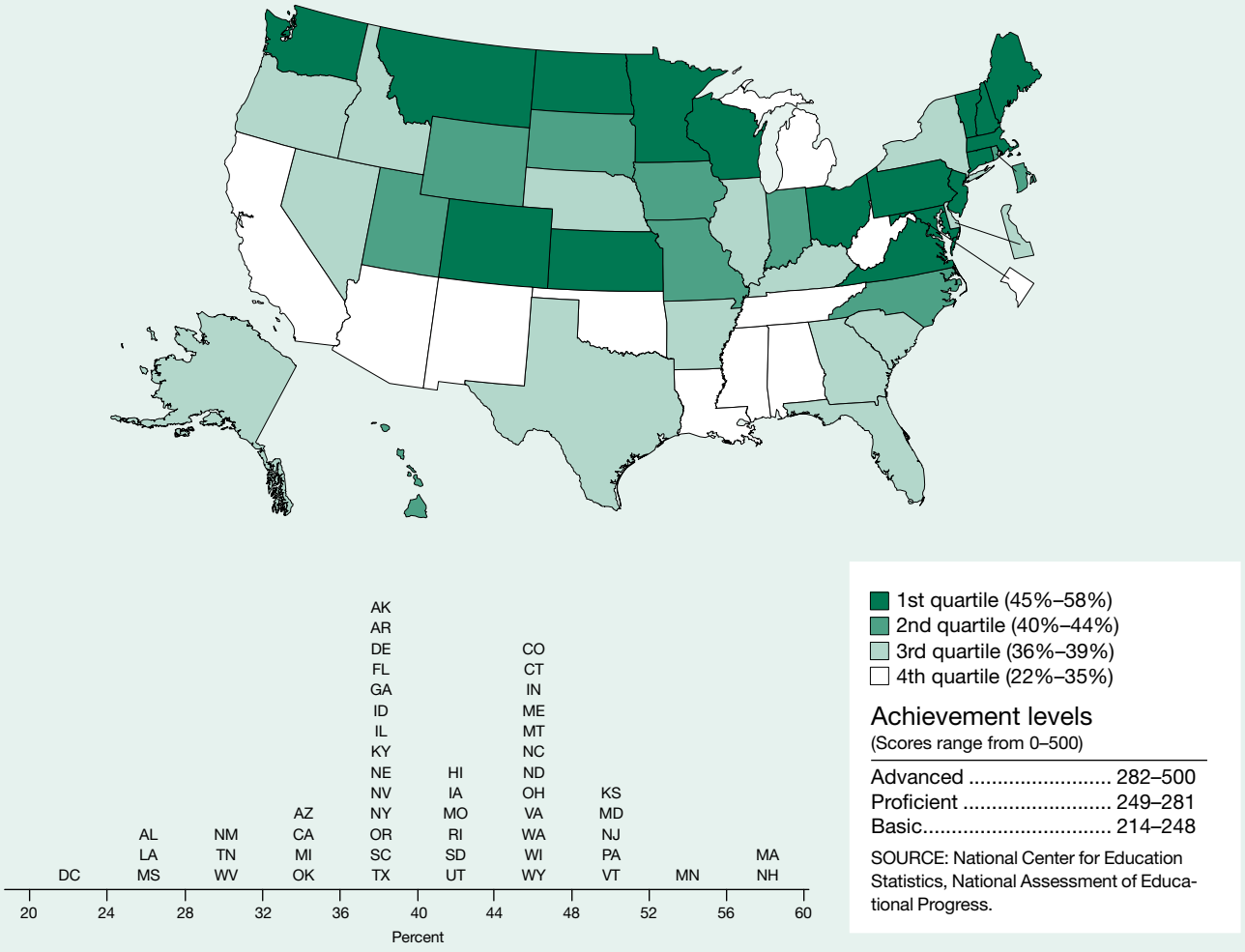
NOTES: National Assessment of Educational Progress (NAEP) grade 4 mathematics scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Fourth Grade Mathematics Proficiency

Figure 8-2
Students reaching proficiency in fourth grade mathematics: 2011
(Percentage of students scoring 249 or above)



Findings

- In 2011, 40% of fourth grade public school students nationwide performed at or above the proficient level in mathematics, an increase from 31% in 2003.
- Of the 51 jurisdictions that participated in both the 2003 and 2011 fourth grade mathematics assessments, 50 showed increases in mathematics proficiency among public school fourth graders over the period.
- Nationally, the percentage of fourth grade white public school students demonstrating proficient performance in mathematics was 52% in 2011 compared to 17% for black students, a gap of 35 percentage points, and 24% for Hispanic students, a gap of 28 percentage points, based upon racial classifications provided by the schools. In 2003, these gaps were 32 and 27 points, respectively, indicating that these demographic gaps are not shrinking.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in mathematics. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency" as well as "advanced" and "basic" accomplishment. For the fourth grade, the proficient level (scores 249–281) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (282–500) signifies superior performance. The basic level (214–248) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. The National Center for Education Statistics has determined that achievement levels should be used on a trial basis and interpreted with caution.

Approximately 210,000 fourth grade students in 8,500 schools participated in the 2011 NAEP mathematics assessment. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-2
Students reaching proficiency in fourth grade mathematics, by state: 2003, 2007, and 2011
(Percent)

State	2003	2007	2011
United States	31	39	40
Alabama	19	26	27
Alaska	30	38	37
Arizona	25	31	34
Arkansas	26	37	37
California	25	30	34
Colorado	34	41	47
Connecticut	41	45	45
Delaware	31	40	39
District of Columbia	7	14	22
Florida	31	40	37
Georgia	27	32	37
Hawaii	23	33	40
Idaho	31	40	39
Illinois	32	36	38
Indiana	35	46	44
Iowa	36	43	43
Kansas	41	51	48
Kentucky	22	31	39
Louisiana	21	24	26
Maine	34	42	45
Maryland	31	40	48
Massachusetts	41	58	58
Michigan	34	37	35
Minnesota	42	51	53
Mississippi	17	21	25
Missouri	30	38	41
Montana	31	44	45
Nebraska	34	38	39
Nevada	23	30	36
New Hampshire	43	52	57
New Jersey	39	52	51
New Mexico	17	24	30
New York	33	43	36
North Carolina	41	41	44
North Dakota	34	46	46
Ohio	36	46	45
Oklahoma	23	33	33
Oregon	33	35	37
Pennsylvania	36	47	48
Rhode Island	28	34	43
South Carolina	32	36	36
South Dakota	34	41	40
Tennessee	24	29	30
Texas	33	40	39
Utah	31	39	43
Vermont	42	49	49
Virginia	36	42	46
Washington	36	44	45
West Virginia	24	33	31
Wisconsin	35	47	47
Wyoming	39	44	44
Puerto Rico	NA	NA	NA

NA = not available.

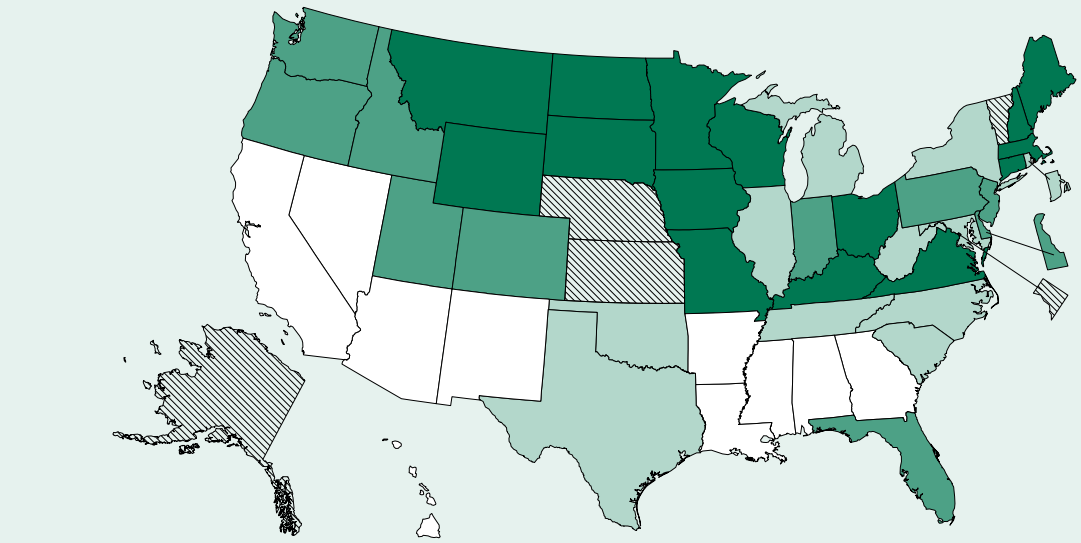
NOTES: National Assessment of Educational Progress (NAEP) grade 4 mathematics scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Fourth Grade Science Performance

Figure 8-3
Average fourth grade science performance: 2009



Findings

- In 2009, the nationwide average science score of fourth grade public school students was 149. Average scores for individual states ranged between 133 and 163.
- Of the 46 jurisdictions that participated in the 2009 fourth grade science assessment, 24 had scores that were higher than the national average, 12 were not significantly different, and 10 were lower.
- Nationally, the 2009 average science score for white public school fourth grade students was 162 compared to 127 for black students, a gap of 35 points, and 130 for Hispanic students, a gap of 32 points, based upon racial classifications provided by the schools.
- Male fourth grade public school students scored 1 point higher in science than female fourth grade public school students although females scored higher in the life science subsection than did males.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its fourth grade students in public schools. The NAEP science assessment, conducted by the National Center for Education Statistics, is part of a legally mandated federal effort to measure student performance. It measures students' knowledge and skill in science and their ability to apply that knowledge in the content areas of physical, life, and earth and space science. The NAEP assessment in science was updated in 2009 to keep pace with recent developments in science and science education. Because it is based on a new framework, 2009 results cannot be compared to those from previous science assessments. Student performance is presented in terms of average scores on a scale from 0 to 300.

An average score designated as "NA" (not available) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-3
Average fourth grade science performance, by state: 2009
(Score out of 300)

State	2009
United States	149
Alabama	143
Alaska	NA
Arizona	138
Arkansas	146
California	136
Colorado	155
Connecticut	156
Delaware	153
District of Columbia	NA
Florida	151
Georgia	144
Hawaii	140
Idaho	154
Illinois	148
Indiana	153
Iowa	157
Kansas	NA
Kentucky	161
Louisiana	141
Maine	160
Maryland	150
Massachusetts	160
Michigan	150
Minnesota	158
Mississippi	133
Missouri	156
Montana	160
Nebraska	NA
Nevada	141
New Hampshire	163
New Jersey	155
New Mexico	142
New York	148
North Carolina	148
North Dakota	162
Ohio	157
Oklahoma	148
Oregon	151
Pennsylvania	154
Rhode Island	150
South Carolina	149
South Dakota	157
Tennessee	148
Texas	148
Utah	154
Vermont	NA
Virginia	162
Washington	151
West Virginia	148
Wisconsin	157
Wyoming	156
Puerto Rico	NA

NA = not available.

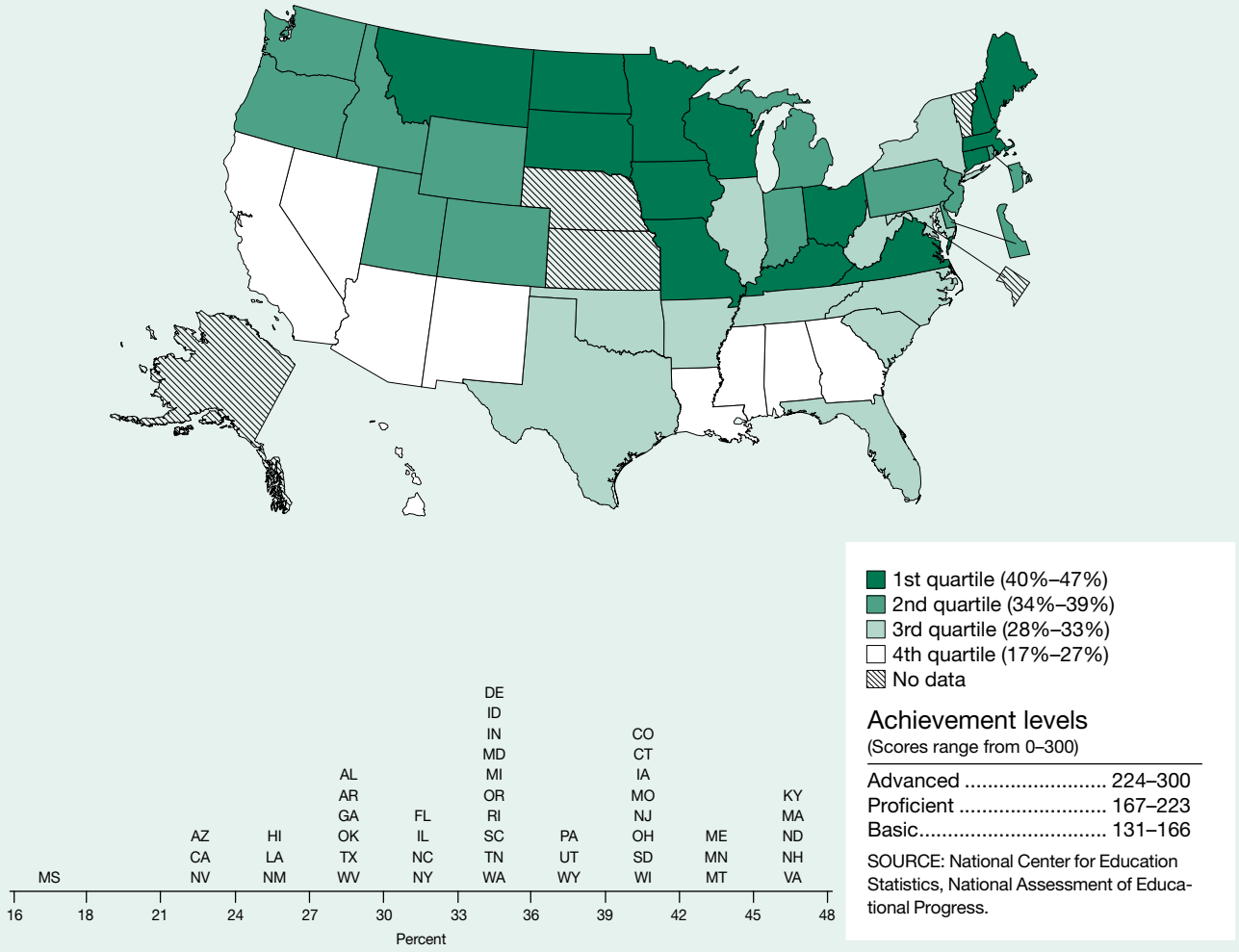
NOTES: National Assessment of Educational Progress (NAEP) grade 4 science scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Fourth Grade Science Proficiency

Figure 8-4
Students reaching proficiency in fourth grade science: 2009
(Percentage of students scoring 167 or above)



Findings

- In 2009, 32% of fourth grade public school students nationwide performed at or above the proficient level in science. Among the states, there were substantial differences in the percentage of fourth grade public school students who demonstrated proficiency in science. State values for this indicator ranged from 17% to 47%.
- Nationally, the percentage of fourth grade white public school students demonstrating proficient performance in science was 46% in 2009 compared to 10% for black students, a gap of 36 percentage points, and 13% for Hispanic students, a gap of 33 percentage points, based upon racial classifications provided by the schools.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in science. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency" as well as "advanced" and "basic" accomplishment. For the fourth grade, the proficient level (scores 167–223) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (224–300) signifies superior performance. The basic level (131–166) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. The National Center for Education Statistics has determined that achievement levels should be used on a trial basis and interpreted with caution.

Approximately 156,500 fourth grade students in 9,330 schools participated in the 2009 NAEP science assessment. A designation of "NA" (not available) indicates that the state either did not participate in the assessment or did not meet minimum guidelines for reporting. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-4
Students reaching proficiency in fourth grade science, by state: 2009
(Percent)

State	2009
United States	32
Alabama	27
Alaska	NA
Arizona	22
Arkansas	29
California	22
Colorado	39
Connecticut	40
Delaware	34
District of Columbia	NA
Florida	32
Georgia	27
Hawaii	25
Idaho	35
Illinois	32
Indiana	35
Iowa	41
Kansas	NA
Kentucky	45
Louisiana	25
Maine	42
Maryland	33
Massachusetts	45
Michigan	34
Minnesota	43
Mississippi	17
Missouri	40
Montana	43
Nebraska	NA
Nevada	23
New Hampshire	47
New Jersey	39
New Mexico	24
New York	30
North Carolina	30
North Dakota	45
Ohio	41
Oklahoma	28
Oregon	34
Pennsylvania	38
Rhode Island	34
South Carolina	33
South Dakota	40
Tennessee	33
Texas	29
Utah	38
Vermont	NA
Virginia	46
Washington	35
West Virginia	28
Wisconsin	41
Wyoming	37
Puerto Rico	NA

NA = not available.

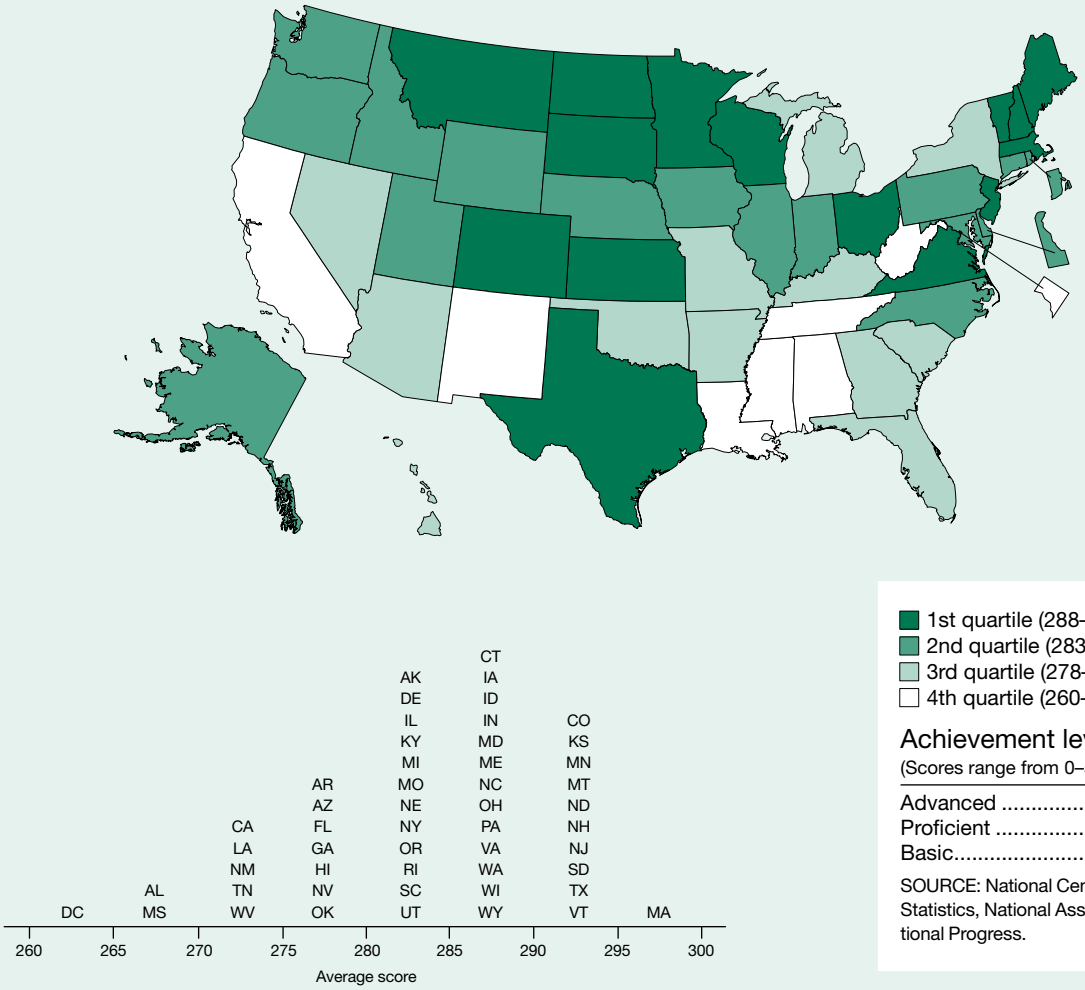
NOTES: National Assessment of Educational Progress (NAEP) grade 4 science scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Eighth Grade Mathematics Performance

Figure 8-5
Average eighth grade mathematics performance: 2011



Findings

- In 2011, the nationwide average mathematics score of eighth grade public school students was 283, an increase from 276 in 2003. Eighth graders scored higher in mathematics in 2011 than in any previous assessment year.
- Of the 51 jurisdictions that participated in both the 2003 and 2011 mathematics assessments, 46 showed increases in mathematics scores among public school eighth graders over the period. Since 2007, eighth grade mathematics scores showed an increase for public school students in 28 states.
- Nationally, the 2011 average mathematics score for white public school eighth grade students was 293 compared to 262 for black students, a gap of 31 points, and 269 for Hispanic students, a gap of 24 points, based upon racial classifications provided by the schools. In 2003, these score gaps were 35 and 29 points, respectively.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its eighth grade students in public schools. The NAEP mathematics assessment, conducted by the National Center for Education Statistics, is part of a legally mandated federal effort to measure student performance. It measures students' knowledge and skills in mathematics and their ability to apply that knowledge in the content areas of number properties and operations; measurement; geometry; data analysis, statistics, and probability; and algebra. Student performance is presented in terms of average scores on a scale from 0 to 500.

All 50 states and the District of Columbia participated in the 2011 NAEP mathematics assessment. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-5
Average eighth grade mathematics performance, by state: 2003, 2007, and 2011
(Score out of 500)

State	2003	2007	2011
Average EPSCoR state value	276	279	282
Average non-EPSCoR state value	279	283	285
United States	276	280	283
Alabama	262	266	269
Alaska	279	283	283
Arizona	271	276	279
Arkansas	266	274	279
California	267	270	273
Colorado	283	286	292
Connecticut	284	282	287
Delaware	277	283	283
District of Columbia	243	248	260
Florida	271	277	278
Georgia	270	275	278
Hawaii	266	269	278
Idaho	280	284	287
Illinois	277	280	283
Indiana	281	285	285
Iowa	284	285	285
Kansas	284	290	290
Kentucky	274	279	282
Louisiana	266	272	273
Maine	282	286	289
Maryland	278	286	288
Massachusetts	287	298	299
Michigan	276	277	280
Minnesota	291	292	295
Mississippi	261	265	269
Missouri	279	281	282
Montana	286	287	293
Nebraska	282	284	283
Nevada	268	271	278
New Hampshire	286	288	292
New Jersey	281	289	294
New Mexico	263	268	274
New York	280	280	280
North Carolina	281	284	286
North Dakota	287	292	292
Ohio	282	285	289
Oklahoma	272	275	279
Oregon	281	284	283
Pennsylvania	279	286	286
Rhode Island	272	275	283
South Carolina	277	282	281
South Dakota	285	288	291
Tennessee	268	274	274
Texas	277	286	290
Utah	281	281	283
Vermont	286	291	294
Virginia	282	288	289
Washington	281	285	288
West Virginia	271	270	273
Wisconsin	284	286	289
Wyoming	284	287	288
Puerto Rico	NA	NA	NA

NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research.

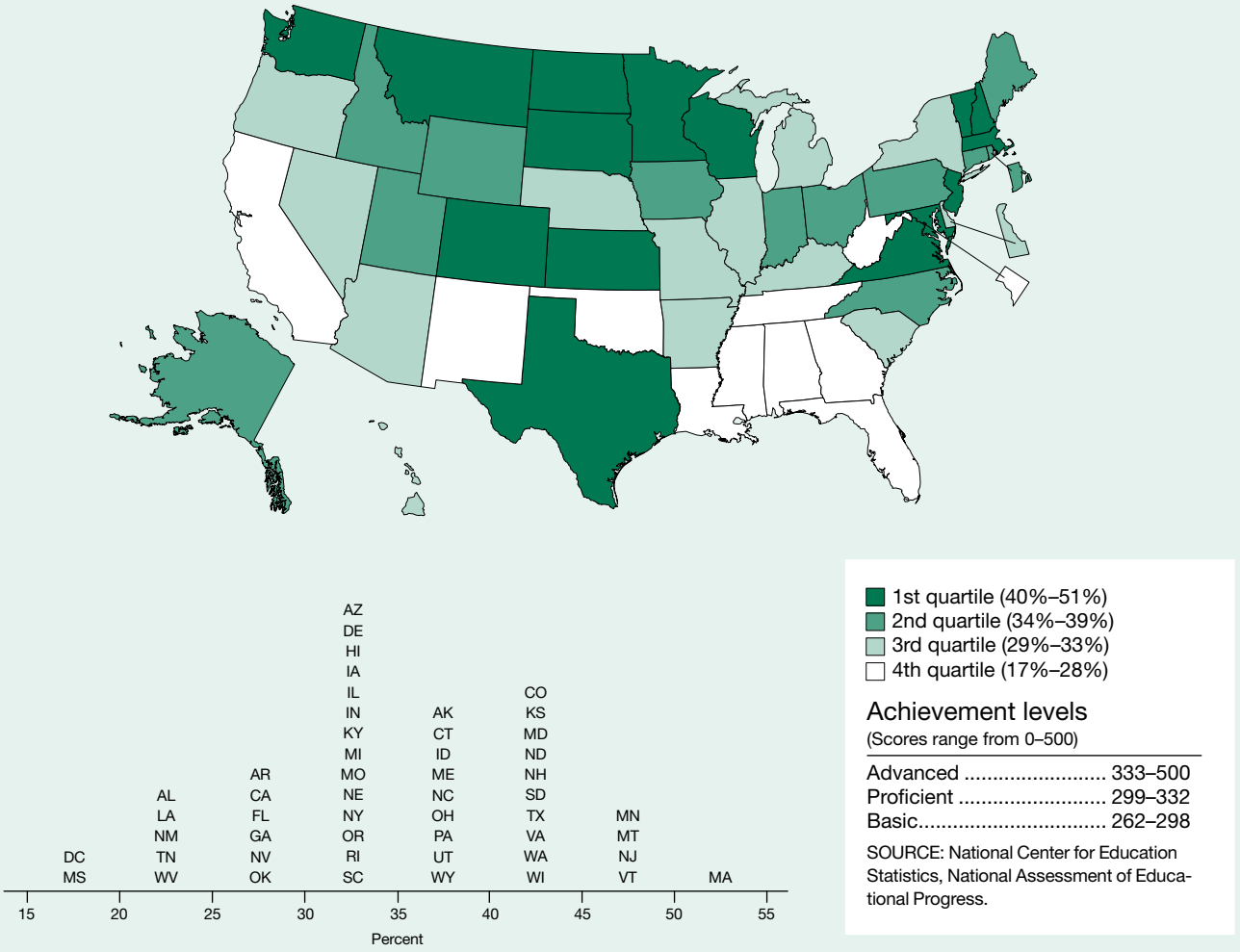
NOTES: National Assessment of Educational Progress (NAEP) grade 8 mathematics scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12. For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Eighth Grade Mathematics Proficiency

Figure 8-6
Students reaching proficiency in eighth grade mathematics: 2011
(Percentage of students scoring 299 or above)



Findings

- In 2011, 34% of eighth grade public school students nationwide performed at or above the proficient level in mathematics, a sizable increase from 27% in 2003.
- Of the 51 jurisdictions that participated in both the 2003 and 2011 eighth grade mathematics assessments, 43 showed increases in mathematics proficiency among public school eighth graders during the period. Only 25 showed a significant increase from 2007 to 2011.
- Nationally, the percentage of eighth grade white public school students demonstrating proficient performance in mathematics was 43% in 2011 compared to 13% for black students, a gap of 30 percentage points, and 20% for Hispanic students, a gap of 23 percentage points, based upon racial classifications provided by the schools. In 2003, these gaps were 29 and 25 percentage points, respectively.
- The percentage of eighth grade students proficient in mathematics increased for both sexes between 2003 and 2011, and the size of the gender gap decreased from 3% to 1% during this period.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in mathematics. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency" as well as "advanced" and "basic" accomplishment. For the eighth grade, the proficient level (scores 299–332) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (333–500) signifies superior performance. The basic level (262–298) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. The National Center for Education Statistics has determined that achievement levels should be used on a trial basis and interpreted with caution.

Approximately 175,200 eighth grade students in 7,610 schools participated in the 2011 NAEP mathematics assessment. Students with disabilities or limited English-language proficiency are allowed to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-6
Students reaching proficiency in eighth grade mathematics, by state: 2003, 2007, and 2011
(Percent)

State	2003	2007	2011
United States	27	31	34
Alabama	16	18	20
Alaska	30	32	35
Arizona	21	26	31
Arkansas	19	24	29
California	22	24	25
Colorado	34	37	43
Connecticut	35	35	38
Delaware	26	31	32
District of Columbia	6	8	17
Florida	23	27	28
Georgia	22	25	28
Hawaii	17	21	30
Idaho	28	34	37
Illinois	29	31	33
Indiana	31	35	34
Iowa	33	35	34
Kansas	34	40	41
Kentucky	24	27	31
Louisiana	17	19	22
Maine	29	34	39
Maryland	30	37	40
Massachusetts	38	51	51
Michigan	28	29	31
Minnesota	44	43	48
Mississippi	12	14	19
Missouri	28	30	32
Montana	35	38	46
Nebraska	32	35	33
Nevada	20	23	29
New Hampshire	35	38	44
New Jersey	33	40	47
New Mexico	15	17	24
New York	32	30	30
North Carolina	32	34	37
North Dakota	36	41	43
Ohio	30	35	39
Oklahoma	20	21	27
Oregon	32	35	33
Pennsylvania	30	38	39
Rhode Island	24	28	34
South Carolina	26	32	32
South Dakota	35	39	42
Tennessee	21	23	24
Texas	25	35	40
Utah	31	32	35
Vermont	35	41	46
Virginia	31	37	40
Washington	32	36	40
West Virginia	20	19	21
Wisconsin	35	37	41
Wyoming	32	36	37
Puerto Rico	NA	NA	NA

NA = not available.

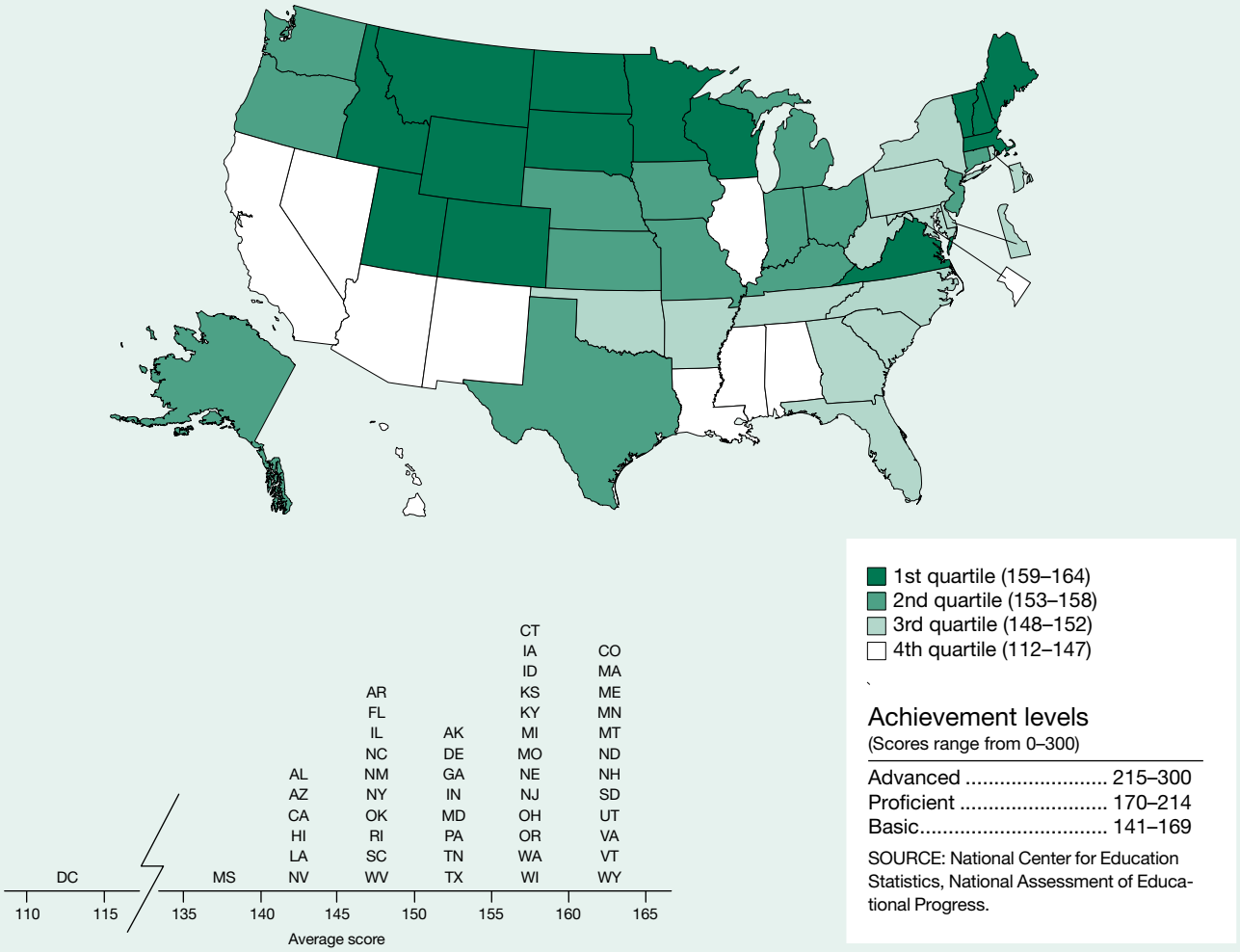
NOTES: National Assessment of Educational Progress (NAEP) grade 8 mathematics scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Eighth Grade Science Performance

Figure 8-7
Average eighth grade science performance: 2011



Findings

- In 2011, the nationwide average science score of eighth grade public school students was 151, an increase from 149 in 2009. Average scores in 2011 for individual states ranged from a high of 164 to a low of 137.
- Of the 46 jurisdictions that participated in both the 2009 and 2011 eighth grade science assessments, 22 showed increases in science scores among public school eighth graders over the period.
- Nationally, the 2011 average science score for white public school eighth grade students was 163 compared to 128 for black students, a gap of 35 points, and 136 for Hispanic students, a gap of 27 points, based upon racial classifications provided by the schools. In 2009, these gaps were 36 and 30 points, respectively.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its eighth grade students in public schools. The NAEP science assessment, conducted by the National Center for Education Statistics, is part of a legally mandated federal effort to measure student performance. It measures students' knowledge and skill in science and their ability to apply that knowledge in the content areas of physical, life, and earth and space science. The NAEP assessment in science was updated in 2009 to keep pace with recent developments in science and science education. Because it is based on a new framework, 2009 results cannot be compared to those from previous science assessments. Student performance is presented in terms of average scores on a scale from 0 to 300.

An average score designated as "NA" (not available) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-7
Average eighth grade science performance, by state: 2009 and 2011
(Score out of 300)

State	2009	2011
United States	149	151
Alabama	139	140
Alaska	NA	153
Arizona	141	144
Arkansas	144	148
California	137	140
Colorado	156	161
Connecticut	155	155
Delaware	148	150
District of Columbia	NA	112
Florida	146	148
Georgia	147	151
Hawaii	139	142
Idaho	158	159
Illinois	148	147
Indiana	152	153
Iowa	156	157
Kansas	NA	156
Kentucky	156	157
Louisiana	139	143
Maine	158	160
Maryland	148	152
Massachusetts	160	161
Michigan	153	157
Minnesota	159	161
Mississippi	132	137
Missouri	156	156
Montana	162	163
Nebraska	NA	157
Nevada	141	144
New Hampshire	160	162
New Jersey	155	155
New Mexico	143	145
New York	149	149
North Carolina	144	148
North Dakota	162	164
Ohio	158	158
Oklahoma	146	148
Oregon	154	155
Pennsylvania	154	151
Rhode Island	146	149
South Carolina	143	149
South Dakota	161	162
Tennessee	148	150
Texas	150	153
Utah	158	161
Vermont	NA	163
Virginia	156	160
Washington	155	156
West Virginia	145	149
Wisconsin	157	159
Wyoming	158	160
Puerto Rico	NA	NA

NA = not available.

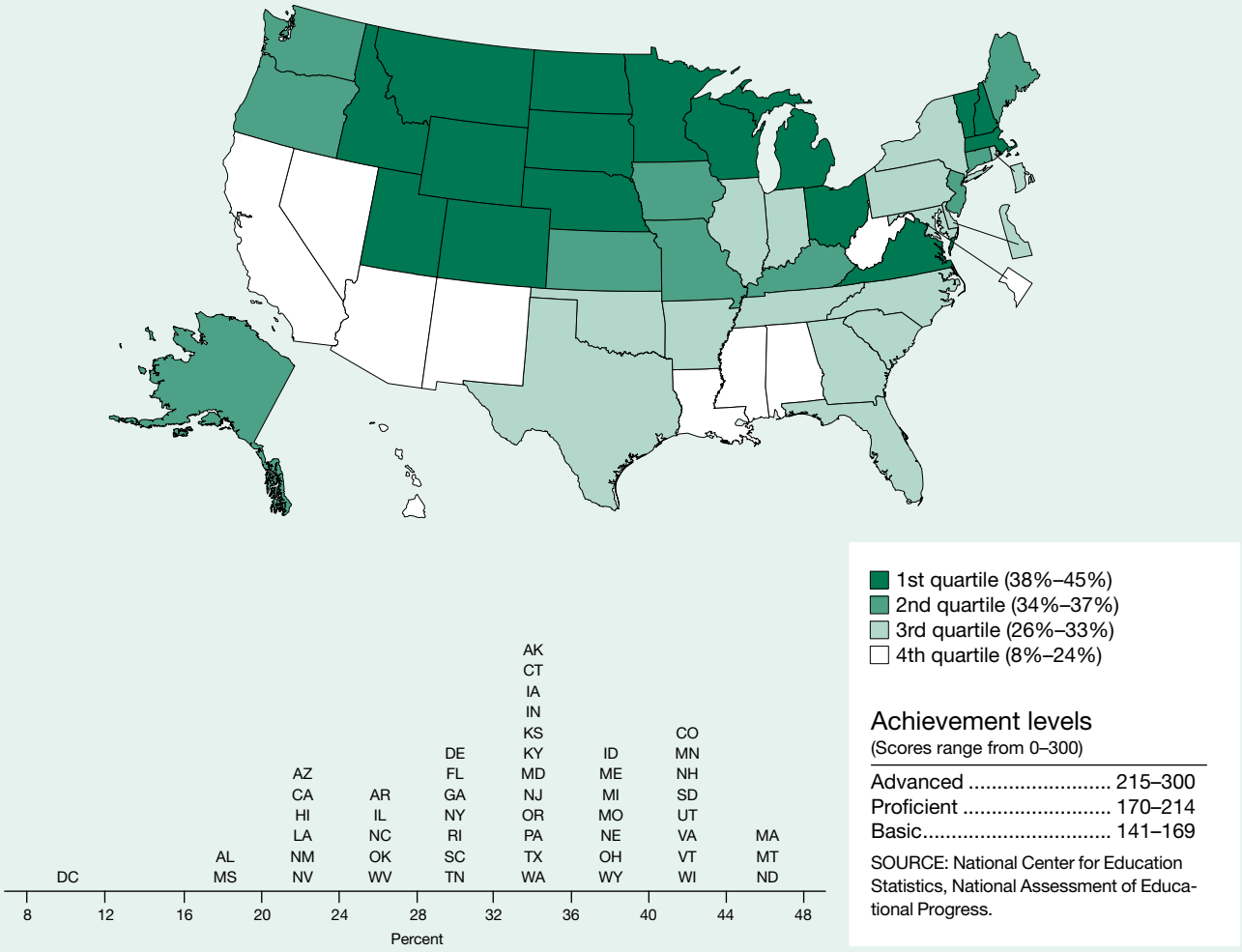
NOTES: National Assessment of Educational Progress (NAEP) grade 8 science scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Eighth Grade Science Proficiency

Figure 8-8
Students reaching proficiency in eighth grade science: 2011
(Percentage of students scoring 170 or above)



Findings

- In 2011, 31% of eighth grade public school students nationwide performed at or above the proficient level in science. State values for this indicator ranged from 19% to 45%.
- Nationally, the percentage of eighth grade white students demonstrating proficient performance in science was 43% in 2011 compared to 9% for black students, a gap of 34 percentage points, and 16% for Hispanic students, a gap of 27 percentage points, based upon the racial classifications provided by the schools. In 2009, these gaps were 33 and 29 percentage points, respectively.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in science. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency" as well as "advanced" and "basic" accomplishment. For the eighth grade, the proficient level (scores 170–214) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (215–300) signifies superior performance. The basic level (141–169) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. The National Center for Education Statistics has determined that achievement levels should be used on a trial basis and interpreted with caution.

Approximately 122,000 eighth grade students in 7,290 schools participated in the 2011 NAEP science assessment. A designation of "NA" (not available) indicates that the state either did not participate in the assessment or did not meet minimum guidelines for reporting. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extra testing time or individual rather than group administration). All data presented here represent scores from tests taken with accommodations offered. For additional details on NAEP scores by gender and race/ethnicity, see appendix tables 8-1 to 8-12.

Table 8-8
Students reaching proficiency in eighth grade science, by state: 2009 and 2011
(Percent)

State	2009	2011
United States	29	31
Alabama	19	19
Alaska	NA	34
Arizona	22	23
Arkansas	24	26
California	20	22
Colorado	36	42
Connecticut	35	35
Delaware	25	28
District of Columbia	NA	8
Florida	25	28
Georgia	27	30
Hawaii	17	22
Idaho	37	38
Illinois	28	26
Indiana	32	33
Iowa	35	35
Kansas	NA	35
Kentucky	34	34
Louisiana	20	22
Maine	35	37
Maryland	28	32
Massachusetts	41	44
Michigan	35	38
Minnesota	40	42
Mississippi	15	19
Missouri	36	36
Montana	43	44
Nebraska	NA	38
Nevada	20	23
New Hampshire	39	42
New Jersey	34	34
New Mexico	21	22
New York	31	29
North Carolina	24	26
North Dakota	42	45
Ohio	37	38
Oklahoma	25	26
Oregon	35	35
Pennsylvania	35	33
Rhode Island	26	31
South Carolina	23	28
South Dakota	40	42
Tennessee	28	31
Texas	29	32
Utah	39	43
Vermont	NA	43
Virginia	36	40
Washington	34	35
West Virginia	22	24
Wisconsin	38	40
Wyoming	36	38
Puerto Rico	NA	NA

NA = not available.

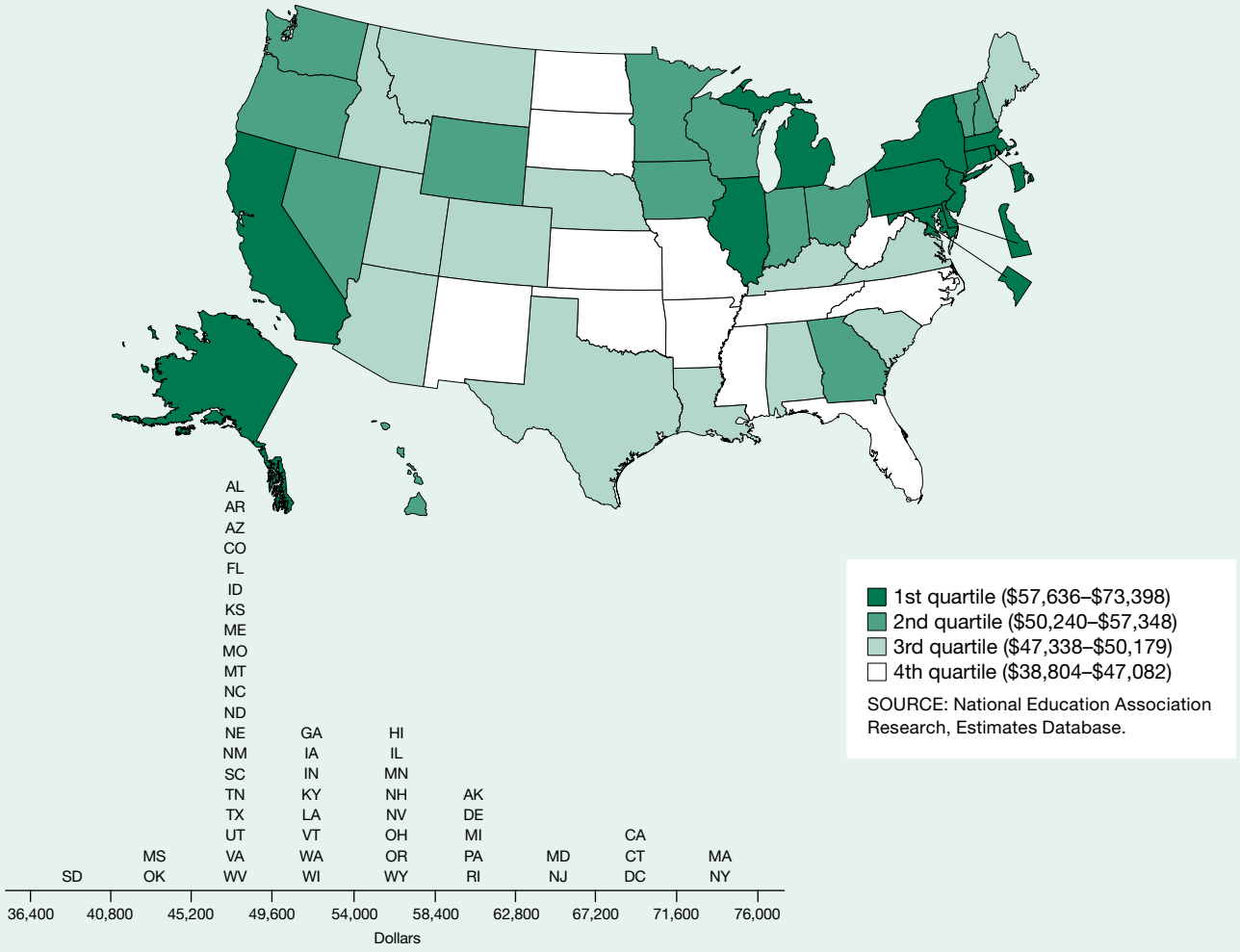
NOTES: National Assessment of Educational Progress (NAEP) grade 8 science scores are for public schools only. For additional details on NAEP scores by sex and race or ethnicity, see appendix tables 8-1–8-12.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2014

Public School Teacher Salaries

Figure 8-9
Public school teacher salaries: 2012



Findings

- In 2012, salaries for public school teachers nationwide averaged $55,418, ranging from a state low of $38,804 to a high of $73,398.
- Fifteen states and the District of Columbia had average public school teacher salaries higher than the national average in 2012, an increase from 13 states and the District of Columbia that were higher than the national average in 2002.
- Between 2002 and 2012, average teacher salaries across the nation rose by 24% in unadjusted dollars. Average teacher salaries declined by 1% after adjusting for inflation.
- Average state salaries for public school teachers and state achievement scores on the NAEP mathematics and science tests are not correlated: some states rank high on one measure and low on the other.

This indicator represents the average salary of all full-time public school teachers. The year is the end date of the academic year. For example, 2012 data represent salaries for the 2011–12 academic year. The figures include salaries for teachers with varying amounts of teaching experience and various types and levels of formal education.

Salary estimates for public elementary and secondary teachers are provided by the National Education Association's *Estimates of School Statistics, 1969–70 through 2011–12*.

Public school teacher salaries may reflect a range of factors, including the value that the state places on primary and secondary education, the state's cost of living, the teachers' experience and education level, and the local supply and demand in the job market. Relatively low teacher salaries may hinder recruitment into the teaching profession.

Table 8-9
Public school teacher salaries, by state: 2002, 2007, and 2012
(Dollars)

State	2002	2007	2012
United States	44,683	50,816	55,418
Alabama	37,194	43,389	48,003
Alaska	49,418	54,658	62,425
Arizona	39,973	45,941	48,691
Arkansas	36,962	44,245	46,314
California	54,348	63,640	68,531
Colorado	40,659	45,833	49,049
Connecticut	53,551	60,822	69,465
Delaware	48,363	54,680	58,800
District of Columbia	47,049	59,000	68,720
Florida	39,275	45,308	46,479
Georgia	44,073	49,905	52,938
Hawaii	42,615	51,922	54,070
Idaho	39,591	42,798	48,551
Illinois	49,435	58,246	57,636
Indiana	44,195	47,831	50,516
Iowa	38,230	43,130	50,240
Kansas	37,093	43,334	46,718
Kentucky	37,951	43,646	49,730
Louisiana	36,328	42,816	50,179
Maine	37,300	41,596	47,338
Maryland	48,251	56,927	63,634
Massachusetts	50,293	58,624	71,721
Michigan	52,676	54,895	61,560
Minnesota	42,194	49,634	54,959
Mississippi	33,295	40,182	41,646
Missouri	37,996	41,839	46,406
Montana	34,379	41,225	48,546
Nebraska	36,236	42,044	48,154
Nevada	40,764	45,342	54,559
New Hampshire	39,915	46,527	54,177
New Jersey	53,192	59,920	67,078
New Mexico	36,440	42,780	45,622
New York	52,000	58,537	73,398
North Carolina	42,680	46,410	45,947
North Dakota	32,253	38,822	46,058
Ohio	44,029	51,937	56,715
Oklahoma	34,744	42,379	44,391
Oregon	46,081	50,911	57,348
Pennsylvania	50,599	54,970	61,934
Rhode Island	49,758	55,956	62,186
South Carolina	39,923	44,133	47,428
South Dakota	31,295	35,378	38,804
Tennessee	38,515	43,816	47,082
Texas	39,232	44,897	48,373
Utah	37,414	40,566	48,159
Vermont	39,240	48,370	51,306
Virginia	41,731	44,727	48,703
Washington	43,464	47,882	52,232
West Virginia	36,751	40,531	45,320
Wisconsin	42,232	47,901	53,792
Wyoming	37,837	50,692	57,222
Puerto Rico	NA	NA	NA

NA = not available.

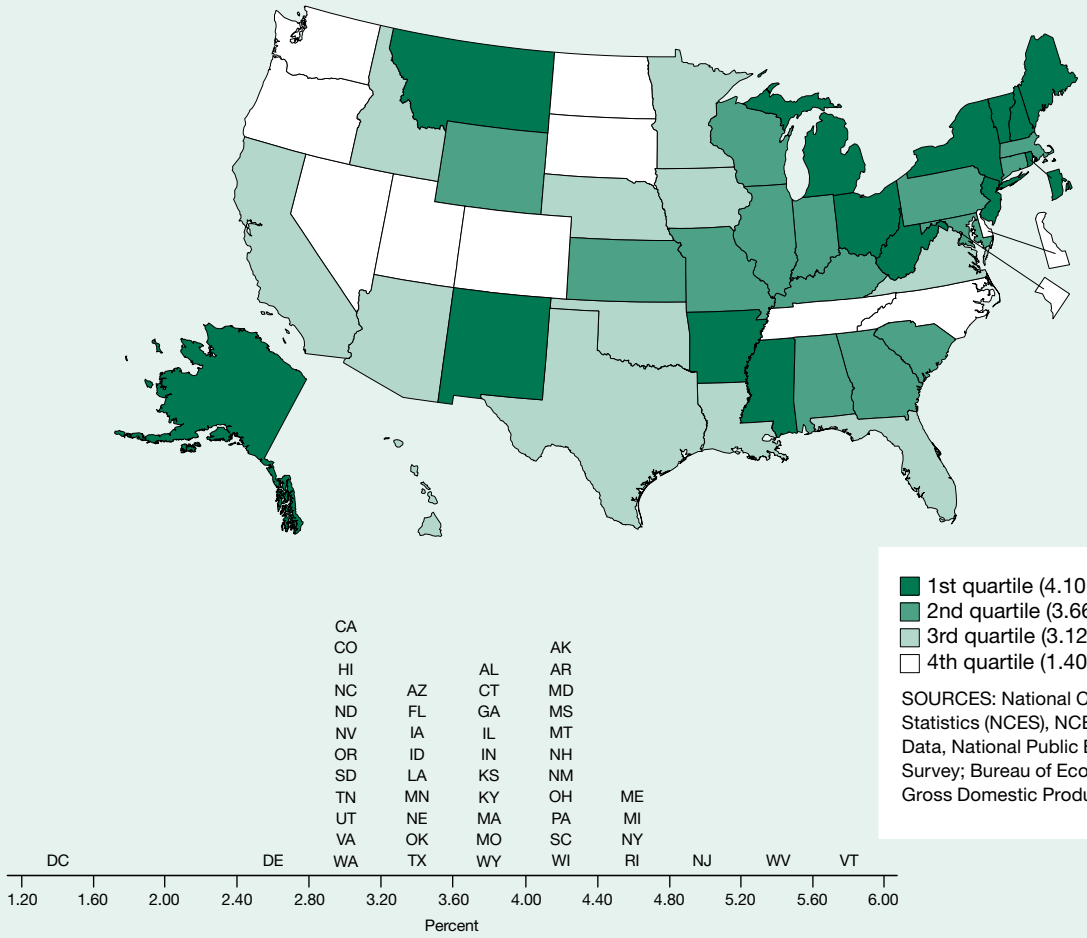
NOTES: The 2002 and 2007 national averages for the United States are the reported values from the *Digest of Education Statistics*; the 2012 national average for the United States is the reported value from the National Education Association.

SOURCE: National Center for Education Statistics, *Digest of Education Statistics* (various years). National Education Association Research, Estimates Database (2012).

Science and Engineering Indicators 2014

Elementary and Secondary Public School Expenditures as a Percentage of Gross Domestic Product

Figure 8-10
Elementary and secondary public school expenditures as a percentage of gross domestic product: 2010



Findings

- The 2010 national average for spending on elementary and secondary education was 3.65% of the gross domestic product (GDP), an increase from 3.28% in 2000. Among individual states, the value for this indicator ranged from 2.47% to 5.67% of the state's GDP in 2010, indicating that some states were directing a much higher percentage of their resources toward elementary and secondary education.
- Spending for elementary and secondary public education as a percentage of the state's GDP decreased in 10 states during the 2000–10 period.
- Several states spending the highest percentage of their GDP on elementary and secondary education had relatively small student populations (100,000–300,000 students), suggesting that some level of expenditure for educational infrastructure (e.g., assessments of curriculum development) may be largely independent of the size of the student population.

This indicator represents the relative amount of resources that state governments expend to support public education in prekindergarten through grade 12. It is calculated by dividing a state's expenditures for elementary and secondary public schools by the state's GDP. Expenditures include instruction and instruction-related costs, student support services, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education. State and local support represent the largest sources of funding for elementary and secondary education.

Expenditure data on public elementary and secondary education are reported by the National Center for Education Statistics, Department of Education. They are part of the National Public Education Financial Survey and are included in the Common Core of Data, a comprehensive annual national statistical database that covers approximately 100,000 public elementary and secondary schools and 18,000 regular school districts in the 50 states, the District of Columbia, and outlying areas, as well as Department of Defense Schools. Most of the data are obtained from administrative records maintained by state education agencies.

Expenditures are expressed in actual dollars and their data year is the end date of the academic year. For example, expenditure data for 2010 represent expenditures for the 2009–10 academic year. GDP data refer to the 2010 calendar year.

Table 8-10
Elementary and secondary public school expenditures as a percentage of gross domestic product, by state: 2000, 2005, and 2010

State	Public school expenditures ($thousands)			State GDP ($millions)			School expenditures/ GDP (%)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	323,808,910	424,562,096	525,497,899	9,884,170	12,539,116	14,388,814	3.28	3.39	3.65
Alabama	4,176,082	5,164,406	6,670,517	116,009	150,968	172,842	3.60	3.42	3.86
Alaska	1,183,499	1,442,269	2,084,019	25,911	37,774	47,910	4.57	3.82	4.35
Arizona	4,262,182	6,451,870	8,587,889*	161,792	222,569	247,329	2.63	2.90	3.47
Arkansas	2,380,331	3,546,999	4,459,910*	68,335	88,501	103,170	3.48	4.01	4.32
California	38,129,479	50,918,654	58,248,662*	1,319,472	1,688,949	1,845,249	2.89	3.01	3.16
Colorado	4,400,888	5,994,440	7,429,302	172,037	217,329	254,551	2.56	2.76	2.92
Connecticut	5,402,868	7,080,396	8,853,337*	163,455	196,307	221,767	3.31	3.61	3.99
Delaware	937,630	1,299,349	1,549,812	40,614	54,422	62,832	2.31	2.39	2.47
District of Columbia	780,192	1,023,952	1,451,870	58,267	82,488	103,745	1.34	1.24	1.40
Florida	13,885,988	19,042,877	23,349,314*	481,239	681,225	727,972	2.89	2.80	3.21
Georgia	9,158,624	12,528,856	15,730,409*	293,966	363,177	402,006	3.12	3.45	3.91
Hawaii	1,213,695	1,648,086	2,110,864	41,450	56,901	67,274	2.93	2.90	3.14
Idaho	1,302,817	1,618,215	1,961,857*	36,147	48,683	55,639	3.60	3.32	3.53
Illinois	14,462,773	18,658,428	24,695,773*	474,520	568,114	642,769	3.05	3.28	3.84
Indiana	7,110,930	9,108,931	9,921,243*	198,238	239,321	270,739	3.59	3.81	3.66
Iowa	3,264,336	3,808,200	4,794,308	93,312	119,998	138,378	3.50	3.17	3.46
Kansas	2,971,814	3,718,153	4,731,676	85,722	104,869	126,640	3.47	3.55	3.74
Kentucky	3,837,794	4,812,591	6,091,814	113,233	138,772	161,064	3.39	3.47	3.78
Louisiana	4,391,214	5,554,766	7,393,452*	131,289	196,917	227,373	3.34	2.82	3.25
Maine	1,604,438	2,056,266	2,356,312*	36,438	45,520	51,343	4.40	4.52	4.59
Maryland	6,545,135	8,682,586	11,883,677*	182,923	247,241	295,981	3.58	3.51	4.02
Massachusetts	8,511,065	11,357,857	14,067,276*	273,006	323,314	376,908	3.12	3.51	3.73
Michigan	13,994,294	16,353,921	17,227,515	337,459	375,753	367,107	4.15	4.35	4.69
Minnesota	6,140,442	7,310,284	8,927,288*	188,818	237,813	268,578	3.25	3.07	3.32
Mississippi	2,510,376	3,243,888	3,990,876*	65,625	81,360	95,763	3.83	3.99	4.17
Missouri	5,655,531	7,115,207	8,923,448*	180,967	216,336	243,876	3.13	3.29	3.66
Montana	994,770	1,193,182	1,498,252	21,633	30,054	36,521	4.60	3.97	4.10
Nebraska	1,926,500	2,512,914	3,247,970	57,333	72,505	90,910	3.36	3.47	3.57
Nevada	1,875,467	2,722,264	3,592,994	75,895	114,478	124,838	2.47	2.38	2.88
New Hampshire	1,418,503	2,021,144	2,576,956	44,161	53,693	61,147	3.21	3.76	4.21
New Jersey	13,327,645	19,669,576	24,261,392	350,110	430,246	483,007	3.81	4.57	5.02
New Mexico	1,890,274	2,554,638	3,217,328	50,294	67,763	77,686	3.76	3.77	4.14
New York	28,433,240	38,866,853	50,251,461*	769,291	959,867	1,136,417	3.70	4.05	4.42
North Carolina	7,713,293	9,567,000	12,200,362	281,542	354,664	426,875	2.74	2.70	2.86
North Dakota	638,946	786,870	1,000,095	18,266	24,670	35,357	3.50	3.19	2.83
Ohio	12,974,575	17,167,866	19,801,670	380,895	444,083	465,679	3.41	3.87	4.25
Oklahoma	3,382,581	4,161,024	5,192,124	91,273	120,529	147,649	3.71	3.45	3.52
Oregon	3,896,287	4,458,028	5,401,667	113,180	143,429	181,523	3.44	3.11	2.98
Pennsylvania	14,120,112	18,711,100	22,733,518	395,602	482,200	558,818	3.57	3.88	4.07
Rhode Island	1,393,143	1,825,900	2,136,582*	33,584	44,189	48,572	4.15	4.13	4.40
South Carolina	4,087,355	5,312,739	6,566,165	115,443	141,877	162,292	3.54	3.74	4.05
South Dakota	737,998	916,563	1,115,861	24,038	31,549	38,297	3.07	2.91	2.91
Tennessee	4,931,734	6,446,691	7,894,661	177,540	224,288	253,602	2.78	2.87	3.11
Texas	25,098,703	31,919,107	42,621,886	731,064	968,553	1,226,714	3.43	3.30	3.47
Utah	2,102,655	2,627,022	3,635,085	69,489	90,616	118,225	3.03	2.90	3.07
Vermont	870,198	1,177,478	1,463,792	18,039	22,743	25,809	4.82	5.18	5.67
Virginia	7,757,598	10,705,162	13,193,633	261,759	356,370	422,763	2.96	3.00	3.12
Washington	6,399,883	7,870,979	9,832,913	227,704	279,333	342,702	2.81	2.82	2.87
West Virginia	2,086,937	2,527,767	3,315,648	41,386	51,857	62,732	5.04	4.87	5.29
Wisconsin	6,852,178	8,435,359	9,918,809	177,355	218,689	245,415	3.86	3.86	4.04
Wyoming	683,918	863,423	1,334,655	17,050	26,250	36,459	4.01	3.29	3.66
Puerto Rico	2,086,414	2,865,945	3,464,044*	69,208	86,158	NA	3.00	3.30	NA

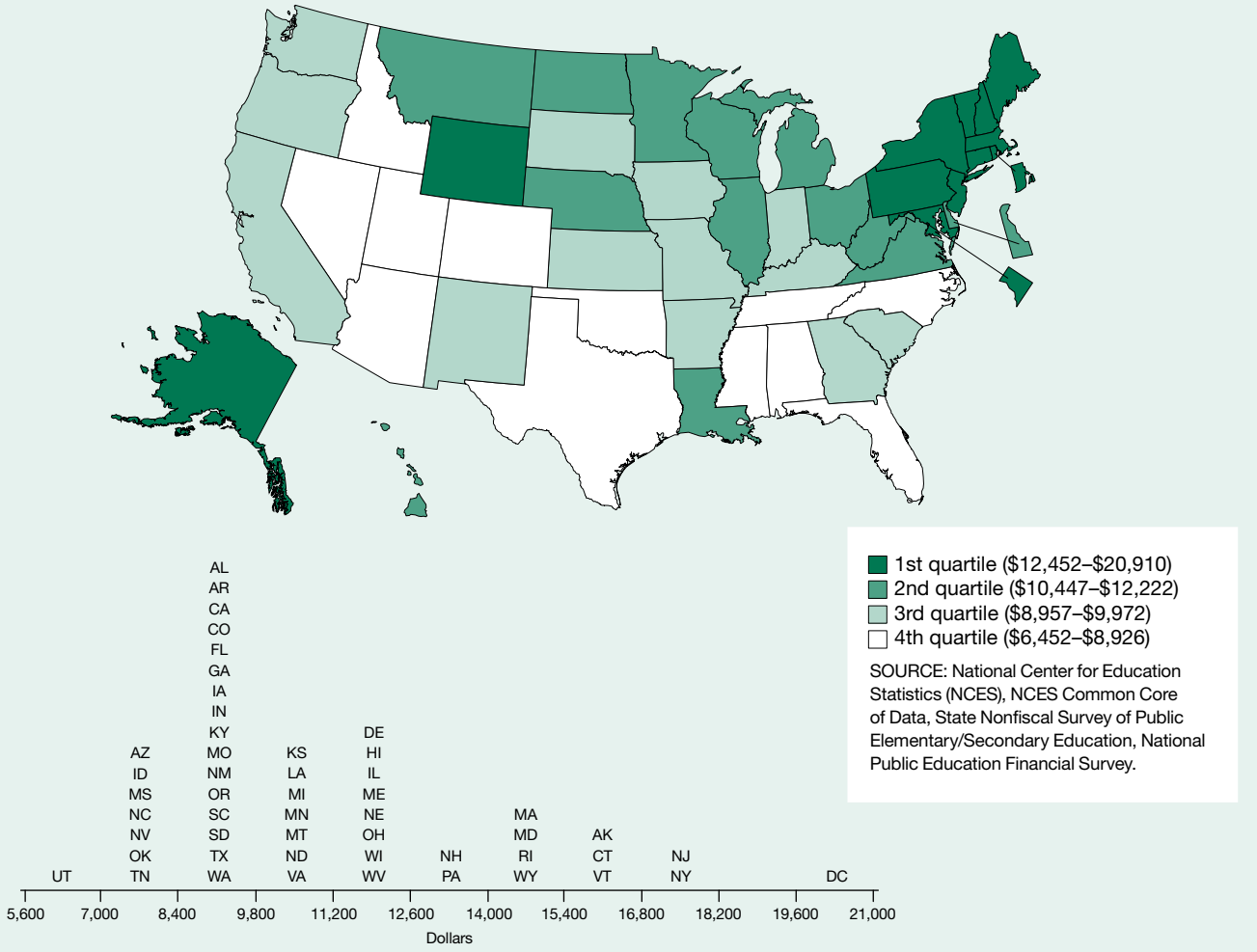
* = value is affected by the redistribution of reported values to correct for missing data items and/or to distribute state direct-support expenditures; NA = not available.

GDP = gross domestic product.

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, National Public Education Financial Survey (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013); Government of Puerto Rico, Office of the Governor (various years); United Nations Statistics Division.

Expenditures per Pupil for Elementary and Secondary Public Schools

Figure 8-11
Expenditures per pupil for elementary and secondary public schools: 2010



Findings

- Per-pupil spending on day-to-day operations grew nationwide from $6,911 in 2000 to $10,652 in 2010, an increase of 54% in unadjusted dollars. This was equivalent to an increase of approximately 23% after adjusting for inflation.
- In 2010, all states showed substantial increases in per-pupil spending relative to 2000, and only one state did not exceed the 2000 national average.
- Per-pupil spending in individual states varied widely, ranging from a low of $6,452 to a high of $18,167 in 2010. The District of Columbia had the highest per-pupil spending of any jurisdiction at $20,910.
- Several states that ranked in the lower two quartiles of this indicator ranked in the upper quartiles of the National Assessment of Educational Progress indicators.

This indicator represents the amount that local, state, and federal governments spend on elementary and secondary education in a state, adjusted for the size of the student body. It is calculated by dividing the expenditures over the entire academic year for prekindergarten through grade 12 by the number of students in those grades in public schools. Expenditures include expenditures for instruction and instruction-related costs, student support services, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education. The number of pupils enrolled in prekindergarten through grade 12 is determined during the fall of the academic year. Expenditures represent actual spending in current dollars and have not been adjusted for inflation or for the cost of living in a state, which affects the amount of goods and services that can be purchased.

During the 2009–10 school year, 66.1% of expenses were used for instructional costs, 17.7% for operational costs, 10.7% for administrative costs, and 5.6% for student support services.

The year is the end date of the academic year. For example, data for 2010 represent costs for the 2009–10 academic year.

Table 8-11
Expenditures per pupil for elementary and secondary public schools, by state: 2000, 2005, and 2010

State	Public school expenditures ($thousands)			Student enrollment			Per-pupil expenditures ($)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	323,808,910	424,562,096	525,497,899	46,857,149	48,794,911	49,333,543	6,911	8,701	10,652
Alabama	4,176,082	5,164,406	6,670,517	740,732	730,140	748,889	5,638	7,073	8,907
Alaska	1,183,499	1,442,269	2,084,019	134,391	132,970	131,661	8,806	10,847	15,829
Arizona	4,262,182	6,451,870	8,587,889*	852,612	1,043,298	1,077,831	4,999	6,184	7,968
Arkansas	2,380,331	3,546,999	4,459,910*	451,034	463,115	480,559	5,277	7,659	9,281
California	38,129,479	50,918,654	58,248,662*	6,038,590	6,441,557	6,263,438	6,314	7,905	9,300
Colorado	4,400,888	5,994,440	7,429,302	708,109	765,976	832,368	6,215	7,826	8,926
Connecticut	5,402,868	7,080,396	8,853,337*	553,993	577,390	563,968	9,753	12,263	15,698
Delaware	937,630	1,299,349	1,549,812	112,836	119,091	126,801	8,310	10,911	12,222
District of Columbia	780,192	1,023,952	1,451,870	77,194	76,714	69,433	10,107	13,348	20,910
Florida	13,885,988	19,042,877	23,349,314*	2,381,396	2,639,336	2,634,522	5,831	7,215	8,863
Georgia	9,158,624	12,528,856	15,730,409*	1,422,762	1,553,437	1,667,685	6,437	8,065	9,432
Hawaii	1,213,695	1,648,086	2,110,864	185,860	183,185	180,196	6,530	8,997	11,714
Idaho	1,302,817	1,618,215	1,961,857*	245,136	256,084	276,299	5,315	6,319	7,100
Illinois	14,462,773	18,658,428	24,695,773*	2,027,600	2,097,503	2,103,813	7,133	8,896	11,739
Indiana	7,110,930	9,108,931	9,921,243*	988,702	1,021,348	1,046,661	7,192	8,919	9,479
Iowa	3,264,336	3,808,200	4,794,308	497,301	478,319	491,842	6,564	7,962	9,748
Kansas	2,971,814	3,718,153	4,731,676	472,188	469,136	474,489	6,294	7,926	9,972
Kentucky	3,837,794	4,812,591	6,091,814	648,180	674,796	680,089	5,921	7,132	8,957
Louisiana	4,391,214	5,554,766	7,393,452*	756,579	724,281	690,915	5,804	7,669	10,701
Maine	1,604,438	2,056,266	2,356,312*	209,253	198,820	189,225	7,667	10,342	12,452
Maryland	6,545,135	8,682,586	11,883,677*	846,582	865,561	848,412	7,731	10,031	14,007
Massachusetts	8,511,065	11,357,857	14,067,276*	971,425	975,574	957,053	8,761	11,642	14,699
Michigan	13,994,294	16,353,921	17,227,515	1,725,639	1,750,919	1,649,082	8,110	9,340	10,447
Minnesota	6,140,442	7,310,284	8,927,288*	854,034	838,503	837,053	7,190	8,718	10,665
Mississippi	2,510,376	3,243,888	3,990,876*	500,716	495,376	492,481	5,014	6,548	8,104
Missouri	5,655,531	7,115,207	8,923,448*	914,110	905,449	917,982	6,187	7,858	9,721
Montana	994,770	1,193,182	1,498,252	157,556	146,705	141,807	6,314	8,133	10,565
Nebraska	1,926,500	2,512,914	3,247,970	288,261	285,761	283,414	6,683	8,794	11,460
Nevada	1,875,467	2,722,264	3,592,994	325,610	400,083	428,947	5,760	6,804	8,376
New Hampshire	1,418,503	2,021,144	2,576,956	206,783	206,852	197,140	6,860	9,771	13,072
New Jersey	13,327,645	19,669,576	24,261,392	1,289,256	1,393,347	1,396,029	10,337	14,117	17,379
New Mexico	1,890,274	2,554,638	3,217,328	324,495	326,102	334,419	5,825	7,834	9,621
New York	28,433,240	38,866,853	50,251,461*	2,887,776	2,836,337	2,766,052	9,846	13,703	18,167
North Carolina	7,713,293	9,567,000	12,200,362	1,275,925	1,385,754	1,483,397	6,045	6,904	8,225
North Dakota	638,946	786,870	1,000,095	112,751	100,513	95,073	5,667	7,829	10,519
Ohio	12,974,575	17,167,866	19,801,670	1,836,554	1,840,032	1,764,297	7,065	9,330	11,224
Oklahoma	3,382,581	4,161,024	5,192,124	627,032	629,476	654,802	5,395	6,610	7,929
Oregon	3,896,287	4,458,028	5,401,667	545,033	552,322	582,839	7,149	8,071	9,268
Pennsylvania	14,120,112	18,711,100	22,733,518	1,816,716	1,828,089	1,785,993	7,772	10,235	12,729
Rhode Island	1,393,143	1,825,900	2,136,582*	156,454	156,498	145,118	8,904	11,667	14,723
South Carolina	4,087,355	5,312,739	6,566,165	666,780	703,736	723,143	6,130	7,549	9,080
South Dakota	737,998	916,563	1,115,861	131,037	122,798	123,713	5,632	7,464	9,020
Tennessee	4,931,734	6,446,691	7,894,661	916,202	941,091	972,549	5,383	6,850	8,117
Texas	25,098,703	31,919,107	42,621,886	3,991,783	4,405,215	4,850,210	6,288	7,246	8,788
Utah	2,102,655	2,627,022	3,635,085	480,255	503,607	563,361	4,378	5,216	6,452
Vermont	870,198	1,177,478	1,463,792	104,559	98,352	91,451	8,323	11,972	16,006
Virginia	7,757,598	10,705,162	13,193,633	1,133,994	1,204,739	1,245,340	6,841	8,886	10,594
Washington	6,399,883	7,870,979	9,832,913	1,003,714	1,020,005	1,035,347	6,376	7,717	9,497
West Virginia	2,086,937	2,527,767	3,315,648	291,811	280,129	282,662	7,152	9,024	11,730
Wisconsin	6,852,178	8,435,359	9,918,809	877,753	864,757	866,072	7,806	9,755	11,453
Wyoming	683,918	863,423	1,334,655	92,105	84,733	87,621	7,425	10,190	15,232
Puerto Rico	2,086,414	2,865,945	3,464,044*	613,019	575,648	493,393	3,404	4,979	7,021

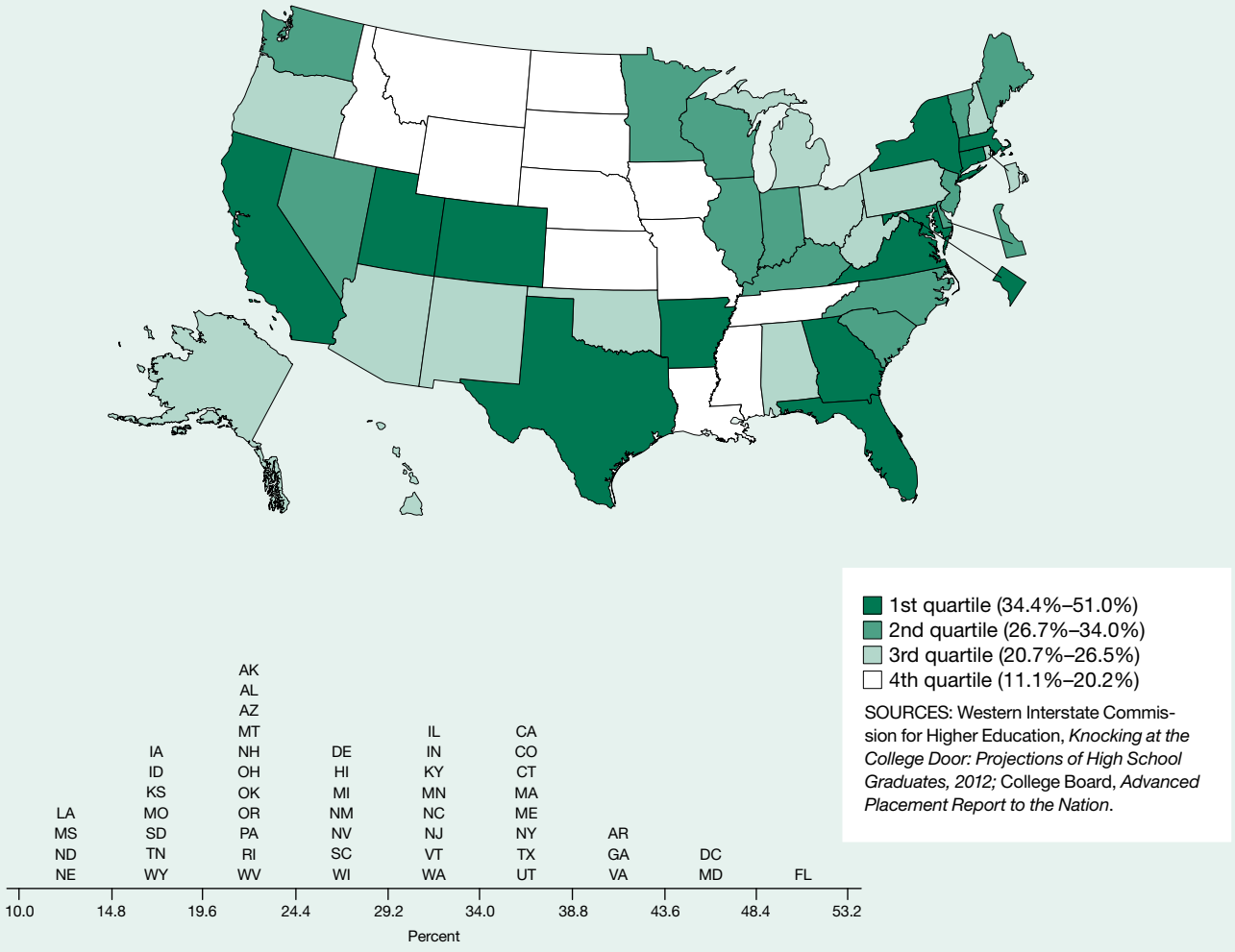
* = value is affected by the redistribution of reported values to correct for missing data items and/or to distribute state direct-support expenditures.

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, State Nonfiscal Survey of Public Elementary/Secondary Education (various years); National Public Education Financial Survey (various years).

Science and Engineering Indicators 2014

Public High School Students Taking Advanced Placement Exams

Figure 8-12
Public high school students taking Advanced Placement Exams: 2012



SOURCES: Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates, 2012;* College Board, *Advanced Placement Report to the Nation*.

Findings

- Nationwide, the percentage of public school students who took an AP Exam rose from 18.0% of the class of 2002 to 31.2% of the class of 2012.
- The percentage of public school students taking an AP Exam varied greatly among states and ranged from 11.1% to 51.0% of the class of 2012. Forty-one states and the District of Columbia exceeded the 2002 national average in 2012, compared with 16 states and the District of Columbia that exceeded the national average in 2002.
- AP participation levels were higher for all jurisdictions in 2012 than in 2002. Arkansas showed the largest increase, with the class of 2012 exceeding the participation of the class of 2002 by 34 percentage points.

Participation in the Advanced Placement (AP) program provides a measure of the extent to which a rigorous curriculum is available to and used by high school students. This indicator represents the percentage of students in the graduating class who have taken one or more AP Exams.

Throughout the United States, more than 954,000 public school students from the class of 2012 took nearly 2.9 million AP Exams during their high school careers. Generally, students who take AP Exams have completed a rigorous course of study in a specific subject area in high school with the expectation of obtaining college credit or advanced placement. AP Exams were taken most frequently in U.S. history, English literature and composition, English language and composition, calculus AB, and U.S. government and politics.

Students from the class of 2012 attended 13,383 U.S. public high schools that participated in the AP program. These schools make many different AP courses available to their students.

Table 8-12
Public high school students taking Advanced Placement Exams, by state: 2002, 2007, and 2012

State	Public high school graduates who took an Advanced Placement Exam			High school graduates			High school graduates who took an Advanced Placement Exam (%)		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
United States	471,404	694,705	954,070	2,621,534	2,893,045	3,053,230	18.0	24.0	31.2
Alabama	3,103	4,181	9,852	35,887	38,912	44,317	8.6	10.7	22.2
Alaska	1,085	1,497	1,621	6,945	7,666	7,813	15.6	19.5	20.7
Arizona	5,100	9,087	14,407	47,175	55,954	61,958	10.8	16.2	23.3
Arkansas	2,630	8,781	12,175	26,984	27,166	27,990	9.7	32.3	43.5
California	78,638	110,253	144,801	325,895	356,641	384,080	24.1	30.9	37.7
Colorado	8,585	13,753	18,358	40,760	45,628	50,176	21.1	30.1	36.6
Connecticut	6,790	9,819	13,332	32,327	37,541	36,836	21.0	26.2	36.2
Delaware	1,017	1,843	2,417	6,482	7,205	8,395	15.7	25.6	28.8
District of Columbia	584	1,017	1,512	3,090	2,944	3,194	18.9	34.5	47.3
Florida	28,170	49,234	76,128	119,537	142,284	149,219	23.6	34.6	51.0
Georgia	13,518	21,730	33,647	65,983	77,829	84,813	20.5	27.9	39.7
Hawaii	1,239	1,702	2,905	10,452	11,063	10,990	11.9	15.4	26.4
Idaho	1,795	2,507	3,150	15,874	16,242	17,043	11.3	15.4	18.5
Illinois	18,833	27,798	40,653	116,657	130,220	135,636	16.1	21.3	30.0
Indiana	7,575	11,306	21,260	56,722	59,887	63,354	13.4	18.9	33.6
Iowa	2,667	3,989	5,542	33,789	34,127	32,833	7.9	11.7	16.9
Kansas	2,458	3,519	5,167	29,541	30,139	30,428	8.3	11.7	17.0
Kentucky	4,537	7,036	12,218	36,337	39,099	41,038	12.5	18.0	29.8
Louisiana	1,399	1,957	3,931	37,905	34,274	35,501	3.7	5.7	11.1
Maine	2,572	3,680	4,576	12,593	13,151	13,468	20.4	28.0	34.0
Maryland	12,019	20,232	26,640	50,881	57,564	58,009	23.6	35.1	45.9
Massachusetts	12,084	17,036	22,808	55,272	63,903	63,701	21.9	26.7	35.8
Michigan	14,706	20,129	26,822	95,001	111,838	107,956	15.5	18.0	24.8
Minnesota	8,926	12,527	16,780	57,440	59,497	57,486	15.5	21.1	29.2
Mississippi	1,659	2,605	3,615	23,740	24,186	25,756	7.0	10.8	14.0
Missouri	3,895	5,846	9,235	54,487	60,275	61,471	7.1	9.7	15.0
Montana	1,367	1,543	1,913	10,554	10,122	9,466	13.0	15.2	20.2
Nebraska	1,199	1,882	2,886	19,910	19,873	19,656	6.0	9.5	14.7
Nevada	2,239	4,371	6,890	16,270	17,149	25,710	13.8	25.5	26.8
New Hampshire	1,919	2,850	3,238	12,452	14,452	13,917	15.4	19.7	23.3
New Jersey	15,350	21,944	27,433	77,664	93,013	93,211	19.8	23.6	29.4
New Mexico	2,496	3,434	4,815	18,094	16,131	18,141	13.8	21.3	26.5
New York	42,000	54,201	64,946	140,139	168,333	181,454	30.0	32.2	35.8
North Carolina	15,008	22,315	26,633	65,955	76,031	88,421	22.8	29.3	30.1
North Dakota	562	768	882	8,114	7,159	6,785	6.9	10.7	13.0
Ohio	14,057	19,929	25,170	110,608	117,658	119,318	12.7	16.9	21.1
Oklahoma	5,032	7,018	8,140	36,852	37,100	37,792	13.7	18.9	21.5
Oregon	3,643	6,107	8,059	31,153	33,446	34,662	11.7	18.3	23.3
Pennsylvania	15,890	21,887	28,750	114,943	128,603	127,773	13.8	17.0	22.5
Rhode Island	1,118	1,438	2,176	9,006	10,384	9,809	12.4	13.8	22.2
South Carolina	6,444	8,142	10,564	31,302	35,108	39,496	20.6	23.2	26.7
South Dakota	1,003	1,268	1,545	8,796	8,346	8,345	11.4	15.2	18.5
Tennessee	5,193	7,954	10,743	40,894	54,502	60,444	12.7	14.6	17.8
Texas	43,308	65,788	96,166	225,167	241,193	279,291	19.2	27.3	34.4
Utah	7,744	8,737	10,439	30,183	28,276	30,229	25.7	30.9	34.5
Vermont	1,280	1,913	2,151	7,083	7,317	6,827	18.1	26.1	31.5
Virginia	17,825	25,627	33,626	66,519	73,997	80,354	26.8	34.6	41.8
Washington	8,513	14,741	20,581	58,311	62,801	64,002	14.6	23.5	32.2
West Virginia	1,806	2,505	3,722	17,128	17,407	17,017	10.5	14.4	21.9
Wisconsin	10,205	14,454	18,076	60,575	63,968	62,111	16.8	22.6	29.1
Wyoming	619	825	974	6,106	5,441	5,538	10.1	15.2	17.6
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

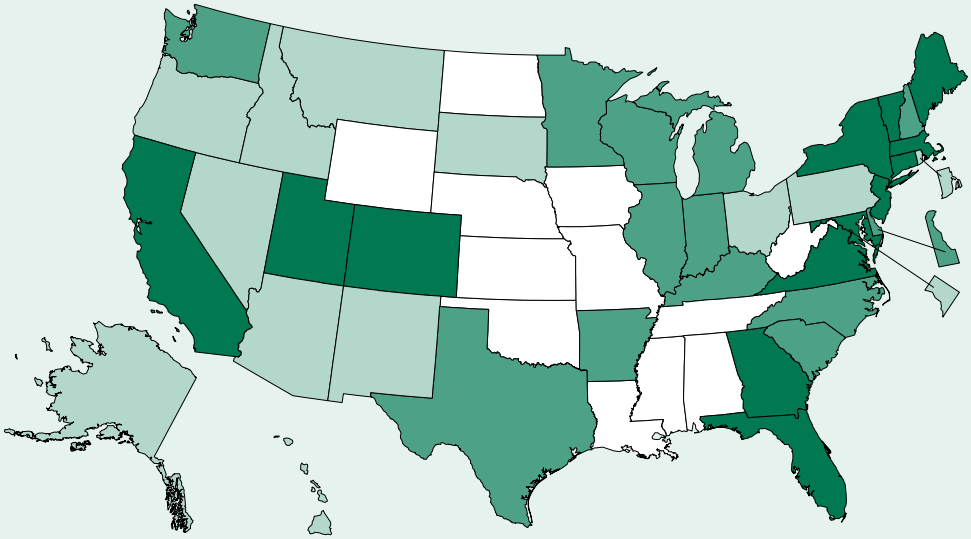
NA = not available.

NOTE: The national average for the United States is the reported value in the *Advanced Placement Report to the Nation*.

SOURCES: Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates, 2012*. College Board, *Advanced Placement Report to the Nation* (various years).

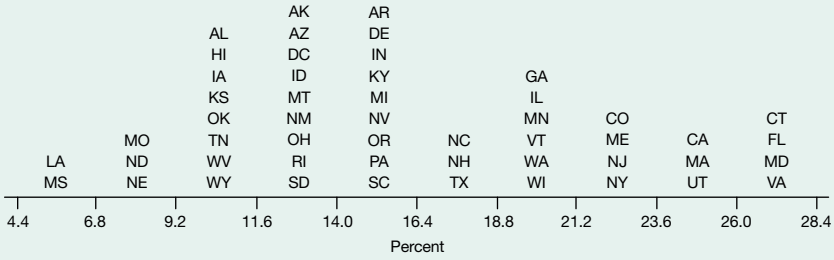
Public High School Students Scoring 3 or Higher on at Least One Advanced Placement Exam

Figure 8-13
Public high school students scoring 3 or higher on at least one Advanced Placement Exam: 2012



1st quartile (20.9%–28.1%)
2nd quartile (14.8%–20.3%)
3rd quartile (10.9%–14.6%)
4th quartile (4.3%–10.6%)

SOURCES: Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates, 2012;* College Board, *Advanced Placement Report to the Nation.*



Findings

- Nationally, 18.8% of public high school students in the class of 2012 demonstrated the ability to do college-level work by obtaining a score of 3 or higher on at least one AP Exam, a substantial increase from the 11.6% of the class of 2002 who obtained that score.
- Students from all states and the District of Columbia demonstrated greater success on AP Exams in 2012 than in 2002, but this success was not evenly distributed. In 2012, 13 states had percentages below the 2002 national average of 11.6% compared with 34 jurisdictions in 2002.
- The percentage of students who scored 3 or higher on an AP Exam varied widely among states. For the class of 2012, this percentage ranged from a low of 4.3% to a high of 28.1%.

This indicator represents the extent to which high school students are successfully demonstrating mastery of college-level material in specific disciplines. State scores on this indicator reflect students' access to rigorous coursework as well as their success in comprehending and using it. The indicator value is defined as the percentage of U.S. public high school graduates who have scored 3 or higher on at least one Advanced Placement (AP) Exam. Many colleges and universities grant college credit or advanced placement for AP Exam scores of 3 or higher. Students who score a 3 or higher typically experience greater academic success in college and higher graduation rates.

More than 30 different AP Exams are offered each spring by the College Board. The exams include a multiple choice section and a free response section. To prepare for the AP Exam in a subject area, most students enroll in an AP class that employs a curriculum of high academic intensity. Performance on AP Exams has been shown in research to be one of the best predictors of success in college.

Table 8-13
Public high school students scoring 3 or higher on at least one Advanced Placement Exam, by state: 2002, 2007, and 2012

State	Public high school graduates who scored 3+ on an Advanced Placement Exam			High school graduates			High school graduates who scored 3+ on an Advanced Placement Exam (%)		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
United States	305,098	424,004	573,472	2,621,534	2,893,045	3,053,230	11.6	14.7	18.8
Alabama	1,710	2,398	4,258	35,887	38,912	44,317	4.8	6.2	9.6
Alaska	762	957	1,062	6,945	7,666	7,813	11.0	12.5	13.6
Arizona	3,285	5,428	8,307	47,175	55,954	61,958	7.0	9.7	13.4
Arkansas	1,333	2,620	4,227	26,984	27,166	27,990	4.9	9.6	15.1
California	53,816	72,097	95,695	325,895	356,641	384,080	16.5	20.2	24.9
Colorado	5,582	8,569	11,442	40,760	45,628	50,176	13.7	18.8	22.8
Connecticut	5,006	7,089	9,685	32,327	37,541	36,836	15.5	18.9	26.3
Delaware	617	979	1,257	6,482	7,205	8,395	9.5	13.6	15.0
District of Columbia	234	211	389	3,090	2,944	3,194	7.6	7.2	12.2
Florida	17,256	26,360	39,306	119,537	142,284	149,219	14.4	18.5	26.3
Georgia	7,686	11,592	17,767	65,983	77,829	84,813	11.6	14.9	20.9
Hawaii	682	867	1,200	10,452	11,063	10,990	6.5	7.8	10.9
Idaho	1,156	1,605	2,115	15,874	16,242	17,043	7.3	9.9	12.4
Illinois	13,666	18,857	26,461	116,657	130,220	135,636	11.7	14.5	19.5
Indiana	4,134	5,786	9,634	56,722	59,887	63,354	7.3	9.7	15.2
Iowa	1,828	2,640	3,481	33,789	34,127	32,833	5.4	7.7	10.6
Kansas	1,631	2,208	3,117	29,541	30,139	30,428	5.5	7.3	10.2
Kentucky	2,396	3,518	6,067	36,337	39,099	41,038	6.6	9.0	14.8
Louisiana	775	920	1,531	37,905	34,274	35,501	2.0	2.7	4.3
Maine	1,701	2,275	2,933	12,593	13,151	13,468	13.5	17.3	21.8
Maryland	8,414	12,882	16,327	50,881	57,564	58,009	16.5	22.4	28.1
Massachusetts	8,773	12,307	16,251	55,272	63,903	63,701	15.9	19.3	25.5
Michigan	9,594	13,062	17,262	95,001	111,838	107,956	10.1	11.7	16.0
Minnesota	5,631	7,815	11,067	57,440	59,497	57,486	9.8	13.1	19.3
Mississippi	696	845	1,145	23,740	24,186	25,756	2.9	3.5	4.4
Missouri	2,566	3,686	5,554	54,487	60,275	61,471	4.7	6.1	9.0
Montana	929	1,033	1,205	10,554	10,122	9,466	8.8	10.2	12.7
Nebraska	733	1,105	1,724	19,910	19,873	19,656	3.7	5.6	8.8
Nevada	1,375	2,430	3,607	16,270	17,149	25,710	8.5	14.2	14.0
New Hampshire	1,341	2,052	2,430	12,452	14,452	13,917	10.8	14.2	17.5
New Jersey	11,230	15,772	20,283	77,664	93,013	93,211	14.5	17.0	21.8
New Mexico	1,215	1,642	2,108	18,094	16,131	18,141	6.7	10.2	11.6
New York	28,196	35,707	42,627	140,139	168,333	181,454	20.1	21.2	23.5
North Carolina	9,016	12,858	16,558	65,955	76,031	88,421	13.7	16.9	18.7
North Dakota	402	542	553	8,114	7,159	6,785	5.0	7.6	8.2
Ohio	8,896	12,301	16,201	110,608	117,658	119,318	8.0	10.5	13.6
Oklahoma	2,620	3,268	4,023	36,852	37,100	37,792	7.1	8.8	10.6
Oregon	2,477	3,812	5,025	31,153	33,446	34,662	8.0	11.4	14.5
Pennsylvania	10,918	14,442	18,665	114,943	128,603	127,773	9.5	11.2	14.6
Rhode Island	666	900	1,302	9,006	10,384	9,809	7.4	8.7	13.3
South Carolina	3,944	4,765	6,231	31,302	35,108	39,496	12.6	13.6	15.8
South Dakota	610	793	1,005	8,796	8,346	8,345	6.9	9.5	12.0
Tennessee	3,153	4,344	5,790	40,894	54,502	60,444	7.7	8.0	9.6
Texas	24,801	34,869	49,062	225,167	241,193	279,291	11.0	14.5	17.6
Utah	5,586	5,896	7,298	30,183	28,276	30,229	18.5	20.9	24.1
Vermont	910	1,311	1,425	7,083	7,317	6,827	12.8	17.9	20.9
Virginia	11,198	16,007	21,524	66,519	73,997	80,354	16.8	21.6	26.8
Washington	5,619	8,938	12,542	58,311	62,801	64,002	9.6	14.2	19.6
West Virginia	886	1,148	1,631	17,128	17,407	17,017	5.2	6.6	9.6
Wisconsin	7,100	10,053	12,590	60,575	63,968	62,111	11.7	15.7	20.3
Wyoming	347	443	523	6,106	5,441	5,538	5.7	8.1	9.4
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available.

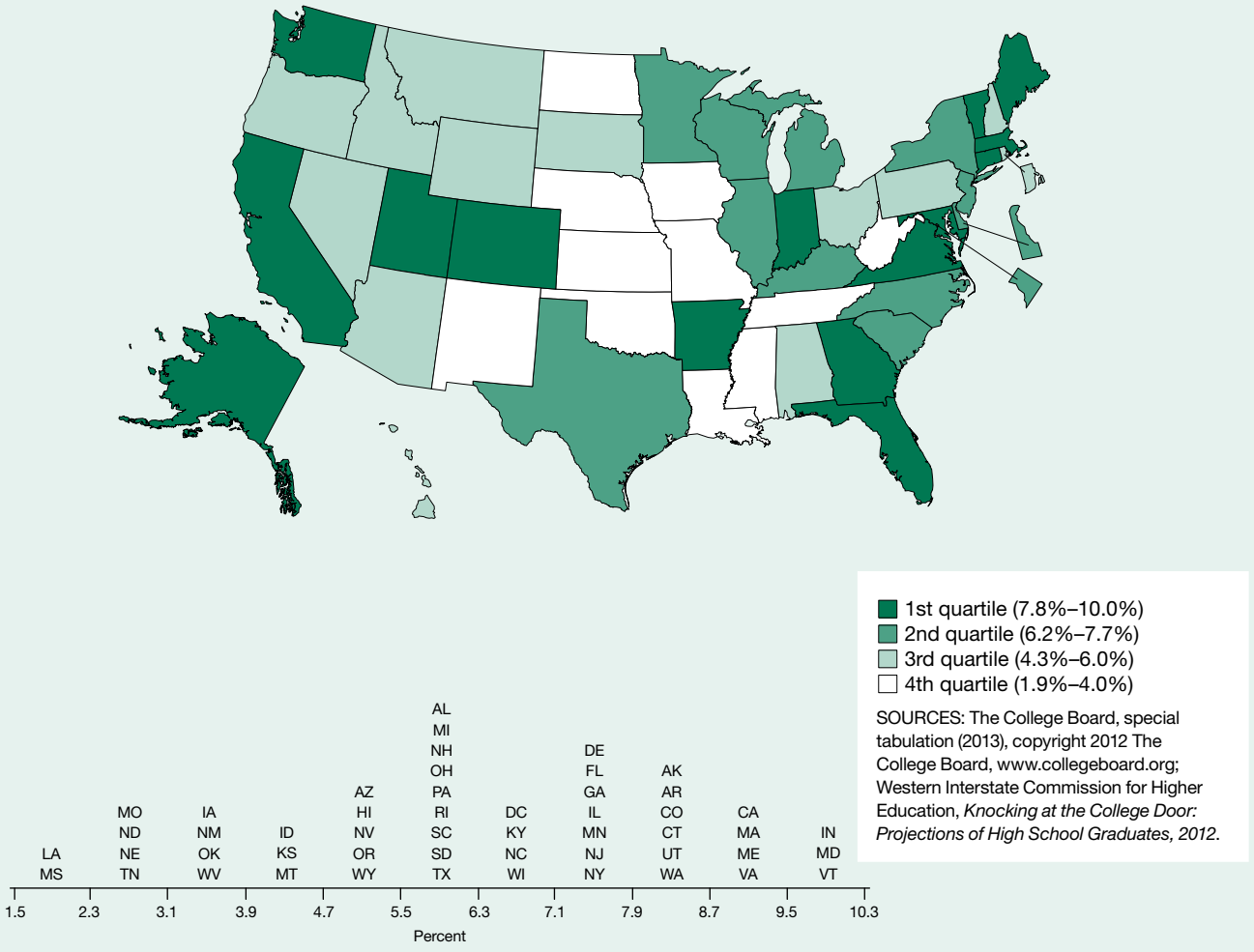
NOTE: The national average for the United States is the reported value in the *Advanced Placement Report to the Nation*.

SOURCE: Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates, 2012*. College Board, *Advanced Placement Report to the Nation* (various years).

Science and Engineering Indicators 2014

Public High School Students Scoring 3 or Higher on Advanced Placement Calculus AB Exam

Figure 8-14
Public high school students scoring 3 or higher on Advanced Placement Calculus AB Exam: 2012



Findings

- Nationally, the share of the graduating class that demonstrated a mastery of Calculus AB by scoring a 3 or higher on the AP Exam increased from 4.7% in 2002 to 6.9% in 2012.
- Values for individual states ranged from a low of 1.9% to a high of 10.0% for the class of 2012.
- Between 2002 and 2012, all but 2 states increased the percentage of high school graduates that successfully completed the Calculus AB exam. For the class of 2012, improvements of 4 percentage points or higher as compared with the class of 2002 were reported in Maryland, Indiana, and Vermont.
- Because the percentages are small, year-to-year comparisons should be made with caution. Variability in students' course selection and level of performance can affect the numbers.

The Advanced Placement (AP) Calculus AB exam seeks to assess how well a student has mastered the concepts and techniques of differential and integral calculus. The indicator value is defined as the percentage of U.S. public high school graduates who have scored 3 or higher on the AP Calculus AB exam during their high school careers. Many colleges and universities grant college credit or advanced placement for AP exam scores of 3 or higher.

AP courses in calculus consist of a full high school academic year of work and are comparable to calculus courses taught at colleges and universities. Prior to taking an AP Calculus course, students are expected to have completed 4 years of secondary mathematics intended for college-bound students consisting of courses in algebra, geometry, trigonometry, analytic geometry, and elementary functions. Even though a Calculus AB course may cover elementary functions, most of its topics will address differential and integral calculus. The use of a graphing calculator in AP Calculus is considered an integral part of the course, and graphing calculators are required on portions of the AP Exam.

Successful performance on the Calculus AB exam indicates that the student has a solid mathematical background and is prepared to undertake advanced training in mathematics, science, or engineering at the college or university level.

Table 8-14
Public high school students scoring 3 or higher on Advanced Placement Calculus AB Exam, by state: 2002, 2007, and 2012

State	Public high school graduates who scored 3+ on Advanced Placement Calculus AB Exam			High school graduates			High school graduates who scored 3+ on Advanced Placement Calculus AB Exam (%)		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
United States	123,388	166,239	211,570	2,621,534	2,893,045	3,053,230	4.7	5.7	6.9
Alabama	696	1,022	2,441	35,887	38,912	44,317	1.9	2.6	5.5
Alaska	338	431	616	6,945	7,666	7,813	4.9	5.6	7.9
Arizona	1,344	2,118	2,971	47,175	55,954	61,958	2.8	3.8	4.8
Arkansas	622	1,709	2,419	26,984	27,166	27,990	2.3	6.3	8.6
California	19,653	27,410	36,107	325,895	356,641	384,080	6.0	7.7	9.4
Colorado	1,705	3,020	4,108	40,760	45,628	50,176	4.2	6.6	8.2
Connecticut	1,691	2,235	3,032	32,327	37,541	36,836	5.2	6.0	8.2
Delaware	385	449	608	6,482	7,205	8,395	5.9	6.2	7.2
District of Columbia	141	158	205	3,090	2,944	3,194	4.6	5.4	6.4
Florida	5,987	9,113	11,670	119,537	142,284	149,219	5.0	6.4	7.8
Georgia	3,798	4,715	6,619	65,983	77,829	84,813	5.8	6.1	7.8
Hawaii	375	443	566	10,452	11,063	10,990	3.6	4.0	5.2
Idaho	433	628	727	15,874	16,242	17,043	2.7	3.9	4.3
Illinois	5,069	6,950	9,807	116,657	130,220	135,636	4.3	5.3	7.2
Indiana	3,415	4,696	6,348	56,722	59,887	63,354	6.0	7.8	10.0
Iowa	764	914	1,178	33,789	34,127	32,833	2.3	2.7	3.6
Kansas	565	968	1,224	29,541	30,139	30,428	1.9	3.2	4.0
Kentucky	1,334	1,934	2,800	36,337	39,099	41,038	3.7	4.9	6.8
Louisiana	288	423	695	37,905	34,274	35,501	0.8	1.2	2.0
Maine	737	907	1,208	12,593	13,151	13,468	5.9	6.9	9.0
Maryland	2,614	3,935	5,801	50,881	57,564	58,009	5.1	6.8	10.0
Massachusetts	3,285	4,588	6,006	55,272	63,903	63,701	5.9	7.2	9.4
Michigan	4,062	5,765	6,736	95,001	111,838	107,956	4.3	5.2	6.2
Minnesota	3,030	3,639	4,309	57,440	59,497	57,486	5.3	6.1	7.5
Mississippi	304	428	495	23,740	24,186	25,756	1.3	1.8	1.9
Missouri	969	1,168	1,583	54,487	60,275	61,471	1.8	1.9	2.6
Montana	288	348	411	10,554	10,122	9,466	2.7	3.4	4.3
Nebraska	258	322	585	19,910	19,873	19,656	1.3	1.6	3.0
Nevada	519	968	1,227	16,270	17,149	25,710	3.2	5.6	4.8
New Hampshire	625	810	830	12,452	14,452	13,917	5.0	5.6	6.0
New Jersey	4,363	5,323	6,783	77,664	93,013	93,211	5.6	5.7	7.3
New Mexico	596	665	695	18,094	16,131	18,141	3.3	4.1	3.8
New York	11,776	12,620	13,992	140,139	168,333	181,454	8.4	7.5	7.7
North Carolina	4,120	5,398	5,850	65,955	76,031	88,421	6.2	7.1	6.6
North Dakota	157	224	185	8,114	7,159	6,785	1.9	3.1	2.7
Ohio	4,567	5,986	6,864	110,608	117,658	119,318	4.1	5.1	5.8
Oklahoma	999	1,100	1,374	36,852	37,100	37,792	2.7	3.0	3.6
Oregon	868	1,325	1,744	31,153	33,446	34,662	2.8	4.0	5.0
Pennsylvania	4,203	5,708	6,985	114,943	128,603	127,773	3.7	4.4	5.5
Rhode Island	301	425	554	9,006	10,384	9,809	3.3	4.1	5.6
South Carolina	2,119	2,384	2,460	31,302	35,108	39,496	6.8	6.8	6.2
South Dakota	372	445	491	8,796	8,346	8,345	4.2	5.3	5.9
Tennessee	1,086	1,554	1,781	40,894	54,502	60,444	2.7	2.9	2.9
Texas	9,724	14,278	17,397	225,167	241,193	279,291	4.3	5.9	6.2
Utah	1,905	2,049	2,518	30,183	28,276	30,229	6.3	7.2	8.3
Vermont	396	576	654	7,083	7,317	6,827	5.6	7.9	9.6
Virginia	4,228	5,450	7,297	66,519	73,997	80,354	6.4	7.4	9.1
Washington	2,797	4,212	5,369	58,311	62,801	64,002	4.8	6.7	8.4
West Virginia	402	519	655	17,128	17,407	17,017	2.3	3.0	3.8
Wisconsin	2,894	3,526	4,315	60,575	63,968	62,111	4.8	5.5	6.9
Wyoming	221	258	275	6,106	5,441	5,538	3.6	4.7	5.0
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

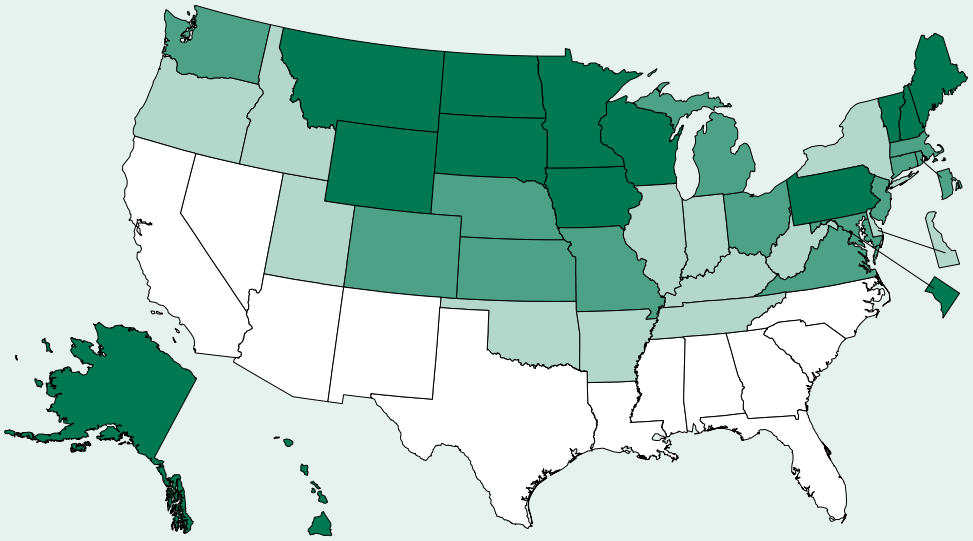
NA = not available.

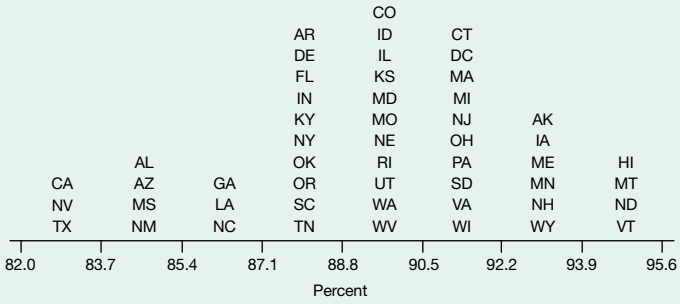
SOURCES: Derived from data provided by the College Board, special tabulations (2013), copyright 2001–12 The College Board, www.collegeboard.org; Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates, 2012*.

Science and Engineering Indicators 2014

High School Graduates or Higher among Individuals 25–44 Years Old

Figure 8-15
High school graduates or higher among individuals 25–44 years old: 2011





1st quartile (91.6%–94.9%)
2nd quartile (89.6%–91.4%)
3rd quartile (87.4%–89.4%)
4th quartile (82.2%–87.3%)

SOURCES: Census Bureau, 2010 Decennial Census, Population Estimates Program, and American Community Survey.

Findings

- Nationwide, 87.5% of the early- to midcareer population had at least a high school credential in 2011, an increase from the 84.0% who held such a credential in 2001.
- Between 2001 and 2011, 23 states and the District of Columbia showed a significant increase in the percentage of their early- to midcareer population with at least a high school credential. Two states had 2011 values below the 2001 national average of 84.0% compared with 8 in 2001.
- In 2011, the early- to midcareer population with at least a high school credential varied greatly among states, ranging from 82.2% to 94.9%. States at or near the southern border of the United States tended to rank lowest on this indicator.

This indicator represents the percentage of a state's early- to midcareer population that has earned at least a high school credential. The indicator displays results based on where high school graduates live rather than where they were educated. High values indicate a resident population and potential workforce with widespread basic education credentials.

Estimates of educational attainment have been developed by the U.S. Census Bureau. Data from 2005 and later are derived from the American Community Survey (ACS), the largest household survey in the United States, with a sample size of about 3 million addresses. The ACS collects information on an annual basis. Data prior to 2005 were derived from the Decennial Census.

Estimates of the population aged 25–44 are provided by the Census Bureau based on the 2000 and 2010 Decennial Censuses. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

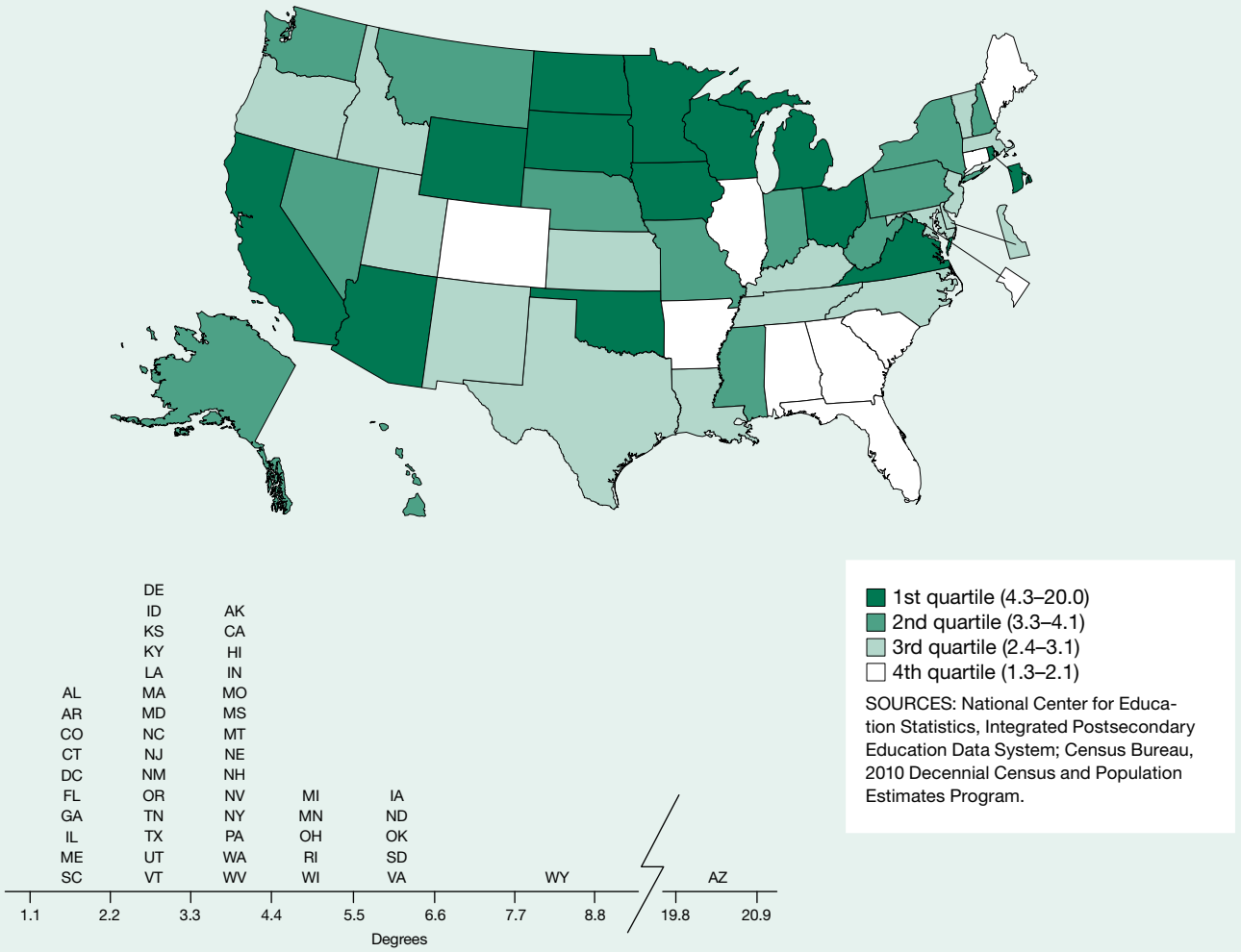
Table 8-15
High school graduates or higher among individuals 25–44 years old, by state: 2001, 2006, and 2011

State	Graduates 25–44 years old			Population 25–44 years old			Graduates/ population 25–44 years old (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	71,031,901	72,494,658	72,168,571	84,523,274	82,638,980	82,432,298	84.0	87.7	87.5
Alabama	1,060,262	1,041,196	1,038,840	1,266,952	1,233,767	1,223,076	83.7	84.4	84.9
Alaska	176,545	177,011	186,627	198,158	188,470	198,914	89.1	93.9	93.8
Arizona	1,167,520	1,461,333	1,436,551	1,526,458	1,664,223	1,688,279	76.5	87.8	85.1
Arkansas	608,424	644,782	651,633	743,315	747,504	745,421	81.9	86.3	87.4
California	8,038,587	8,641,477	8,684,128	10,750,718	10,578,738	10,565,342	74.8	81.7	82.2
Colorado	1,211,816	1,253,856	1,304,869	1,412,620	1,380,451	1,448,033	85.8	90.8	90.1
Connecticut	908,023	876,847	815,391	1,017,477	944,217	898,232	89.2	92.9	90.8
Delaware	207,147	208,667	200,262	233,890	232,516	227,578	88.6	89.7	88.0
District of Columbia	156,642	168,221	198,756	190,251	187,870	216,233	82.3	89.5	91.9
Florida	3,808,005	4,201,616	4,153,736	4,591,807	4,804,621	4,758,046	82.9	87.4	87.3
Georgia	2,205,133	2,389,315	2,356,862	2,668,017	2,727,666	2,741,412	82.7	87.6	86.0
Hawaii	318,552	336,004	348,052	357,271	358,311	366,855	89.2	93.8	94.9
Idaho	307,283	344,342	359,687	362,154	383,267	402,781	84.8	89.8	89.3
Illinois	3,239,703	3,204,663	3,119,362	3,756,180	3,572,420	3,491,104	86.2	89.7	89.4
Indiana	1,532,633	1,519,940	1,471,266	1,769,492	1,705,535	1,665,758	86.6	89.1	88.3
Iowa	723,260	691,725	693,855	793,288	747,836	749,530	91.2	92.5	92.6
Kansas	700,664	650,567	653,237	755,887	713,707	727,160	92.7	91.2	89.8
Kentucky	983,313	1,022,178	997,294	1,194,291	1,162,541	1,138,883	82.3	87.9	87.6
Louisiana	1,007,477	956,118	1,027,440	1,268,704	1,152,042	1,203,069	79.4	83.0	85.4
Maine	332,327	321,680	292,585	364,111	337,692	312,002	91.3	95.3	93.8
Maryland	1,456,139	1,442,853	1,410,513	1,652,198	1,598,650	1,565,884	88.1	90.3	90.1
Massachusetts	1,801,547	1,660,827	1,588,629	1,967,815	1,795,786	1,738,118	91.6	92.5	91.4
Michigan	2,623,986	2,467,686	2,192,907	2,905,689	2,658,755	2,414,603	90.3	92.8	90.8
Minnesota	1,403,384	1,332,478	1,298,651	1,486,814	1,412,852	1,400,438	94.4	94.3	92.7
Mississippi	620,634	641,562	639,787	794,888	767,066	760,122	78.1	83.6	84.2
Missouri	1,387,967	1,392,466	1,371,220	1,606,777	1,547,126	1,523,458	86.4	90.0	90.0
Montana	207,722	213,879	223,374	238,899	228,548	237,269	86.9	93.6	94.1
Nebraska	434,381	421,144	423,823	478,968	458,133	469,737	90.7	91.9	90.2
Nevada	517,456	625,412	634,590	648,880	747,896	766,544	79.7	83.6	82.8
New Hampshire	348,880	337,033	298,047	378,536	348,846	319,411	92.2	96.6	93.3
New Jersey	2,372,904	2,220,609	2,118,729	2,603,347	2,446,589	2,338,637	91.1	90.8	90.6
New Mexico	421,618	431,947	436,332	506,151	507,378	519,946	83.3	85.1	83.9
New York	4,931,556	4,751,228	4,630,437	5,775,563	5,417,603	5,280,570	85.4	87.7	87.7
North Carolina	2,014,720	2,155,551	2,219,453	2,504,293	2,518,651	2,577,307	80.5	85.6	86.1
North Dakota	162,511	147,532	159,980	168,631	156,114	170,010	96.4	94.5	94.1
Ohio	2,947,087	2,765,830	2,612,564	3,259,384	3,037,836	2,873,075	90.4	91.0	90.9
Oklahoma	774,640	820,764	856,716	960,435	938,630	975,445	80.7	87.4	87.8
Oregon	853,696	893,508	913,086	992,783	994,743	1,031,267	86.0	89.8	88.5
Pennsylvania	3,046,733	2,921,526	2,860,909	3,435,158	3,224,924	3,123,097	88.7	90.6	91.6
Rhode Island	259,555	252,937	233,864	306,912	284,670	261,020	84.6	88.9	89.6
South Carolina	1,003,899	1,006,117	1,040,906	1,175,787	1,179,555	1,193,581	85.4	85.3	87.2
South Dakota	187,100	180,183	185,252	202,454	193,284	201,235	92.4	93.2	92.1
Tennessee	1,414,180	1,473,533	1,484,697	1,699,828	1,690,961	1,678,144	83.2	87.1	88.5
Texas	4,978,683	5,507,182	5,937,001	6,529,822	6,742,164	7,180,834	76.2	81.7	82.7
Utah	565,686	643,346	708,544	633,099	701,224	793,074	89.4	91.7	89.3
Vermont	159,184	150,033	138,202	172,405	155,997	146,497	92.3	96.2	94.3
Virginia	1,907,914	1,977,743	2,014,374	2,227,441	2,190,642	2,215,775	85.7	90.3	90.9
Washington	1,602,454	1,634,206	1,683,779	1,805,606	1,791,998	1,868,055	88.7	91.2	90.1
West Virginia	401,838	414,635	404,537	487,860	468,119	455,269	82.4	88.6	88.9
Wisconsin	1,410,448	1,378,346	1,322,584	1,561,327	1,479,447	1,440,314	90.3	93.2	91.8
Wyoming	120,083	121,024	134,651	134,483	131,399	145,854	89.3	92.1	92.3
Puerto Rico	NA	878,376	798,311	1,055,380	1,080,801	955,369	NA	81.3	83.6

SOURCES: Census Bureau, 2000 and 2010 Decennial Censuses, Population Estimates Program (various years), and American Community Survey (various years).

Associate's Degrees in Science, Engineering, and Technology Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-16
Associate's degrees in science, engineering, and technology conferred per 1,000 individuals 18–24 years old: 2011



SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Census Bureau, 2010 Decennial Census and Population Estimates Program.

Findings

- In 2011, nearly 116,000 associate's degrees in SET were conferred nationally, which is up from 85,000 in 2001 and represents an increase of 37%. Between 2001 and 2011, the number of associate's degrees in SET fields conferred per 1,000 individuals 18–24 years old in the population increased by 23% nationwide.
- In 2011, state values on this indicator varied greatly. They ranged from 1.3 to 20.0 associate's degrees in SET fields conferred per 1,000 individuals 18–24 years old.
- California has consistently awarded the largest number of SET associate's degrees, at between 12% and 15% of the national total.

Educational attainment in a science, engineering, or technology (SET) field gives people greater opportunities to work in higher-paying technical jobs than are generally available to those in other fields of study. Earning an associate's degree in a SET field also prepares an individual for more advanced technical education.

This indicator represents the extent to which a state provides associate's level training in SET fields, controlling for the size of its college-age population. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an associate's degree.

The National Center for Education Statistics counts the number of associate's degrees awarded in SET fields; these data include degrees in science and engineering technology fields, which are not included in measures of S&E degrees. Associate's degrees are awarded at both 2-year and 4-year institutions in the United States; states and regions vary in the kinds of institutions that are accredited to award degrees in different fields. Estimates of the population aged 18–24 years old are provided by the U.S. Census Bureau. Small differences in the indicator value between states or across time generally are not meaningful.

Because students may move across state lines after receiving their associate's degrees, this indicator does not necessarily predict the qualifications of a state's future technical workforce.

Table 8-16
Associate's degrees in science, engineering, and technology conferred per 1,000 individuals 18–24 years old, by state: 2001, 2006, and 2011

State	SET associate's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
EPSCoR states	14,248	12,088	15,610	4,617,353	4,785,938	4,930,966	3.1	2.5	3.2
Non-EPSCoR states	69,513	67,171	99,175	23,105,302	24,522,581	25,834,531	3.0	2.7	3.8
Average EPSCoR state value	na	na	na	na	na	na	3.5	2.9	3.5
Average non-EPSCoR state value	na	na	na	na	na	na	2.8	2.7	4.0
United States	84,856	80,346	115,838	27,992,652	29,602,839	31,067,478	3.0	2.7	3.7
Alabama	1,011	679	1,026	447,963	459,114	482,405	2.3	1.5	2.1
Alaska	125	145	262	61,774	74,369	77,271	2.0	1.9	3.4
Arizona	2,009	2,291	12,854	536,018	591,986	643,726	3.7	3.9	20.0
Arkansas	378	400	545	268,131	273,882	287,131	1.4	1.5	1.9
California	11,291	9,961	17,166	3,488,933	3,700,882	3,975,377	3.2	2.7	4.3
Colorado	1,148	761	922	453,712	477,387	498,956	2.5	1.6	1.8
Connecticut	432	409	427	278,499	310,891	333,524	1.6	1.3	1.3
Delaware	230	258	280	78,530	84,759	92,520	2.9	3.0	3.0
District of Columbia	226	217	106	72,568	76,839	84,786	3.1	2.8	1.3
Florida	3,850	3,759	3,682	1,401,785	1,652,892	1,773,048	2.7	2.3	2.1
Georgia	500	1,210	1,631	866,190	915,634	996,088	0.6	1.3	1.6
Hawaii	524	490	440	120,970	131,489	133,388	4.3	3.7	3.3
Idaho	776	337	466	144,212	153,844	155,895	5.4	2.2	3.0
Illinois	1,936	2,317	2,295	1,230,513	1,238,706	1,246,926	1.6	1.9	1.8
Indiana	2,121	2,428	2,424	628,372	638,724	656,136	3.4	3.8	3.7
Iowa	796	1,132	1,759	303,271	312,319	310,985	2.6	3.6	5.7
Kansas	1,101	652	800	282,851	296,431	291,056	3.9	2.2	2.7
Kentucky	1,031	1,024	1,272	411,270	405,029	418,168	2.5	2.5	3.0
Louisiana	1,359	819	1,225	485,975	459,662	474,817	2.8	1.8	2.6
Maine	217	295	236	107,177	117,346	116,333	2.0	2.5	2.0
Maryland	510	735	1,380	470,318	525,903	567,560	1.1	1.4	2.4
Massachusetts	1,636	1,473	1,655	594,747	637,145	685,891	2.8	2.3	2.4
Michigan	2,967	3,152	4,546	955,459	975,541	986,710	3.1	3.2	4.6
Minnesota	1,576	1,578	2,433	486,444	517,679	505,955	3.2	3.0	4.8
Mississippi	688	670	1,037	316,243	306,076	308,468	2.2	2.2	3.4
Missouri	1,813	1,450	2,095	552,622	583,691	591,301	3.3	2.5	3.5
Montana	265	243	343	89,343	99,357	96,660	3.0	2.4	3.5
Nebraska	925	762	651	178,947	188,966	183,949	5.2	4.0	3.5
Nevada	337	399	868	190,232	229,614	250,650	1.8	1.7	3.5
New Hampshire	463	379	450	107,717	121,400	125,008	4.3	3.1	3.6
New Jersey	1,545	1,628	1,932	690,374	729,181	779,067	2.2	2.2	2.5
New Mexico	813	573	644	184,493	202,027	206,918	4.4	2.8	3.1
New York	8,257	5,673	6,724	1,802,422	1,869,014	1,996,795	4.6	3.0	3.4
North Carolina	1,610	2,056	2,810	824,717	876,910	953,966	2.0	2.3	2.9
North Dakota	345	380	507	76,459	85,992	83,807	4.5	4.4	6.0
Ohio	3,766	4,266	5,231	1,079,689	1,083,220	1,106,053	3.5	3.9	4.7
Oklahoma	1,349	1,748	2,189	369,614	381,715	385,762	3.6	4.6	5.7
Oregon	840	699	1,007	337,357	350,178	362,400	2.5	2.0	2.8
Pennsylvania	4,810	4,518	5,078	1,121,223	1,200,427	1,269,203	4.3	3.8	4.0
Rhode Island	704	616	593	109,990	116,788	120,607	6.4	5.3	4.9
South Carolina	909	788	972	418,111	440,769	481,483	2.2	1.8	2.0
South Dakota	324	314	479	79,716	84,428	82,667	4.1	3.7	5.8
Tennessee	1,274	1,319	1,685	563,268	572,909	613,516	2.3	2.3	2.7
Texas	7,256	6,165	7,950	2,283,119	2,463,849	2,628,169	3.2	2.5	3.0
Utah	1,010	859	937	328,513	322,408	321,208	3.1	2.7	2.9
Vermont	252	215	184	58,845	65,566	65,966	4.3	3.3	2.8
Virginia	2,644	3,490	5,044	706,828	781,520	815,225	3.7	4.5	6.2
Washington	2,037	1,840	2,727	586,456	628,998	665,328	3.5	2.9	4.1
West Virginia	651	402	642	174,409	168,204	170,502	3.7	2.4	3.8
Wisconsin	1,879	2,002	2,781	534,453	564,587	551,418	3.5	3.5	5.0
Wyoming	340	370	446	51,810	56,592	56,730	6.6	6.5	7.9
Puerto Rico	1,348	952	1,130	429,366	400,529	376,652	3.1	2.4	3.0

na = not applicable.

EPSCoR = Experimental Program to Stimulate Competitive Research; SET = science, engineering, and technology.

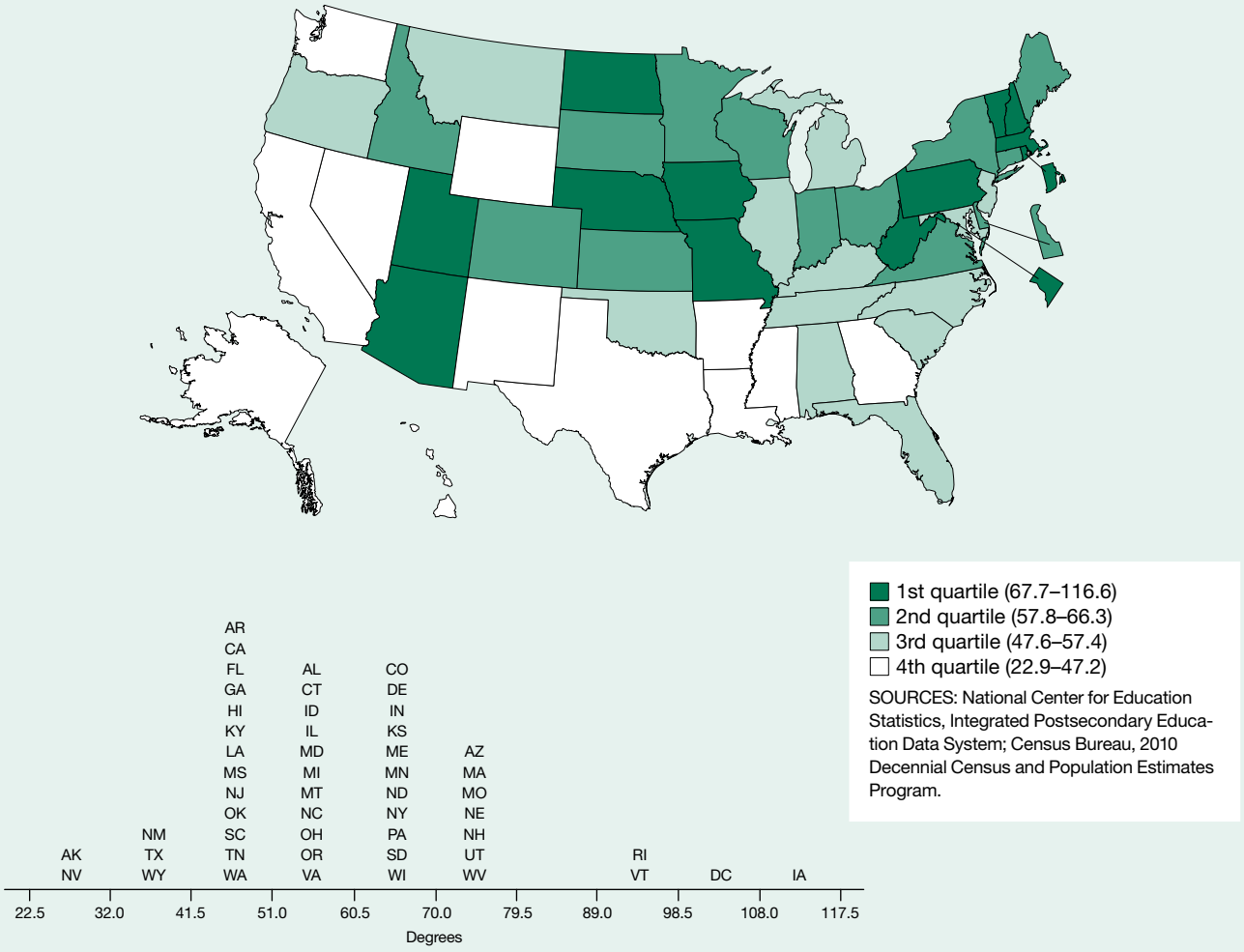
NOTES: SET associate's degrees include engineering, physical sciences, computer and mathematical sciences, agricultural and biological sciences, social sciences, science technologies, and engineering technologies.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 and 2010 Decennial Censuses and Population Estimates Program (various years).

Science and Engineering Indicators 2014

Bachelor's Degrees Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-17
Bachelor's degrees conferred per 1,000 individuals 18–24 years old: 2011



Findings

- In 2011, more than 1.7 million bachelor's degrees were conferred nationally in all fields, which is up from 1.2 million in 2001 and represents an increase of 38%.
- Between 2001 and 2011, the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old in the population has increased by more than 24% nationwide.
- In 2011, state values on this indicator varied greatly. They ranged from 22.9 to 116.6 bachelor's degrees conferred per 1,000 individuals 18–24 years old.
- Except in the District of Columbia and Montana, the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old increased in all jurisdictions between 2001 and 2011.

Educational attainment gives people greater opportunities to work in higher-paying jobs than are generally available to those with less education. Earning a bachelor's degree also prepares them for advanced education.

Educational attainment varies by several demographic characteristics including age. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree. This indicator represents the extent to which the 18–24-year-old population has earned a bachelor's degree.

The number of bachelor's degrees awarded is based on an actual count provided by the National Center for Education Statistics. Estimates of the population aged 18–24 years are provided by the U.S. Census Bureau. Small differences in the indicator value between states or across time generally are not meaningful.

A high value for this indicator may suggest the successful provision of educational opportunity at this level. Student mobility after graduation is not accounted for, which may make this indicator less meaningful in predicting the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students—a situation characteristic of the District of Columbia and of some states with small resident populations.

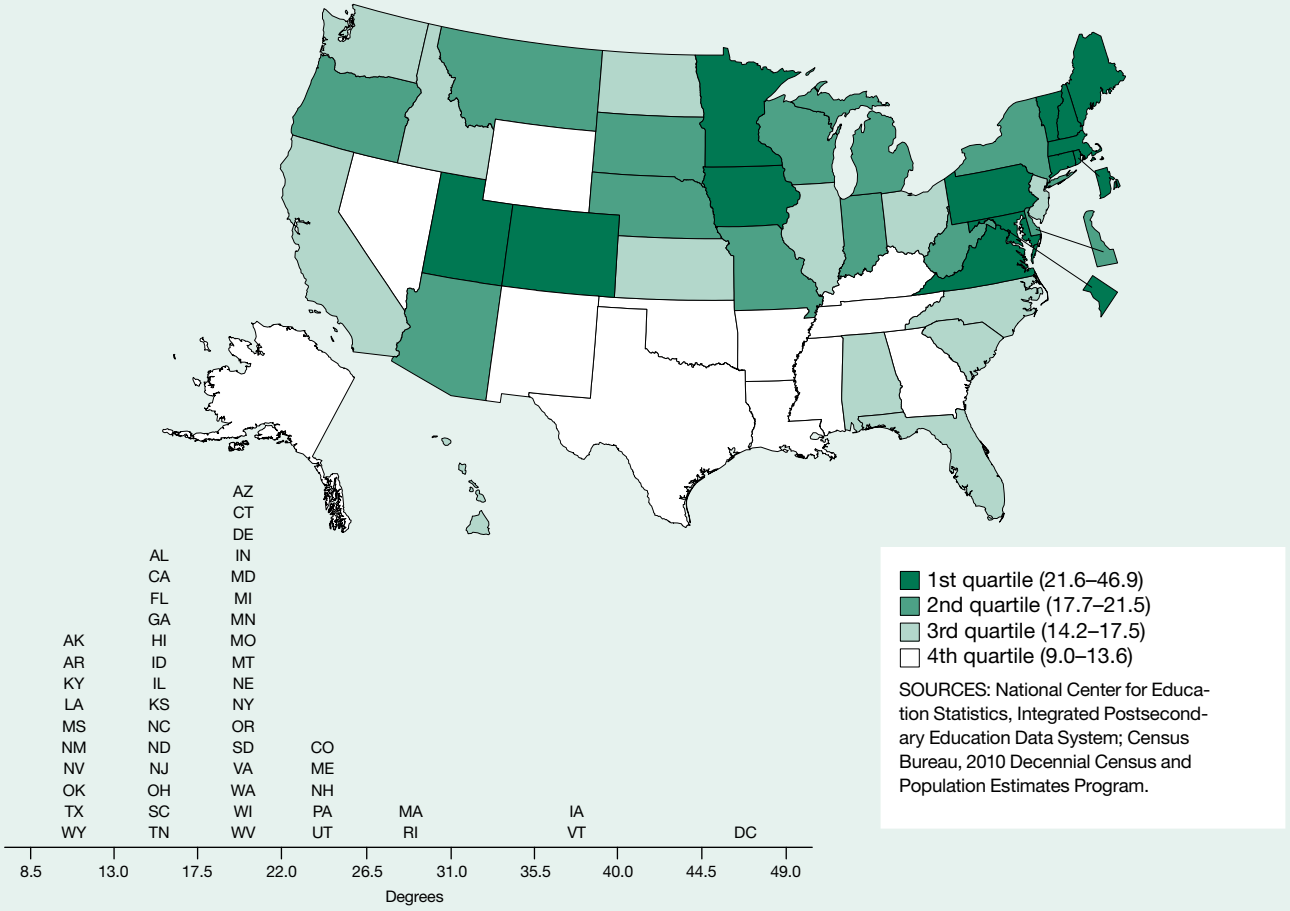
Table 8-17
Bachelor's degrees conferred per 1,000 individuals 18–24 years old, by state: 2001, 2006, and 2011

State	Bachelor's degrees			Population 18–24 years old			Degrees/ 1,000 individuals 18–24 years old		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	1,244,171	1,485,242	1,715,913	27,992,652	29,602,839	31,067,478	44.4	50.2	55.2
Alabama	20,823	21,995	27,248	447,963	459,114	482,405	46.5	47.9	56.5
Alaska	1,338	1,573	1,770	61,774	74,369	77,271	21.7	21.2	22.9
Arizona	20,856	32,708	50,928	536,018	591,986	643,726	38.9	55.3	79.1
Arkansas	9,628	11,340	13,259	268,131	273,882	287,131	35.9	41.4	46.2
California	123,382	151,021	169,623	3,488,933	3,700,882	3,975,377	35.4	40.8	42.7
Colorado	22,272	28,554	30,570	453,712	477,387	498,956	49.1	59.8	61.3
Connecticut	14,245	17,997	19,970	278,499	310,891	333,524	51.1	57.9	59.9
Delaware	4,504	5,410	5,877	78,530	84,759	92,520	57.4	63.8	63.5
District of Columbia	8,166	10,556	8,402	72,568	76,839	84,786	112.5	137.4	99.1
Florida	52,557	69,899	86,281	1,401,785	1,652,892	1,773,048	37.5	42.3	48.7
Georgia	28,790	36,332	45,075	866,190	915,634	996,088	33.2	39.7	45.3
Hawaii	4,896	5,813	5,751	120,970	131,489	133,388	40.5	44.2	43.1
Idaho	4,646	7,781	9,171	144,212	153,844	155,895	32.2	50.6	58.8
Illinois	55,633	68,016	71,580	1,230,513	1,238,706	1,246,926	45.2	54.9	57.4
Indiana	31,881	38,093	43,519	628,372	638,724	656,136	50.7	59.6	66.3
Iowa	18,652	21,435	36,266	303,271	312,319	310,985	61.5	68.6	116.6
Kansas	14,734	16,731	18,191	282,851	296,431	291,056	52.1	56.4	62.5
Kentucky	15,434	18,646	21,078	411,270	405,029	418,168	37.5	46.0	50.4
Louisiana	19,990	19,936	21,509	485,975	459,662	474,817	41.1	43.4	45.3
Maine	5,429	6,544	7,347	107,177	117,346	116,333	50.7	55.8	63.2
Maryland	23,001	26,685	30,264	470,318	525,903	567,560	48.9	50.7	53.3
Massachusetts	42,792	47,074	53,749	594,747	637,145	685,891	71.9	73.9	78.4
Michigan	46,115	51,756	56,217	955,459	975,541	986,710	48.3	53.1	57.0
Minnesota	23,355	28,927	33,386	486,444	517,679	505,955	48.0	55.9	66.0
Mississippi	11,232	11,803	13,230	316,243	306,076	308,468	35.5	38.6	42.9
Missouri	30,102	35,161	41,648	552,622	583,691	591,301	54.5	60.2	70.4
Montana	5,183	5,118	5,512	89,343	99,357	96,660	58.0	51.5	57.0
Nebraska	10,782	12,150	13,510	178,947	188,966	183,949	60.3	64.3	73.4
Nevada	4,358	6,595	7,556	190,232	229,614	250,650	22.9	28.7	30.1
New Hampshire	7,254	8,030	9,479	107,717	121,400	125,008	67.3	66.1	75.8
New Jersey	26,948	32,251	37,087	690,374	729,181	779,067	39.0	44.2	47.6
New Mexico	6,551	7,491	8,179	184,493	202,027	206,918	35.5	37.1	39.5
New York	97,415	113,094	128,472	1,802,422	1,869,014	1,996,795	54.0	60.5	64.3
North Carolina	34,767	39,969	48,670	824,717	876,910	953,966	42.2	45.6	51.0
North Dakota	4,688	5,487	5,674	76,459	85,992	83,807	61.3	63.8	67.7
Ohio	50,856	58,522	63,882	1,079,689	1,083,220	1,106,053	47.1	54.0	57.8
Oklahoma	15,932	18,909	19,511	369,614	381,715	385,762	43.1	49.5	50.6
Oregon	13,887	17,631	19,542	337,357	350,178	362,400	41.2	50.3	53.9
Pennsylvania	66,514	79,791	88,205	1,121,223	1,200,427	1,269,203	59.3	66.5	69.5
Rhode Island	8,222	9,636	10,863	109,990	116,788	120,607	74.8	82.5	90.1
South Carolina	16,316	19,313	23,034	418,111	440,769	481,483	39.0	43.8	47.8
South Dakota	4,223	4,850	5,211	79,716	84,428	82,667	53.0	57.4	63.0
Tennessee	22,823	26,330	31,026	563,268	572,909	613,516	40.5	46.0	50.6
Texas	76,074	92,027	107,438	2,283,119	2,463,849	2,628,169	33.3	37.4	40.9
Utah	17,091	20,677	24,461	328,513	322,408	321,208	52.0	64.1	76.2
Vermont	4,697	4,981	6,100	58,845	65,566	65,966	79.8	76.0	92.5
Virginia	32,822	38,775	49,077	706,828	781,520	815,225	46.4	49.6	60.2
Washington	23,441	28,570	31,398	586,456	628,998	665,328	40.0	45.4	47.2
West Virginia	8,704	10,033	12,978	174,409	168,204	170,502	49.9	59.6	76.1
Wisconsin	28,493	31,434	35,279	534,453	564,587	551,418	53.3	55.7	64.0
Wyoming	1,677	1,792	1,860	51,810	56,592	56,730	32.4	31.7	32.8
Puerto Rico	15,758	17,129	17,698	429,366	400,529	376,652	36.7	42.8	47.0

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 and 2010 Decennial Censuses and Population Estimates Program (various years).

Bachelor's Degrees in Science and Engineering Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-18
Bachelor's degrees in science and engineering conferred per 1,000 individuals 18–24 years old: 2011



SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Census Bureau, 2010 Decennial Census and Population Estimates Program.

Findings

- In 2011, nearly 550,000 bachelor's degrees in S&E fields were conferred nationally, which is up from 396,000 in 2001 and represents an increase of 39%.
- Between 2001 and 2011, the number of bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old in the population increased by nearly 25% nationwide.
- In 2011, state values on this indicator varied greatly. They ranged from 9.0 to 39.4 bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old.
- The number of bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old decreased in Kansas and the District of Columbia between 2001 and 2011.
- The states producing the largest numbers of S&E bachelor's degrees were the same as those producing the largest numbers of bachelor's degrees in natural sciences and engineering (see indicator 8-19).

Educational attainment in an S&E field gives people greater opportunities to work in higher-paying technical jobs than are generally available to those in other fields of study. Earning a bachelor's degree in an S&E field also prepares an individual for advanced technical education. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology.

Educational attainment varies by several demographic characteristics including age. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree. This indicator represents the extent to which a state provides bachelor's level training in S&E fields, controlling for the size of its college-age population.

The number of bachelor's degrees awarded in S&E fields is based on an actual count provided by the National Center for Education Statistics. Estimates of the population aged 18–24 years old are provided by the U.S. Census Bureau. Small differences in the indicator value between states or across time generally are not meaningful.

A high value for this indicator may suggest the successful provision of undergraduate training in S&E fields. Student mobility after graduation is not accounted for, which may make this indicator less meaningful in predicting the qualifications of a state's future technical workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students, a situation characteristic of the District of Columbia and of some states with small resident populations.

Table 8-18
Bachelor's degrees in science and engineering conferred per 1,000 individuals 18–24 years old, by state: 2001, 2006, and 2011

State	S&E bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
EPSCoR states	56,960	65,336	74,420	4,617,353	4,785,938	4,930,966	12.3	13.7	15.1
Non-EPSCoR states	332,493	401,258	468,059	23,105,302	24,522,581	25,834,531	14.4	16.4	18.1
Average EPSCoR state value	na	na	na	na	na	na	14.1	15.3	17.3
Average non-EPSCoR state value	na	na	na	na	na	na	15.2	17.4	19.8
United States	396,149	474,650	549,871	27,992,652	29,602,839	31,067,478	14.2	16.0	17.7
Alabama	5,520	6,019	7,406	447,963	459,114	482,405	12.3	13.1	15.4
Alaska	420	515	693	61,774	74,369	77,271	6.8	6.9	9.0
Arizona	5,159	8,174	13,812	536,018	591,986	643,726	9.6	13.8	21.5
Arkansas	2,404	2,659	3,196	268,131	273,882	287,131	9.0	9.7	11.1
California	47,715	60,588	68,228	3,488,933	3,700,882	3,975,377	13.7	16.4	17.2
Colorado	8,727	11,024	11,173	453,712	477,387	498,956	19.2	23.1	22.4
Connecticut	5,161	6,272	7,213	278,499	310,891	333,524	18.5	20.2	21.6
Delaware	1,449	1,729	1,916	78,530	84,759	92,520	18.5	20.4	20.7
District of Columbia	3,880	4,814	3,979	72,568	76,839	84,786	53.5	62.7	46.9
Florida	14,374	20,500	25,263	1,401,785	1,652,892	1,773,048	10.3	12.4	14.2
Georgia	9,119	11,219	13,327	866,190	915,634	996,088	10.5	12.3	13.4
Hawaii	1,602	1,956	1,995	120,970	131,489	133,388	13.2	14.9	15.0
Idaho	1,415	2,159	2,444	144,212	153,844	155,895	9.8	14.0	15.7
Illinois	16,150	19,132	20,589	1,230,513	1,238,706	1,246,926	13.1	15.4	16.5
Indiana	8,748	10,397	12,224	628,372	638,724	656,136	13.9	16.3	18.6
Iowa	5,375	6,122	11,742	303,271	312,319	310,985	17.7	19.6	37.8
Kansas	4,405	4,598	4,515	282,851	296,431	291,056	15.6	15.5	15.5
Kentucky	4,041	4,830	5,271	411,270	405,029	418,168	9.8	11.9	12.6
Louisiana	5,490	5,574	5,925	485,975	459,662	474,817	11.3	12.1	12.5
Maine	2,062	2,390	2,854	107,177	117,346	116,333	19.2	20.4	24.5
Maryland	8,878	11,170	12,388	470,318	525,903	567,560	18.9	21.2	21.8
Massachusetts	16,189	17,794	20,023	594,747	637,145	685,891	27.2	27.9	29.2
Michigan	13,682	15,675	17,573	955,459	975,541	986,710	14.3	16.1	17.8
Minnesota	7,497	9,544	11,012	486,444	517,679	505,955	15.4	18.4	21.8
Mississippi	2,836	2,821	3,191	316,243	306,076	308,468	9.0	9.2	10.3
Missouri	8,360	9,605	10,473	552,622	583,691	591,301	15.1	16.5	17.7
Montana	1,718	1,763	1,888	89,343	99,357	96,660	19.2	17.7	19.5
Nebraska	2,564	3,064	3,415	178,947	188,966	183,949	14.3	16.2	18.6
Nevada	975	1,836	2,270	190,232	229,614	250,650	5.1	8.0	9.1
New Hampshire	2,477	2,811	3,284	107,717	121,400	125,008	23.0	23.2	26.3
New Jersey	10,617	11,668	12,819	690,374	729,181	779,067	15.4	16.0	16.5
New Mexico	1,819	2,163	2,466	184,493	202,027	206,918	9.9	10.7	11.9
New York	33,187	37,365	42,904	1,802,422	1,869,014	1,996,795	18.4	20.0	21.5
North Carolina	11,826	13,300	16,543	824,717	876,910	953,966	14.3	15.2	17.3
North Dakota	1,214	1,286	1,418	76,459	85,992	83,807	15.9	15.0	16.9
Ohio	14,001	15,723	17,872	1,079,689	1,083,220	1,106,053	13.0	14.5	16.2
Oklahoma	4,067	4,839	4,815	369,614	381,715	385,762	11.0	12.7	12.5
Oregon	5,177	6,456	7,242	337,357	350,178	362,400	15.3	18.4	20.0
Pennsylvania	21,007	25,095	28,273	1,121,223	1,200,427	1,269,203	18.7	20.9	22.3
Rhode Island	2,340	2,975	3,326	109,990	116,788	120,607	21.3	25.5	27.6
South Carolina	4,951	5,910	7,017	418,111	440,769	481,483	11.8	13.4	14.6
South Dakota	1,396	1,582	1,669	79,716	84,428	82,667	17.5	18.7	20.2
Tennessee	6,281	7,080	8,370	563,268	572,909	613,516	11.2	12.4	13.6
Texas	20,778	25,896	30,453	2,283,119	2,463,849	2,628,169	9.1	10.5	11.6
Utah	5,090	6,774	7,751	328,513	322,408	321,208	15.5	21.0	24.1
Vermont	1,834	2,020	2,596	58,845	65,566	65,966	31.2	30.8	39.4
Virginia	12,522	14,209	17,594	706,828	781,520	815,225	17.7	18.2	21.6
Washington	8,055	10,158	11,652	586,456	628,998	665,328	13.7	16.1	17.5
West Virginia	2,176	2,422	3,539	174,409	168,204	170,502	12.5	14.4	20.8
Wisconsin	8,818	10,318	11,546	534,453	564,587	551,418	16.5	18.3	20.9
Wyoming	601	657	724	51,810	56,592	56,730	11.6	11.6	12.8
Puerto Rico	4,208	4,076	4,370	429,366	400,529	376,652	9.8	10.2	11.6

na = not applicable.

EPSCoR = Experimental Program to Stimulate Competitive Research.

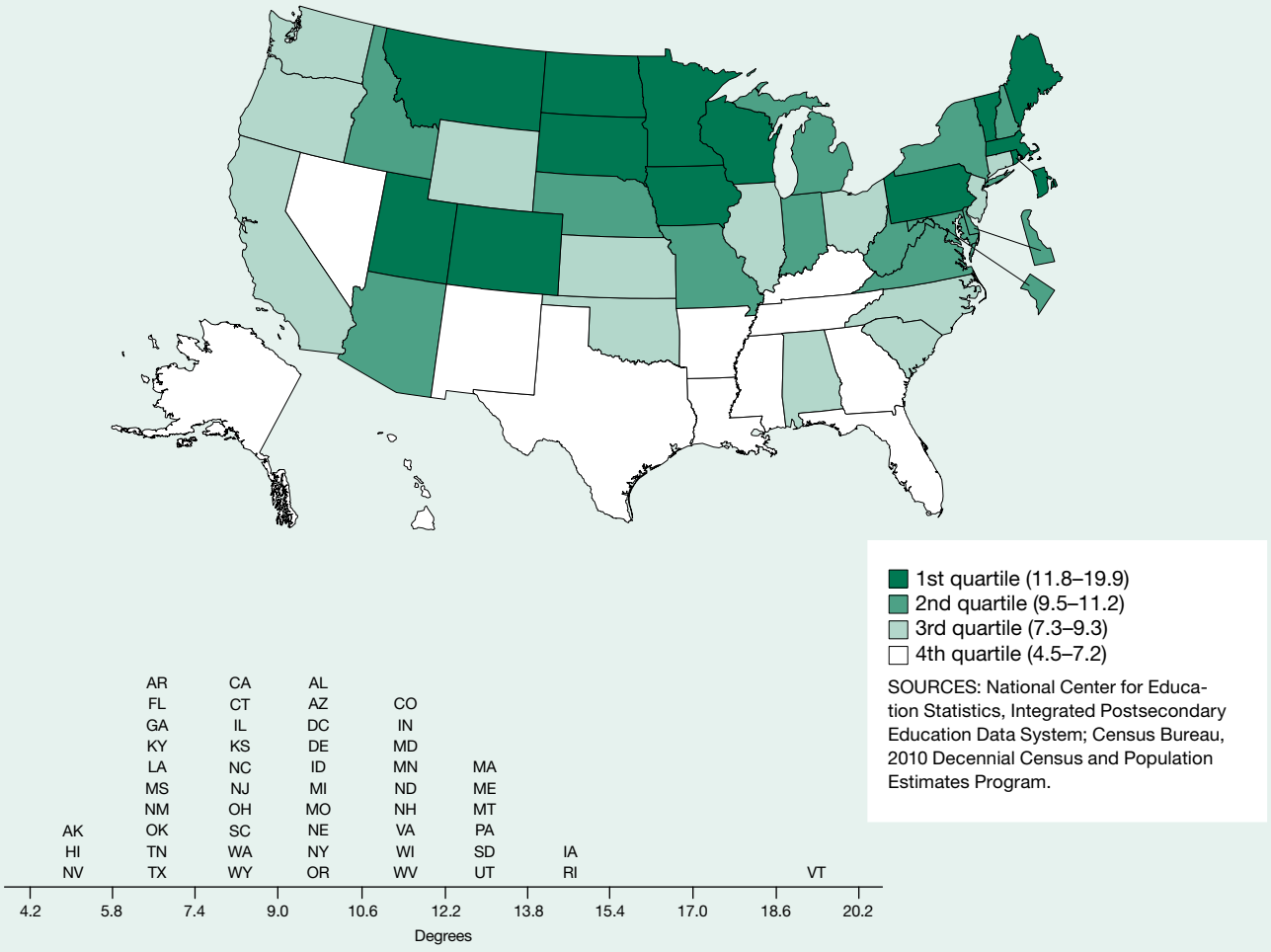
NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 and 2010 Decennial Censuses and Population Estimates Program (various years).

Science and Engineering Indicators 2014

Bachelor's Degrees in Natural Sciences and Engineering Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-19
Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old: 2011



Findings

- Between 2001 and 2011, the value of this indicator nationwide increased from 7.5 to 8.9 bachelor's degrees conferred in NS&E fields per 1,000 individuals aged 18–24 years old.
- In 2011, the value of this indicator for individual states ranged from 4.5 to 19.9.
- The states conferring the largest number of bachelor's degrees in NS&E fields were California, New York, Texas, and Pennsylvania.
- States that ranked in the top two quartiles on this indicator were generally the same as those in the top two quartiles for the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old (see indicator 8-17).

Natural sciences and engineering (NS&E) fields include the physical, earth, ocean, atmospheric, biological, agricultural, and computer sciences; mathematics; and engineering. NS&E fields do not include social sciences and psychology. This indicator is the ratio of new NS&E bachelor's degrees to the population aged 18–24 years old and represents the extent to which a state prepares young people to enter technology-intensive occupations that are fundamental to a knowledge-based, technology-driven economy. In addition, the presence of higher education institutions that produce such degrees may generate resources for the state. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree.

The number of NS&E bachelor's degrees awarded is based on an actual count provided by the National Center for Education Statistics. Estimates of the population aged 18–24 years old are provided by the U.S. Census Bureau. Small differences in the value of the indicator between states or across time generally are not meaningful.

Because students often relocate after graduation, this measure does not necessarily indicate the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large number of out-of-state students who study NS&E fields—a situation characteristic of the District of Columbia and some states with small resident populations.

Table 8-19
Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old, by state: 2001, 2006, and 2011

State	NS&E bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
EPSCoR states	33,480	35,875	41,515	4,617,353	4,785,938	4,930,966	7.3	7.5	8.4
Non-EPSCoR states	172,100	199,802	233,396	23,105,302	24,522,581	25,834,531	7.4	8.1	9.0
Average EPSCoR state value	na	na	na	na	na	na	8.0	8.2	9.5
Average non-EPSCoR state value	na	na	na	na	na	na	7.9	8.7	9.8
United States	208,747	239,201	277,549	27,992,652	29,602,839	31,067,478	7.5	8.1	8.9
Alabama	3,659	3,662	4,499	447,963	459,114	482,405	8.2	8.0	9.3
Alaska	230	312	399	61,774	74,369	77,271	3.7	4.2	5.2
Arizona	3,110	5,423	6,285	536,018	591,986	643,726	5.8	9.2	9.8
Arkansas	1,492	1,531	1,897	268,131	273,882	287,131	5.6	5.6	6.6
California	22,337	27,014	30,766	3,488,933	3,700,882	3,975,377	6.4	7.3	7.7
Colorado	4,614	5,892	5,906	453,712	477,387	498,956	10.2	12.3	11.8
Connecticut	1,902	2,171	2,734	278,499	310,891	333,524	6.8	7.0	8.2
Delaware	689	729	895	78,530	84,759	92,520	8.8	8.6	9.7
District of Columbia	1,699	1,821	893	72,568	76,839	84,786	23.4	23.7	10.5
Florida	7,348	9,524	12,184	1,401,785	1,652,892	1,773,048	5.2	5.8	6.9
Georgia	5,206	6,009	7,208	866,190	915,634	996,088	6.0	6.6	7.2
Hawaii	670	790	746	120,970	131,489	133,388	5.5	6.0	5.6
Idaho	900	1,384	1,530	144,212	153,844	155,895	6.2	9.0	9.8
Illinois	9,184	10,920	11,153	1,230,513	1,238,706	1,246,926	7.5	8.8	8.9
Indiana	4,953	5,744	6,961	628,372	638,724	656,136	7.9	9.0	10.6
Iowa	3,055	3,327	4,533	303,271	312,319	310,985	10.1	10.7	14.6
Kansas	2,606	2,469	2,555	282,851	296,431	291,056	9.2	8.3	8.8
Kentucky	2,132	2,367	2,828	411,270	405,029	418,168	5.2	5.8	6.8
Louisiana	3,481	3,327	3,354	485,975	459,662	474,817	7.2	7.2	7.1
Maine	1,060	1,138	1,430	107,177	117,346	116,333	9.9	9.7	12.3
Maryland	4,737	5,793	6,287	470,318	525,903	567,560	10.1	11.0	11.1
Massachusetts	7,209	7,707	9,182	594,747	637,145	685,891	12.1	12.1	13.4
Michigan	8,348	9,265	10,044	955,459	975,541	986,710	8.7	9.5	10.2
Minnesota	4,026	5,016	6,027	486,444	517,679	505,955	8.3	9.7	11.9
Mississippi	1,755	1,659	1,856	316,243	306,076	308,468	5.5	5.4	6.0
Missouri	4,837	5,152	5,628	552,622	583,691	591,301	8.8	8.8	9.5
Montana	1,171	1,133	1,233	89,343	99,357	96,660	13.1	11.4	12.8
Nebraska	1,495	1,676	1,940	178,947	188,966	183,949	8.4	8.9	10.5
Nevada	527	883	1,137	190,232	229,614	250,650	2.8	3.8	4.5
New Hampshire	1,198	1,116	1,386	107,717	121,400	125,008	11.1	9.2	11.1
New Jersey	5,199	5,217	5,920	690,374	729,181	779,067	7.5	7.2	7.6
New Mexico	1,166	1,296	1,383	184,493	202,027	206,918	6.3	6.4	6.7
New York	15,134	16,418	19,196	1,802,422	1,869,014	1,996,795	8.4	8.8	9.6
North Carolina	6,183	6,396	8,342	824,717	876,910	953,966	7.5	7.3	8.7
North Dakota	798	913	999	76,459	85,992	83,807	10.4	10.6	11.9
Ohio	7,748	8,254	9,746	1,079,689	1,083,220	1,106,053	7.2	7.6	8.8
Oklahoma	2,491	2,672	2,808	369,614	381,715	385,762	6.7	7.0	7.3
Oregon	2,372	2,886	3,349	337,357	350,178	362,400	7.0	8.2	9.2
Pennsylvania	11,901	13,781	15,723	1,121,223	1,200,427	1,269,203	10.6	11.5	12.4
Rhode Island	1,202	1,531	1,744	109,990	116,788	120,607	10.9	13.1	14.5
South Carolina	2,760	3,201	3,878	418,111	440,769	481,483	6.6	7.3	8.1
South Dakota	913	1,052	1,070	79,716	84,428	82,667	11.5	12.5	12.9
Tennessee	3,281	3,491	4,330	563,268	572,909	613,516	5.8	6.1	7.1
Texas	11,798	14,150	17,196	2,283,119	2,463,849	2,628,169	5.2	5.7	6.5
Utah	2,797	3,432	4,028	328,513	322,408	321,208	8.5	10.6	12.5
Vermont	846	898	1,312	58,845	65,566	65,966	14.4	13.7	19.9
Virginia	5,956	6,519	8,632	706,828	781,520	815,225	8.4	8.3	10.6
Washington	3,861	4,631	5,416	586,456	628,998	665,328	6.6	7.4	8.1
West Virginia	1,296	1,407	1,918	174,409	168,204	170,502	7.4	8.4	11.2
Wisconsin	5,004	5,670	6,620	534,453	564,587	551,418	9.4	10.0	12.0
Wyoming	411	432	463	51,810	56,592	56,730	7.9	7.6	8.2
Puerto Rico	3,054	2,925	3,000	429,366	400,529	376,652	7.1	7.3	8.0

na = not applicable.

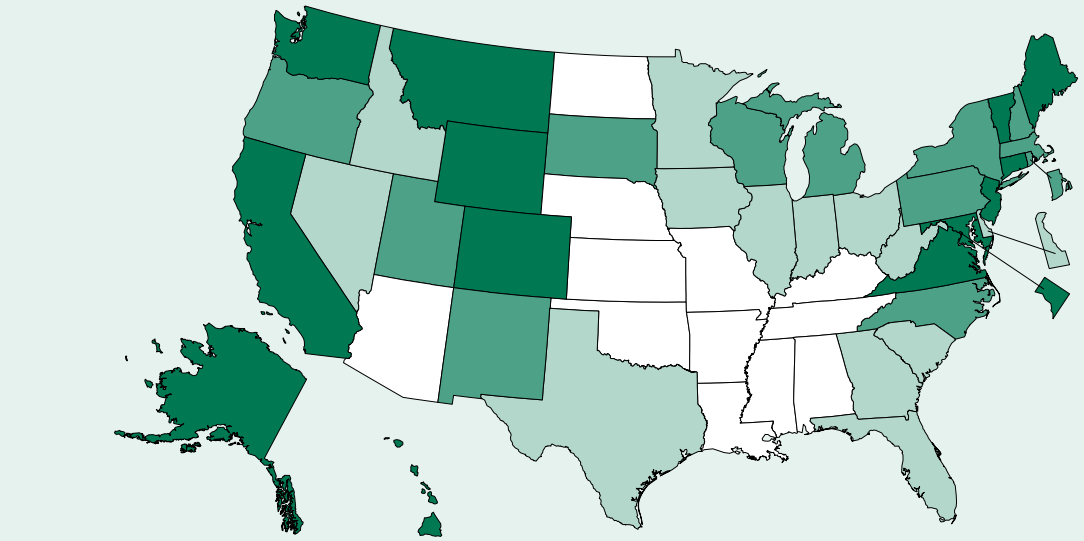
EPSCoR = Experimental Program to Stimulate Competitive Research; NS&E = natural sciences and engineering.

NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 and 2010 Decennial Censuses and Population Estimates Program (various years).

Science and Engineering Degrees as a Percentage of Higher Education Degrees Conferred

Figure 8-20
Science and engineering degrees as a percentage of higher education degrees conferred: 2011



Findings

- In 2011, nearly 734,000 S&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of 41% since 2001.
- Nationally, the proportion of S&E degrees as a share of total degrees conferred remained almost unchanged at 29% between 2001 and 2011.
- There are noteworthy differences in the proportions of S&E higher education degrees conferred in different states. In some states, only about 20% of higher education degrees were awarded in S&E fields. In others, nearly 40% of higher education degrees were awarded in S&E fields.
- The District of Columbia has a high value because of the large number of programs in political science and public administration at several of its academic institutions.

This indicator represents the extent to which a state's higher education programs are concentrated in S&E fields. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Counts of both S&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are not included.

Degree data reflect the location of the degree-granting institution, not the state where degree-earning students permanently reside. The year indicates the end date of the academic year. For example, data for 2011 represent degrees conferred during the 2010–11 academic year. All degree data are actual counts.

Table 8-20
Science and engineering degrees as a percentage of higher education degrees conferred, by state: 2001, 2006, and 2011

State	All S&E degrees			All higher education degrees			All S&E degrees/ all higher education degrees (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	520,476	625,163	733,609	1,757,551	2,135,374	2,506,134	29.6	29.3	29.3
Alabama	7,489	8,313	9,933	29,471	32,889	39,751	25.4	25.3	25.0
Alaska	604	719	921	1,771	2,176	2,509	34.1	33.0	36.7
Arizona	6,800	10,072	18,154	32,089	58,452	88,964	21.2	17.2	20.4
Arkansas	2,844	3,235	4,121	12,039	14,662	18,344	23.6	22.1	22.5
California	63,360	80,172	91,643	175,179	213,725	244,200	36.2	37.5	37.5
Colorado	11,606	14,320	15,209	31,418	41,242	45,772	36.9	34.7	33.2
Connecticut	6,929	8,341	9,790	22,459	27,331	29,759	30.9	30.5	32.9
Delaware	1,868	2,216	2,512	6,174	7,795	8,840	30.3	28.4	28.4
District of Columbia	6,870	8,294	7,743	16,005	20,458	19,033	42.9	40.5	40.7
Florida	18,843	25,887	32,260	74,159	96,870	121,004	25.4	26.7	26.7
Georgia	12,083	14,677	17,367	40,652	50,258	64,301	29.7	29.2	27.0
Hawaii	2,227	2,531	2,594	6,793	7,982	8,074	32.8	31.7	32.1
Idaho	1,756	2,661	2,942	5,809	9,613	11,076	30.2	27.7	26.6
Illinois	22,867	27,863	30,855	85,474	108,371	117,325	26.8	25.7	26.3
Indiana	11,188	13,241	15,768	41,533	50,859	59,294	26.9	26.0	26.6
Iowa	6,389	7,413	13,296	22,762	26,669	47,054	28.1	27.8	28.3
Kansas	5,576	5,872	6,012	20,315	23,069	25,962	27.4	25.5	23.2
Kentucky	5,015	6,317	6,883	20,615	26,057	29,932	24.3	24.2	23.0
Louisiana	6,908	7,282	7,562	26,403	26,933	29,072	26.2	27.0	26.0
Maine	2,236	2,625	3,103	6,659	8,238	9,173	33.6	31.9	33.8
Maryland	12,710	15,870	18,039	34,837	41,487	48,527	36.5	38.3	37.2
Massachusetts	22,843	25,439	28,989	70,397	77,949	90,422	32.4	32.6	32.1
Michigan	18,618	21,124	23,488	68,860	75,553	79,340	27.0	28.0	29.6
Minnesota	9,319	12,388	15,853	32,426	45,705	57,518	28.7	27.1	27.6
Mississippi	3,472	3,618	4,278	14,904	16,011	18,366	23.3	22.6	23.3
Missouri	11,306	12,690	14,323	44,466	53,706	63,525	25.4	23.6	22.5
Montana	2,076	2,189	2,313	6,216	6,333	6,814	33.4	34.6	33.9
Nebraska	3,261	3,892	4,478	14,309	16,517	18,564	22.8	23.6	24.1
Nevada	1,279	2,378	2,814	5,966	8,904	10,532	21.4	26.7	26.7
New Hampshire	3,082	3,520	4,047	9,767	11,273	13,293	31.6	31.2	30.4
New Jersey	13,842	15,603	17,439	37,760	46,061	52,919	36.7	33.9	33.0
New Mexico	2,558	3,164	3,339	9,412	11,117	11,725	27.2	28.5	28.5
New York	44,628	51,277	59,701	150,970	181,303	203,148	29.6	28.3	29.4
North Carolina	14,543	16,541	20,896	45,316	53,738	66,530	32.1	30.8	31.4
North Dakota	1,397	1,522	1,743	5,597	6,805	7,385	25.0	22.4	23.6
Ohio	18,238	20,505	23,094	70,489	81,292	88,516	25.9	25.2	26.1
Oklahoma	5,914	6,243	6,503	21,668	24,726	26,299	27.3	25.2	24.7
Oregon	6,473	8,004	8,767	19,198	24,144	27,306	33.7	33.2	32.1
Pennsylvania	26,514	32,358	37,253	90,967	110,726	127,084	29.1	29.2	29.3
Rhode Island	2,872	3,649	4,077	10,400	12,083	13,718	27.6	30.2	29.7
South Carolina	6,052	6,997	8,223	21,323	24,830	29,523	28.4	28.2	27.9
South Dakota	1,775	2,030	2,153	5,305	6,043	6,729	33.5	33.6	32.0
Tennessee	7,787	8,752	10,243	31,683	36,299	43,362	24.6	24.1	23.6
Texas	28,242	35,293	42,413	103,513	127,836	153,270	27.3	27.6	27.7
Utah	6,151	8,075	9,399	21,069	25,753	31,967	29.2	31.4	29.4
Vermont	2,153	2,576	3,343	6,116	6,827	8,535	35.2	37.7	39.2
Virginia	15,823	18,582	23,672	44,783	53,760	72,067	35.3	34.6	32.8
Washington	10,011	12,592	14,269	31,856	38,392	42,255	31.4	32.8	33.8
West Virginia	2,699	3,056	5,050	11,225	13,265	19,040	24.0	23.0	26.5
Wisconsin	10,549	12,328	13,761	36,813	40,999	46,009	28.7	30.1	29.9
Wyoming	831	857	981	2,161	2,288	2,407	38.5	37.5	40.8
Puerto Rico	4,847	4,992	5,437	18,678	22,551	23,611	26.0	22.1	23.0

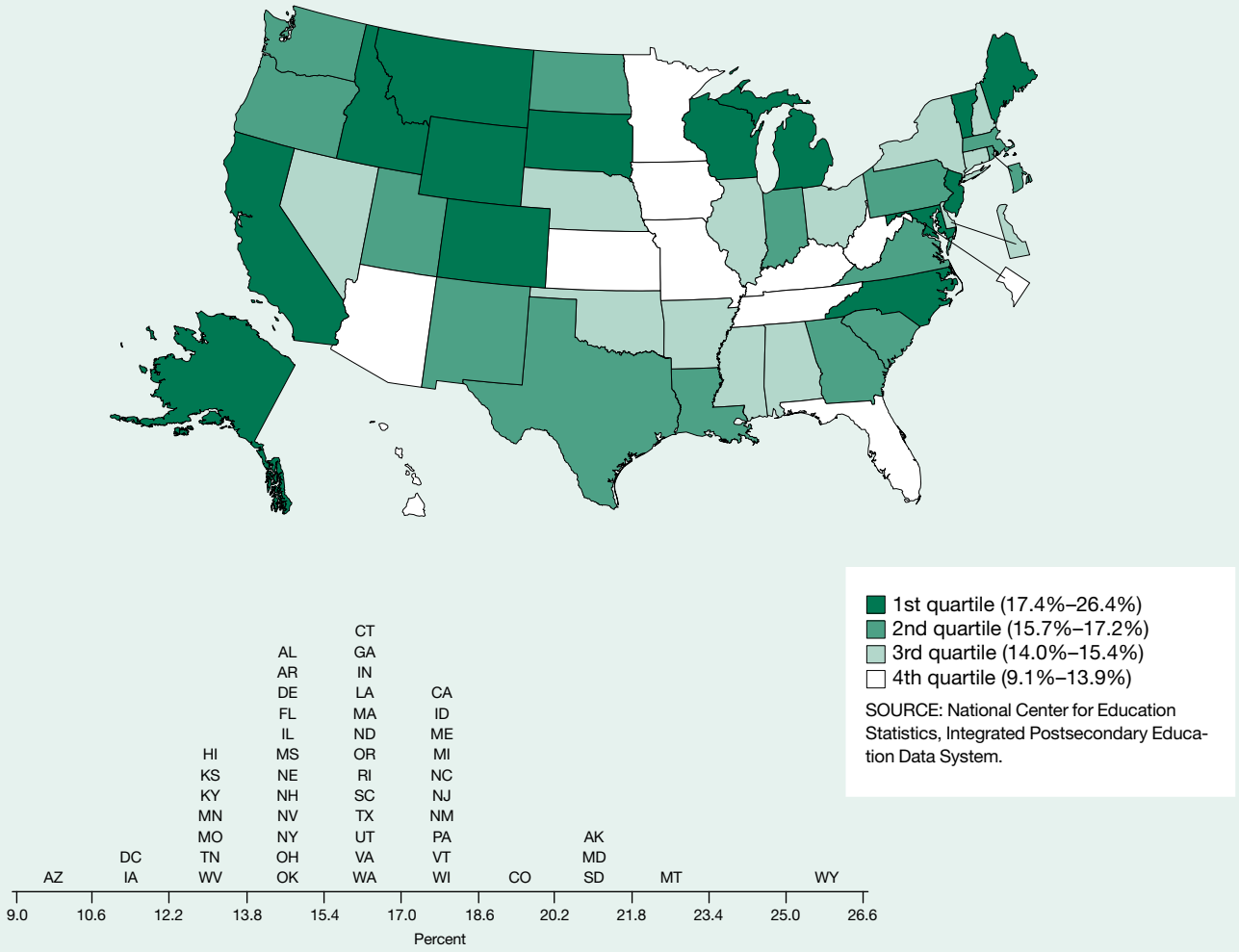
NOTES: All S&E degrees include bachelor's, master's, and doctorate. All S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering. All higher education degrees include bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2014

Natural Sciences and Engineering Degrees as a Percentage of Higher Education Degrees Conferred

Figure 8-21
Natural sciences and engineering degrees as a percentage of higher education degrees conferred: 2011



Findings

- In 2011, more than 392,000 NS&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of 37% since 2001.
- The proportion of NS&E degrees as a share of total degrees conferred remained unchanged at 15.6% between 2006 and 2011.
- There are noteworthy differences in the proportions of NS&E higher education degrees conferred in different states. In 2011, the proportions ranged between 9.1% and 26.4%.
- Nationally, more than half (53%) of all S&E degrees were in NS&E fields in 2011, down from 55% of all S&E degrees in 2001.
- States with the highest percentage of higher education degrees in NS&E fields tended to be located in the western United States, and four of the top five are Experimental Program to Stimulate Competitive Research states.

This indicator represents the extent to which a state's higher education programs are concentrated in natural sciences and engineering (NS&E) fields. The indicator is expressed as the percentage of higher education degrees that were conferred in NS&E fields.

NS&E fields include the physical, life, earth, ocean, atmospheric, and computer sciences; mathematics; and engineering. Social sciences such as anthropology, economics, political science and public administration, psychology, and sociology are not included. Counts of both NS&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are not included.

Degree data reflect the location of the degree-granting institution, not the state in which degree-earning students permanently reside. The year reflects the end date of the academic year. For example, data for 2010 represent degrees conferred during the 2009–10 academic year. All degree data are actual counts.

Table 8-21
Natural sciences and engineering degrees as a percentage of higher education degrees conferred, by state: 2001, 2006, and 2011

State	NS&E degrees			All higher education degrees			NS&E degrees/higher education degrees (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	287,290	333,677	392,170	1,757,551	2,135,374	2,506,134	16.3	15.6	15.6
Alabama	4,578	4,854	5,927	29,471	32,889	39,751	15.5	14.8	14.9
Alaska	346	451	543	1,771	2,176	2,509	19.5	20.7	21.6
Arizona	4,251	6,666	8,107	32,089	58,452	88,964	13.2	11.4	9.1
Arkansas	1,783	1,932	2,608	12,039	14,662	18,344	14.8	13.2	14.2
California	31,205	38,756	44,876	175,179	213,725	244,200	17.8	18.1	18.4
Colorado	6,514	8,017	8,532	31,418	41,242	45,772	20.7	19.4	18.6
Connecticut	3,078	3,637	4,592	22,459	27,331	29,759	13.7	13.3	15.4
Delaware	906	1,021	1,271	6,174	7,795	8,840	14.7	13.1	14.4
District of Columbia	3,230	3,100	2,243	16,005	20,458	19,033	20.2	15.2	11.8
Florida	10,142	12,964	16,847	74,159	96,870	121,004	13.7	13.4	13.9
Georgia	7,296	8,233	10,120	40,652	50,258	64,301	17.9	16.4	15.7
Hawaii	983	1,042	1,041	6,793	7,982	8,074	14.5	13.1	12.9
Idaho	1,174	1,797	1,939	5,809	9,613	11,076	20.2	18.7	17.5
Illinois	13,417	16,244	17,297	85,474	108,371	117,325	15.7	15.0	14.7
Indiana	6,455	7,596	9,295	41,533	50,859	59,294	15.5	14.9	15.7
Iowa	3,830	4,300	5,672	22,762	26,669	47,054	16.8	16.1	12.1
Kansas	3,368	3,309	3,533	20,315	23,069	25,962	16.6	14.3	13.6
Kentucky	2,705	3,247	3,656	20,615	26,057	29,932	13.1	12.5	12.2
Louisiana	4,480	4,522	4,550	26,403	26,933	29,072	17.0	16.8	15.7
Maine	1,198	1,301	1,604	6,659	8,238	9,173	18.0	15.8	17.5
Maryland	7,300	9,075	10,167	34,837	41,487	48,527	21.0	21.9	21.0
Massachusetts	11,261	12,275	14,560	70,397	77,949	90,422	16.0	15.7	16.1
Michigan	12,070	13,262	14,238	68,860	75,553	79,340	17.5	17.6	17.9
Minnesota	5,083	6,492	7,767	32,426	45,705	57,518	15.7	14.2	13.5
Mississippi	2,242	2,265	2,660	14,904	16,011	18,366	15.0	14.1	14.5
Missouri	6,125	6,760	7,733	44,466	53,706	63,525	13.8	12.6	12.2
Montana	1,448	1,433	1,530	6,216	6,333	6,814	23.3	22.6	22.5
Nebraska	1,943	2,209	2,602	14,309	16,517	18,564	13.6	13.4	14.0
Nevada	728	1,232	1,498	5,966	8,904	10,532	12.2	13.8	14.2
New Hampshire	1,648	1,545	1,953	9,767	11,273	13,293	16.9	13.7	14.7
New Jersey	7,530	7,769	9,266	37,760	46,061	52,919	19.9	16.9	17.5
New Mexico	1,666	1,988	2,021	9,412	11,117	11,725	17.7	17.9	17.2
New York	21,845	24,238	29,236	150,970	181,303	203,148	14.5	13.4	14.4
North Carolina	8,204	8,745	11,550	45,316	53,738	66,530	18.1	16.3	17.4
North Dakota	928	1,087	1,226	5,597	6,805	7,385	16.6	16.0	16.6
Ohio	10,649	11,501	13,299	70,489	81,292	88,516	15.1	14.1	15.0
Oklahoma	3,361	3,658	3,875	21,668	24,726	26,299	15.5	14.8	14.7
Oregon	3,162	3,799	4,359	19,198	24,144	27,306	16.5	15.7	16.0
Pennsylvania	15,425	18,459	21,701	90,967	110,726	127,084	17.0	16.7	17.1
Rhode Island	1,537	1,935	2,207	10,400	12,083	13,718	14.8	16.0	16.1
South Carolina	3,635	4,004	4,789	21,323	24,830	29,523	17.0	16.1	16.2
South Dakota	1,159	1,325	1,369	5,305	6,043	6,729	21.8	21.9	20.3
Tennessee	4,235	4,522	5,509	31,683	36,299	43,362	13.4	12.5	12.7
Texas	17,085	20,867	25,952	103,513	127,836	153,270	16.5	16.3	16.9
Utah	3,477	4,377	5,136	21,069	25,753	31,967	16.5	17.0	16.1
Vermont	1,001	1,158	1,553	6,116	6,827	8,535	16.4	17.0	18.2
Virginia	8,032	9,182	11,887	44,783	53,760	72,067	17.9	17.1	16.5
Washington	5,102	6,009	6,907	31,856	38,392	42,255	16.0	15.7	16.3
West Virginia	1,629	1,861	2,428	11,225	13,265	19,040	14.5	14.0	12.8
Wisconsin	6,269	7,099	8,303	36,813	40,999	46,009	17.0	17.3	18.0
Wyoming	572	557	636	2,161	2,288	2,407	26.5	24.3	26.4
Puerto Rico	3,417	3,392	3,520	18,678	22,551	23,611	18.3	15.0	14.9

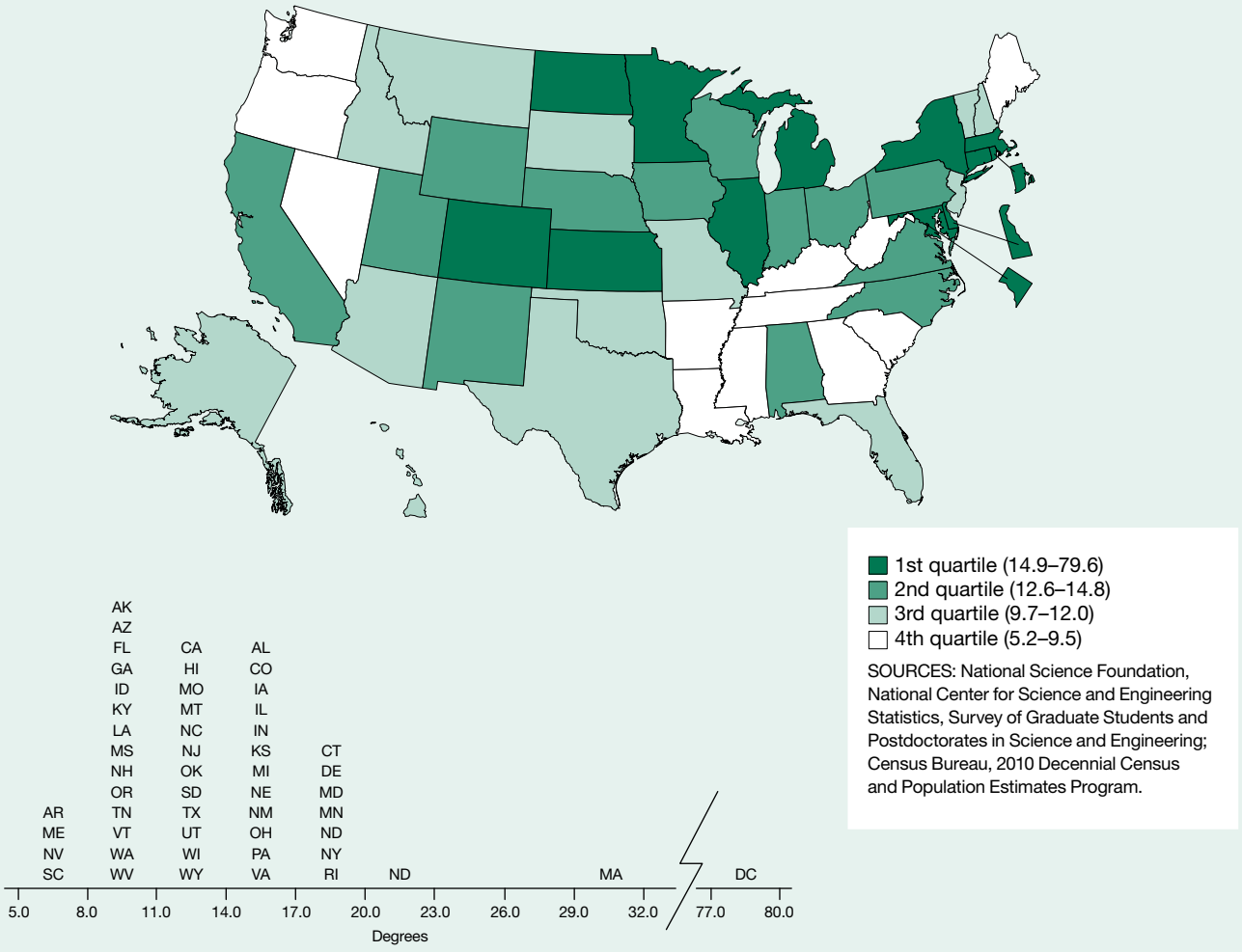
NS&E = natural sciences and engineering.

NOTES: NS&E degrees include bachelor's, master's, and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering. All higher education degrees include bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Graduate Students per 1,000 Individuals 25–34 Years Old

Figure 8-22
Science and engineering graduate students per 1,000 individuals 25–34 years old: 2011



Findings

- The number of S&E graduate students in the United States grew from approximately 426,000 in 2001 to 558,000 in 2011, a 31% increase.
- Among the 50 states, the value of this indicator ranged from 5.2 to 30.5.
- Growth in the number of S&E graduate students was most significant in Texas and California during this period. Other states with sizeable increases included New York, Florida, Minnesota, and Maryland.

Graduate students in S&E fields may become the technical leaders of the future. This indicator is a relative measure of a state's population with graduate training in S&E and is defined as the ratio of S&E graduate students to a state's population aged 25–34.

Graduate students are counted on the basis of their university enrollment and include state residents, residents of other states, and noncitizens. The cohort includes all state residents aged 25–34 and was chosen to approximate the age of most graduate students.

Data on S&E graduate students are counts obtained from all academic institutions in the United States that offer doctoral or master's degree programs in any S&E field, including the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Graduate students enrolled in schools of nursing, public health, dentistry, veterinary medicine, and other health-related disciplines are not included.

Estimates of the population aged 25–34 years old are provided by the U.S. Census Bureau. Small differences in the value of the indicator between states or across years generally are not meaningful.

Table 8-22
Science and engineering graduate students per 1,000 individuals 25–34 years old, by state: 2001, 2006, and 2011

State	S&E graduate students			Population 25–34 years old			S&E graduate students/1,000 individuals 25–34 years old		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	426,094	482,626	557,993	39,471,522	39,395,179	41,797,950	10.8	12.3	13.3
Alabama	5,257	6,097	8,639	588,949	591,061	614,667	8.9	10.3	14.1
Alaska	619	825	1,139	87,154	89,788	106,872	7.1	9.2	10.7
Arizona	6,789	7,395	9,398	748,567	838,414	867,462	9.1	8.8	10.8
Arkansas	2,069	2,677	2,533	348,283	366,132	381,599	5.9	7.3	6.6
California	54,730	64,120	68,576	5,234,401	5,169,993	5,405,582	10.5	12.4	12.7
Colorado	9,048	9,316	12,326	674,645	673,414	746,654	13.4	13.8	16.5
Connecticut	6,937	7,308	8,309	437,292	403,277	428,825	15.9	18.1	19.4
Delaware	1,461	1,817	2,055	106,005	107,873	114,146	13.8	16.8	18.0
District of Columbia	7,448	9,798	10,626	102,420	105,154	133,464	72.7	93.2	79.6
Florida	16,414	19,550	23,822	2,071,777	2,221,655	2,348,449	7.9	8.8	10.1
Georgia	9,345	10,848	12,473	1,295,862	1,312,377	1,357,886	7.2	8.3	9.2
Hawaii	1,455	1,896	2,142	168,560	176,055	192,265	8.6	10.8	11.1
Idaho	1,547	1,841	2,039	169,900	191,279	210,906	9.1	9.6	9.7
Illinois	24,266	24,483	27,237	1,788,465	1,737,829	1,787,899	13.6	14.1	15.2
Indiana	8,510	9,761	12,125	817,892	812,260	835,258	10.4	12.0	14.5
Iowa	4,705	5,124	5,601	356,466	352,021	389,147	13.2	14.6	14.4
Kansas	5,846	5,722	5,958	343,487	343,137	383,886	17.0	16.7	15.5
Kentucky	4,017	4,693	4,543	556,948	555,069	569,299	7.2	8.5	8.0
Louisiana	5,739	5,515	5,980	587,213	560,262	643,209	9.8	9.8	9.3
Maine	605	675	761	152,867	143,767	146,381	4.0	4.7	5.2
Maryland	9,209	11,219	13,688	733,474	725,791	784,346	12.6	15.5	17.5
Massachusetts	20,191	23,011	26,539	907,376	818,399	870,207	22.3	28.1	30.5
Michigan	15,695	15,206	17,439	1,327,644	1,219,056	1,172,148	11.8	12.5	14.9
Minnesota	6,663	11,940	13,443	666,671	661,468	729,934	10.0	18.1	18.4
Mississippi	2,629	3,010	3,419	374,462	373,805	389,945	7.0	8.1	8.8
Missouri	6,320	7,687	8,715	727,911	736,036	787,984	8.7	10.4	11.1
Montana	1,268	1,456	1,496	101,315	107,547	125,164	12.5	13.5	12.0
Nebraska	2,428	2,905	3,598	220,445	223,330	250,051	11.0	13.0	14.4
Nevada	1,584	2,053	2,133	314,776	367,992	388,454	5.0	5.6	5.5
New Hampshire	1,337	1,426	1,608	156,956	144,611	146,960	8.5	9.9	10.9
New Jersey	11,322	12,513	12,676	1,164,876	1,091,700	1,124,825	9.7	11.5	11.3
New Mexico	3,269	3,656	4,045	229,301	247,445	273,317	14.3	14.8	14.8
New York	38,946	44,139	49,332	2,705,918	2,560,803	2,716,521	14.4	17.2	18.2
North Carolina	10,640	12,419	16,027	1,207,640	1,192,318	1,261,660	8.8	10.4	12.7
North Dakota	1,078	1,362	1,890	74,377	75,538	94,738	14.5	18.0	19.9
Ohio	16,388	18,161	20,589	1,481,232	1,420,465	1,425,637	11.1	12.8	14.4
Oklahoma	4,166	4,095	6,113	445,894	463,304	515,926	9.3	8.8	11.8
Oregon	3,990	4,409	5,064	472,656	488,957	530,602	8.4	9.0	9.5
Pennsylvania	18,585	20,218	22,851	1,514,109	1,460,972	1,547,226	12.3	13.8	14.8
Rhode Island	1,646	1,885	2,376	137,032	128,875	128,843	12.0	14.6	18.4
South Carolina	3,240	3,397	4,202	551,336	564,942	600,606	5.9	6.0	7.0
South Dakota	982	924	1,272	89,533	92,913	108,359	11.0	9.9	11.7
Tennessee	5,797	6,302	7,081	800,705	809,202	834,804	7.2	7.8	8.5
Texas	28,440	33,083	42,542	3,186,416	3,361,877	3,690,821	8.9	9.8	11.5
Utah	4,034	5,049	5,755	333,952	395,758	449,404	12.1	12.8	12.8
Vermont	597	610	685	72,130	66,702	70,651	8.3	9.1	9.7
Virginia	12,286	13,044	15,984	1,025,675	1,023,967	1,121,245	12.0	12.7	14.3
Washington	5,891	6,542	8,741	837,266	855,936	961,616	7.0	7.6	9.1
West Virginia	2,031	2,166	2,101	222,472	221,677	221,255	9.1	9.8	9.5
Wisconsin	7,871	8,460	9,227	692,200	678,122	731,644	11.4	12.5	12.6
Wyoming	764	818	1,080	58,619	64,854	79,201	13.0	12.6	13.6
Puerto Rico	3,062	3,585	2,842	533,518	551,751	480,337	5.7	6.5	5.9

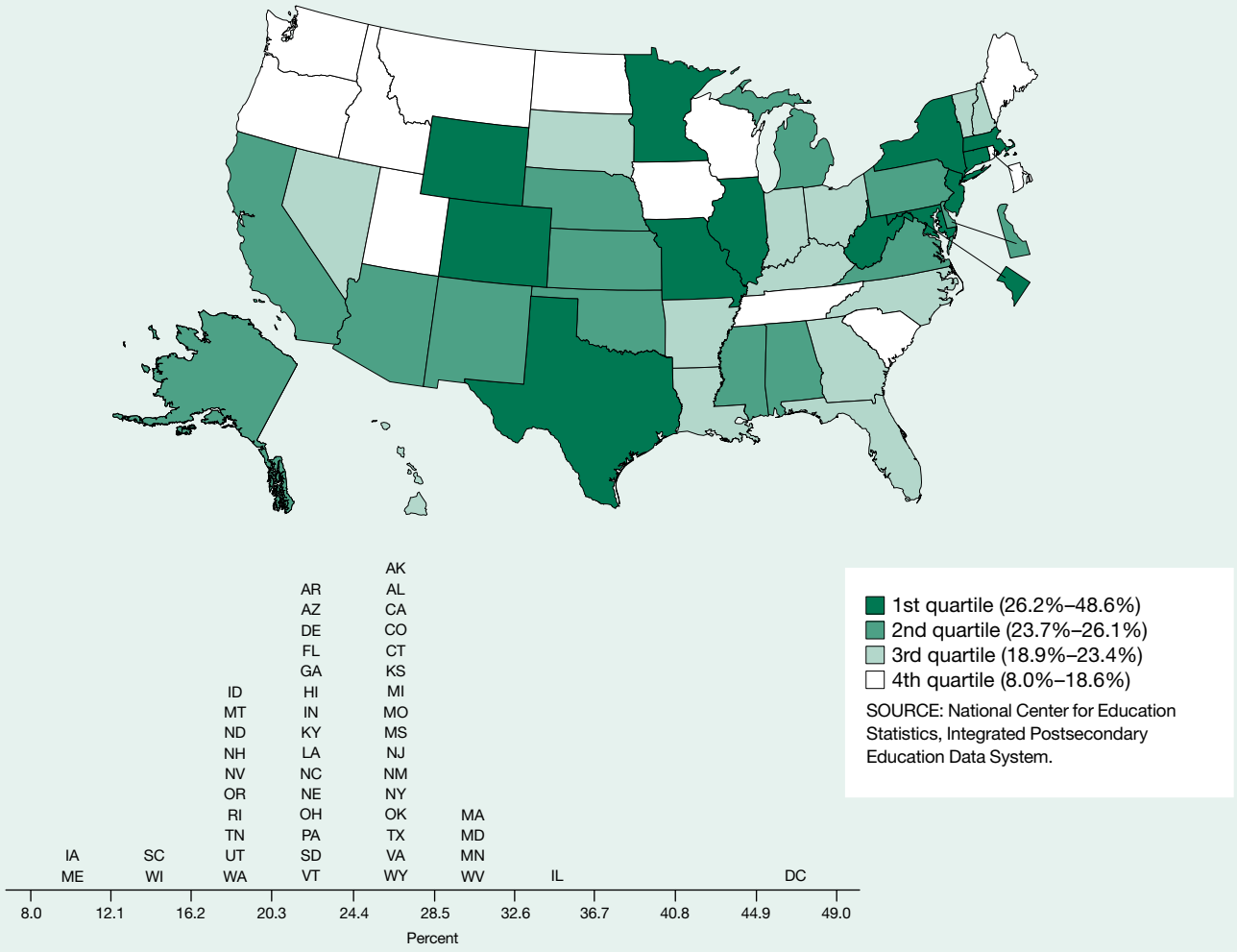
NOTE: S&E graduate students include students pursuing degrees in physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering; Census Bureau, 2000 and 2010 Decennial Censuses and Population Estimates Program (various years).

Science and Engineering Indicators 2014

Advanced Science and Engineering Degrees as a Percentage of S&E Degrees Conferred

Figure 8-23
Advanced science and engineering degrees as a percentage of S&E degrees conferred: 2011



Findings

- In 2011, nearly 184,000 advanced S&E degrees were awarded nationwide, 48% more degrees than were awarded in 2001. The share of advanced degrees as a percentage of all S&E degrees conferred increased by 5% between 2001 and 2011.
- In 2011, the value of this indicator for individual states ranged from 8.0% to 33.3% of S&E graduates completing training at the master's or doctoral level. Between 2001 and 2011, 29 states and the District of Columbia showed increases in the share of their S&E graduates completing training at the master's or doctoral level and 21 states showed decreases.
- In states with few S&E graduate programs, the number of advanced S&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of S&E graduate students.

This indicator represents the extent to which a state's higher education programs in S&E are concentrated at the graduate level. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Advanced S&E degrees include master's and doctoral degrees. Total S&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced S&E degrees by the total number of S&E degrees awarded by the higher education institutions within the state. The number of degrees are actual counts provided by the National Center for Education Statistics.

Table 8-23
Advanced science and engineering degrees as a percentage of S&E degrees conferred, by state: 2001, 2006, and 2011

State	Advanced S&E degrees			All S&E degrees			Advanced S&E degrees/all S&E degrees (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	124,327	150,513	183,738	520,476	625,163	733,609	23.9	24.1	25.0
Alabama	1,969	2,294	2,527	7,489	8,313	9,933	26.3	27.6	25.4
Alaska	184	204	228	604	719	921	30.5	28.4	24.8
Arizona	1,641	1,898	4,342	6,800	10,072	18,154	24.1	18.8	23.9
Arkansas	440	576	925	2,844	3,235	4,121	15.5	17.8	22.4
California	15,645	19,584	23,415	63,360	80,172	91,643	24.7	24.4	25.6
Colorado	2,879	3,296	4,036	11,606	14,320	15,209	24.8	23.0	26.5
Connecticut	1,768	2,069	2,577	6,929	8,341	9,790	25.5	24.8	26.3
Delaware	419	487	596	1,868	2,216	2,512	22.4	22.0	23.7
District of Columbia	2,990	3,480	3,764	6,870	8,294	7,743	43.5	42.0	48.6
Florida	4,469	5,387	6,997	18,843	25,887	32,260	23.7	20.8	21.7
Georgia	2,964	3,458	4,040	12,083	14,677	17,367	24.5	23.6	23.3
Hawaii	625	575	599	2,227	2,531	2,594	28.1	22.7	23.1
Idaho	341	502	498	1,756	2,661	2,942	19.4	18.9	16.9
Illinois	6,717	8,731	10,266	22,867	27,863	30,855	29.4	31.3	33.3
Indiana	2,440	2,844	3,544	11,188	13,241	15,768	21.8	21.5	22.5
Iowa	1,014	1,291	1,554	6,389	7,413	13,296	15.9	17.4	11.7
Kansas	1,171	1,274	1,497	5,576	5,872	6,012	21.0	21.7	24.9
Kentucky	974	1,487	1,612	5,015	6,317	6,883	19.4	23.5	23.4
Louisiana	1,418	1,708	1,637	6,908	7,282	7,562	20.5	23.5	21.6
Maine	174	235	249	2,236	2,625	3,103	7.8	9.0	8.0
Maryland	3,832	4,700	5,651	12,710	15,870	18,039	30.1	29.6	31.3
Massachusetts	6,654	7,645	8,966	22,843	25,439	28,989	29.1	30.1	30.9
Michigan	4,936	5,449	5,915	18,618	21,124	23,488	26.5	25.8	25.2
Minnesota	1,822	2,844	4,841	9,319	12,388	15,853	19.6	23.0	30.5
Mississippi	636	797	1,087	3,472	3,618	4,278	18.3	22.0	25.4
Missouri	2,946	3,085	3,850	11,306	12,690	14,323	26.1	24.3	26.9
Montana	358	426	425	2,076	2,189	2,313	17.2	19.5	18.4
Nebraska	697	828	1,063	3,261	3,892	4,478	21.4	21.3	23.7
Nevada	304	542	544	1,279	2,378	2,814	23.8	22.8	19.3
New Hampshire	605	709	763	3,082	3,520	4,047	19.6	20.1	18.9
New Jersey	3,225	3,935	4,620	13,842	15,603	17,439	23.3	25.2	26.5
New Mexico	739	1,001	873	2,558	3,164	3,339	28.9	31.6	26.1
New York	11,441	13,912	16,797	44,628	51,277	59,701	25.6	27.1	28.1
North Carolina	2,717	3,241	4,353	14,543	16,541	20,896	18.7	19.6	20.8
North Dakota	183	236	325	1,397	1,522	1,743	13.1	15.5	18.6
Ohio	4,237	4,782	5,222	18,238	20,505	23,094	23.2	23.3	22.6
Oklahoma	1,847	1,404	1,688	5,914	6,243	6,503	31.2	22.5	26.0
Oregon	1,296	1,548	1,525	6,473	8,004	8,767	20.0	19.3	17.4
Pennsylvania	5,507	7,263	8,980	26,514	32,358	37,253	20.8	22.4	24.1
Rhode Island	532	674	751	2,872	3,649	4,077	18.5	18.5	18.4
South Carolina	1,101	1,087	1,206	6,052	6,997	8,223	18.2	15.5	14.7
South Dakota	379	448	484	1,775	2,030	2,153	21.4	22.1	22.5
Tennessee	1,506	1,672	1,873	7,787	8,752	10,243	19.3	19.1	18.3
Texas	7,464	9,397	11,960	28,242	35,293	42,413	26.4	26.6	28.2
Utah	1,061	1,301	1,648	6,151	8,075	9,399	17.2	16.1	17.5
Vermont	319	556	747	2,153	2,576	3,343	14.8	21.6	22.3
Virginia	3,301	4,373	6,078	15,823	18,582	23,672	20.9	23.5	25.7
Washington	1,956	2,434	2,617	10,011	12,592	14,269	19.5	19.3	18.3
West Virginia	523	634	1,511	2,699	3,056	5,050	19.4	20.7	29.9
Wisconsin	1,731	2,010	2,215	10,549	12,328	13,761	16.4	16.3	16.1
Wyoming	230	200	257	831	857	981	27.7	23.3	26.2
Puerto Rico	639	916	1,067	4,847	4,992	5,437	13.2	18.3	19.6

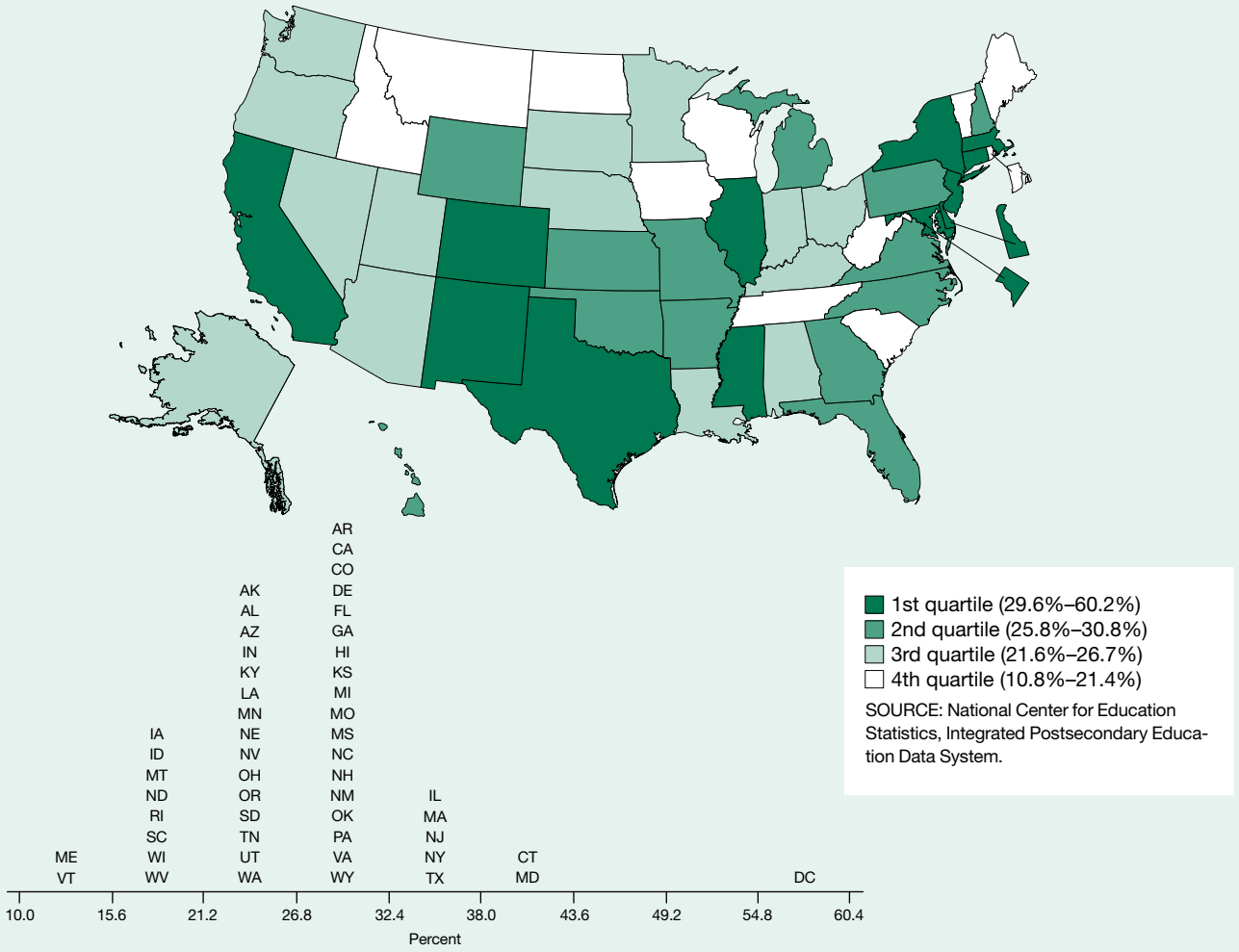
NOTES: Advanced S&E degrees include only master's and doctorate. All S&E degrees include bachelor's, master's, and doctorate. S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2014

Advanced Natural Sciences and Engineering Degrees as a Percentage of NS&E Degrees Conferred

Figure 8-24
Advanced natural sciences and engineering degrees as a percentage of NS&E degrees conferred: 2011



Findings

- In 2011, nearly 115,000 advanced natural sciences and engineering (NS&E) degrees were awarded nationwide. This total represented approximately 46% more than were awarded in 2001. The share of advanced degrees as a percentage of all NS&E degrees conferred rose by 1.9 percentage points between 2001 and 2011.
- In 2011, the value of this indicator for states ranged from a low of 10.8% to a high of 40.5%.
- Nationally, about 62% of all advanced S&E degrees were in NS&E fields in 2011, a slight decline from 63% in 2001.
- In states with few NS&E graduate programs, the number of advanced NS&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of NS&E graduate students.

This indicator represents the extent to which a state's higher education programs in NS&E are concentrated at the graduate level. NS&E fields include the physical, life, earth, ocean, atmospheric, and computer sciences; mathematics; and engineering. The social sciences, including anthropology, economics, political science and public administration, psychology, and sociology, are not included. Advanced NS&E degrees include master's and doctoral degrees. Total NS&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced NS&E degrees by the total number of NS&E degrees awarded by the higher education institutions within the state.

The number of degrees are actual counts provided by the National Center for Education Statistics.

Table 8-24
Advanced natural sciences and engineering degrees as a percentage of NS&E degrees conferred, by state: 2001, 2006, and 2011

State	Advanced NS&E degrees			NS&E degrees conferred			Advanced NS&E degrees/NS&E degrees conferred (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	78,543	94,476	114,621	287,290	333,677	392,170	27.3	28.3	29.2
Alabama	919	1,192	1,428	4,578	4,854	5,927	20.1	24.6	24.1
Alaska	116	139	144	346	451	543	33.5	30.8	26.5
Arizona	1,141	1,243	1,822	4,251	6,666	8,107	26.8	18.6	22.5
Arkansas	291	401	711	1,783	1,932	2,608	16.3	20.8	27.3
California	8,868	11,742	14,110	31,205	38,756	44,876	28.4	30.3	31.4
Colorado	1,900	2,125	2,626	6,514	8,017	8,532	29.2	26.5	30.8
Connecticut	1,176	1,466	1,858	3,078	3,637	4,592	38.2	40.3	40.5
Delaware	217	292	376	906	1,021	1,271	24.0	28.6	29.6
District of Columbia	1,531	1,279	1,350	3,230	3,100	2,243	47.4	41.3	60.2
Florida	2,794	3,440	4,663	10,142	12,964	16,847	27.5	26.5	27.7
Georgia	2,090	2,224	2,912	7,296	8,233	10,120	28.6	27.0	28.8
Hawaii	313	252	295	983	1,042	1,041	31.8	24.2	28.3
Idaho	274	413	409	1,174	1,797	1,939	23.3	23.0	21.1
Illinois	4,233	5,324	6,144	13,417	16,244	17,297	31.5	32.8	35.5
Indiana	1,502	1,852	2,334	6,455	7,596	9,295	23.3	24.4	25.1
Iowa	775	973	1,139	3,830	4,300	5,672	20.2	22.6	20.1
Kansas	762	840	978	3,368	3,309	3,533	22.6	25.4	27.7
Kentucky	573	880	828	2,705	3,247	3,656	21.2	27.1	22.6
Louisiana	999	1,195	1,196	4,480	4,522	4,550	22.3	26.4	26.3
Maine	138	163	174	1,198	1,301	1,604	11.5	12.5	10.8
Maryland	2,563	3,282	3,880	7,300	9,075	10,167	35.1	36.2	38.2
Massachusetts	4,052	4,568	5,378	11,261	12,275	14,560	36.0	37.2	36.9
Michigan	3,722	3,997	4,194	12,070	13,262	14,238	30.8	30.1	29.5
Minnesota	1,057	1,476	1,740	5,083	6,492	7,767	20.8	22.7	22.4
Mississippi	487	606	804	2,242	2,265	2,660	21.7	26.8	30.2
Missouri	1,288	1,608	2,105	6,125	6,760	7,733	21.0	23.8	27.2
Montana	277	300	297	1,448	1,433	1,530	19.1	20.9	19.4
Nebraska	448	533	662	1,943	2,209	2,602	23.1	24.1	25.4
Nevada	201	349	361	728	1,232	1,498	27.6	28.3	24.1
New Hampshire	450	429	567	1,648	1,545	1,953	27.3	27.8	29.0
New Jersey	2,331	2,552	3,346	7,530	7,769	9,266	31.0	32.8	36.1
New Mexico	500	692	638	1,666	1,988	2,021	30.0	34.8	31.6
New York	6,711	7,820	10,040	21,845	24,238	29,236	30.7	32.3	34.3
North Carolina	2,021	2,349	3,208	8,204	8,745	11,550	24.6	26.9	27.8
North Dakota	130	174	227	928	1,087	1,226	14.0	16.0	18.5
Ohio	2,901	3,247	3,553	10,649	11,501	13,299	27.2	28.2	26.7
Oklahoma	870	986	1,067	3,361	3,658	3,875	25.9	27.0	27.5
Oregon	790	913	1,010	3,162	3,799	4,359	25.0	24.0	23.2
Pennsylvania	3,524	4,678	5,978	15,425	18,459	21,701	22.8	25.3	27.5
Rhode Island	335	404	463	1,537	1,935	2,207	21.8	20.9	21.0
South Carolina	875	803	911	3,635	4,004	4,789	24.1	20.1	19.0
South Dakota	246	273	299	1,159	1,325	1,369	21.2	20.6	21.8
Tennessee	954	1,031	1,179	4,235	4,522	5,509	22.5	22.8	21.4
Texas	5,287	6,717	8,756	17,085	20,867	25,952	30.9	32.2	33.7
Utah	680	945	1,108	3,477	4,377	5,136	19.6	21.6	21.6
Vermont	155	260	241	1,001	1,158	1,553	15.5	22.5	15.5
Virginia	2,076	2,663	3,255	8,032	9,182	11,887	25.8	29.0	27.4
Washington	1,241	1,378	1,491	5,102	6,009	6,907	24.3	22.9	21.6
West Virginia	333	454	510	1,629	1,861	2,428	20.4	24.4	21.0
Wisconsin	1,265	1,429	1,683	6,269	7,099	8,303	20.2	20.1	20.3
Wyoming	161	125	173	572	557	636	28.1	22.4	27.2
Puerto Rico	363	467	520	3,417	3,392	3,520	10.6	13.8	14.8

NS&E = natural sciences and engineering.

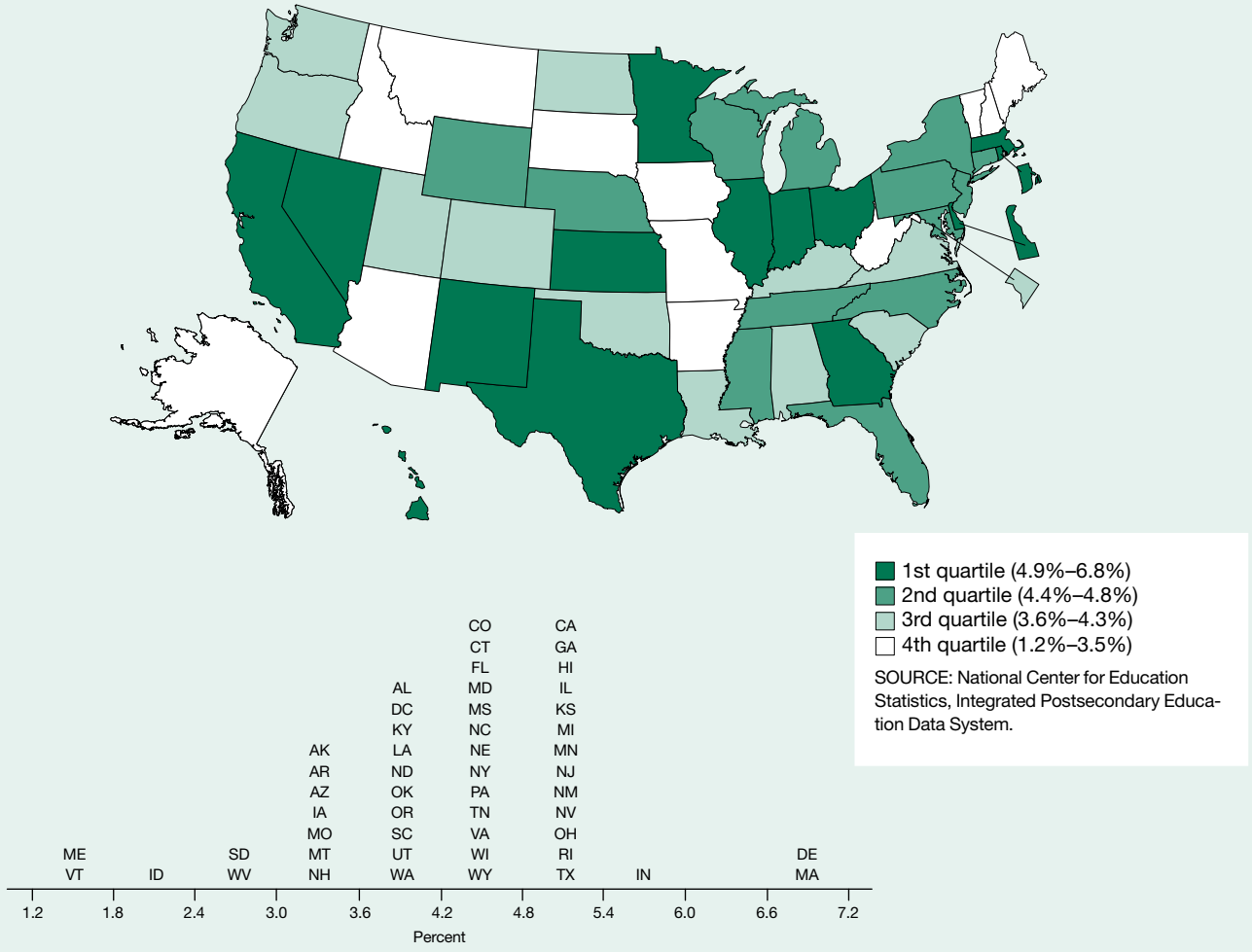
NOTES: Advanced NS&E degrees include only master's and doctorate. NS&E degrees conferred includes bachelor's, master's, and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2014

Science and Engineering Doctoral Degrees as a Percentage of S&E Degrees Conferred

Figure 8-25
Science and engineering doctoral degrees as a percentage of S&E degrees conferred: 2011



Findings

- The number of S&E doctoral degrees awarded nationwide rose from 25,000 in 2001 to 34,000 in 2011, an increase of 34%. California showed the largest increase in the number of S&E doctorates awarded during this period.
- Nationally, the percentage of S&E degrees awarded that were doctoral degrees has declined from 4.9% in 2001 to 4.6% in 2011.
- In 2011, the value of this indicator for individual states ranged from a low of 1.2% to a high of 6.8%.
- In states with a small number of S&E graduate programs, the number of S&E doctoral degrees awarded varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of S&E doctorates.

This indicator represents the extent to which a state's higher education programs in S&E are focused on producing individuals with the highest level of technical expertise. The academic and technical leaders of the future are often drawn from individuals receiving S&E doctoral degrees. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Total S&E degrees conferred include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of doctoral degrees awarded in S&E fields by the total number of S&E degrees awarded by the higher education institutions within the state. The number of degrees are counts provided by the National Center for Education Statistics.

Table 8-25
Science and engineering doctoral degrees as a percentage of S&E degrees conferred, by state: 2001, 2006, and 2011

State	S&E doctoral degrees			S&E degrees conferred			S&E doctoral/S&E degrees conferred (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	25,352	30,291	34,045	520,476	625,163	733,609	4.9	4.8	4.6
Alabama	268	309	367	7,489	8,313	9,933	3.6	3.7	3.7
Alaska	22	18	29	604	719	921	3.6	2.5	3.1
Arizona	392	514	626	6,800	10,072	18,154	5.8	5.1	3.4
Arkansas	61	106	127	2,844	3,235	4,121	2.1	3.3	3.1
California	3,664	4,365	4,805	63,360	80,172	91,643	5.8	5.4	5.2
Colorado	511	546	647	11,606	14,320	15,209	4.4	3.8	4.3
Connecticut	370	453	457	6,929	8,341	9,790	5.3	5.4	4.7
Delaware	108	135	170	1,868	2,216	2,512	5.8	6.1	6.8
District of Columbia	306	363	321	6,870	8,294	7,743	4.5	4.4	4.1
Florida	838	1,211	1,466	18,843	25,887	32,260	4.4	4.7	4.5
Georgia	607	819	901	12,083	14,677	17,367	5.0	5.6	5.2
Hawaii	141	110	136	2,227	2,531	2,594	6.3	4.3	5.2
Idaho	50	72	68	1,756	2,661	2,942	2.8	2.7	2.3
Illinois	1,528	1,603	1,541	22,867	27,863	30,855	6.7	5.8	5.0
Indiana	621	700	848	11,188	13,241	15,768	5.6	5.3	5.4
Iowa	322	373	442	6,389	7,413	13,296	5.0	5.0	3.3
Kansas	236	247	302	5,576	5,872	6,012	4.2	4.2	5.0
Kentucky	174	254	264	5,015	6,317	6,883	3.5	4.0	3.8
Louisiana	317	289	309	6,908	7,282	7,562	4.6	4.0	4.1
Maine	30	27	44	2,236	2,625	3,103	1.3	1.0	1.4
Maryland	604	791	822	12,710	15,870	18,039	4.8	5.0	4.6
Massachusetts	1,436	1,689	1,909	22,843	25,439	28,989	6.3	6.6	6.6
Michigan	868	1,060	1,132	18,618	21,124	23,488	4.7	5.0	4.8
Minnesota	531	705	847	9,319	12,388	15,853	5.7	5.7	5.3
Mississippi	115	142	201	3,472	3,618	4,278	3.3	3.9	4.7
Missouri	412	512	496	11,306	12,690	14,323	3.6	4.0	3.5
Montana	39	66	80	2,076	2,189	2,313	1.9	3.0	3.5
Nebraska	131	136	195	3,261	3,892	4,478	4.0	3.5	4.4
Nevada	50	93	138	1,279	2,378	2,814	3.9	3.9	4.9
New Hampshire	111	129	126	3,082	3,520	4,047	3.6	3.7	3.1
New Jersey	652	708	835	13,842	15,603	17,439	4.7	4.5	4.8
New Mexico	134	181	165	2,558	3,164	3,339	5.2	5.7	4.9
New York	2,157	2,495	2,730	44,628	51,277	59,701	4.8	4.9	4.6
North Carolina	665	805	974	14,543	16,541	20,896	4.6	4.9	4.7
North Dakota	43	45	68	1,397	1,522	1,743	3.1	3.0	3.9
Ohio	1,023	1,138	1,167	18,238	20,505	23,094	5.6	5.5	5.1
Oklahoma	198	195	239	5,914	6,243	6,503	3.3	3.1	3.7
Oregon	298	320	324	6,473	8,004	8,767	4.6	4.0	3.7
Pennsylvania	1,143	1,551	1,724	26,514	32,358	37,253	4.3	4.8	4.6
Rhode Island	168	223	207	2,872	3,649	4,077	5.8	6.1	5.1
South Carolina	205	231	294	6,052	6,997	8,223	3.4	3.3	3.6
South Dakota	31	38	55	1,775	2,030	2,153	1.7	1.9	2.6
Tennessee	351	395	486	7,787	8,752	10,243	4.5	4.5	4.7
Texas	1,500	1,845	2,228	28,242	35,293	42,413	5.3	5.2	5.3
Utah	197	225	348	6,151	8,075	9,399	3.2	2.8	3.7
Vermont	52	49	40	2,153	2,576	3,343	2.4	1.9	1.2
Virginia	667	787	984	15,823	18,582	23,672	4.2	4.2	4.2
Washington	422	525	578	10,011	12,592	14,269	4.2	4.2	4.1
West Virginia	56	102	122	2,699	3,056	5,050	2.1	3.3	2.4
Wisconsin	494	559	618	10,549	12,328	13,761	4.7	4.5	4.5
Wyoming	33	37	43	831	857	981	4.0	4.3	4.4
Puerto Rico	101	161	160	4,847	4,992	5,437	2.1	3.2	2.9

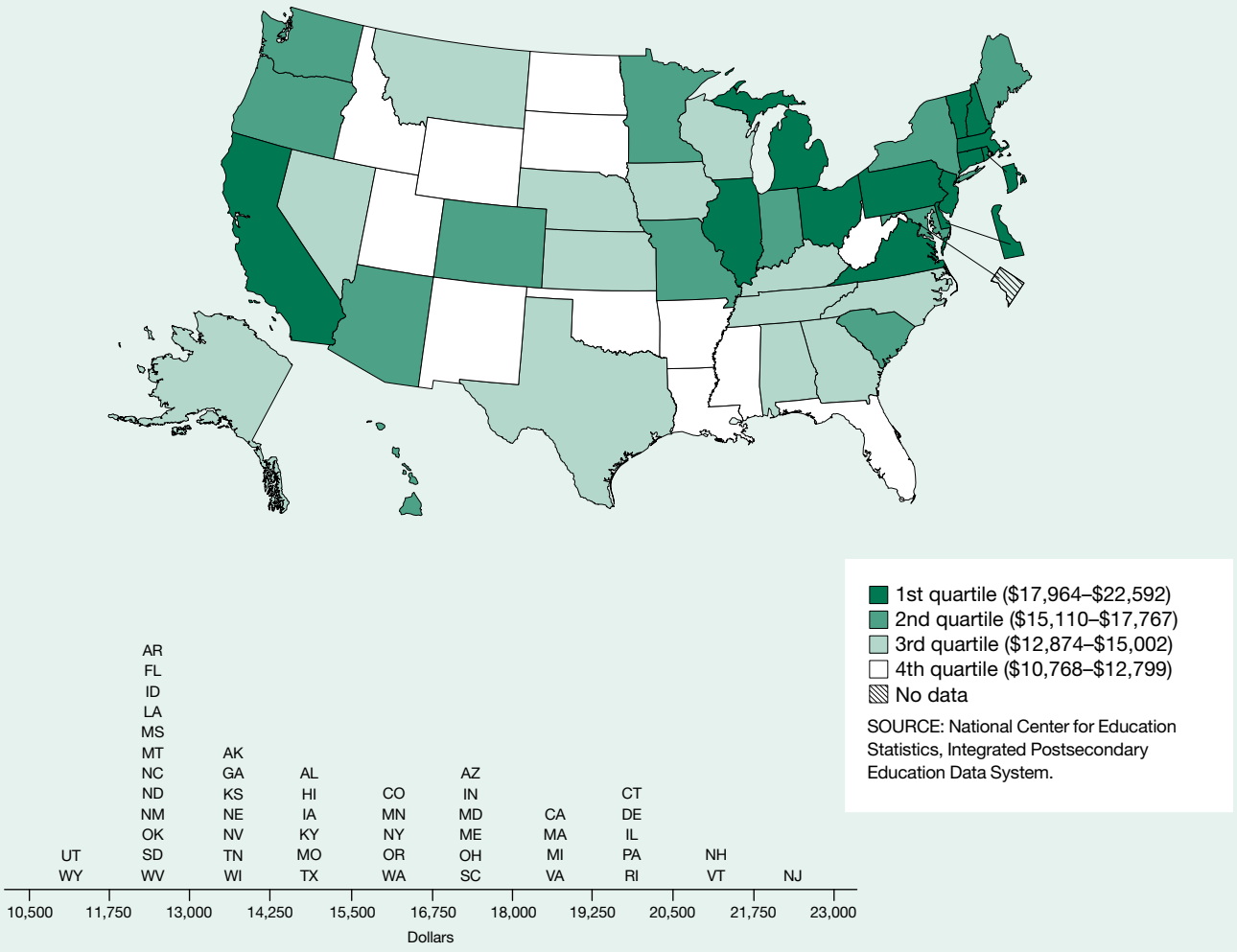
NOTES: S&E degrees conferred include bachelor's, master's, and doctorate. S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2014

Average Undergraduate Charge at Public 4-Year Institutions

Figure 8-26
Average undergraduate charge at public 4-year institutions: 2011



Findings

- During 2011, the total annual nominal charge for a full-time undergraduate student to attend a public 4-year institution averaged $15,918 nationally, an increase of 84% since 2001. This was equivalent to an increase of approximately 47% after adjusting for inflation.
- All states showed major increases in undergraduate charges at public institutions from 2001 to 2011. In several states, undergraduate charges more than doubled during this period.
- In 2011, the state average for a year of undergraduate education at a public 4-year institution ranged from a low of $10,768 to a high of $22,592.
- Tuition and required fees averaged 47% of the total charges at public 4-year institutions in 2011, but individual states had different cost structures.

The average annual charge for an undergraduate student to attend a public 4-year academic institution is one indicator of how accessible higher education is to a state's students. The annual charge includes standard in-state charges for tuition, required fees, room, and board for a full-time undergraduate student who is a resident of that state. These charges were weighted by the number of full-time undergraduates attending each public institution within the state. The total charge for all public 4-year institutions in the state was divided by the total number of full-time undergraduates attending all public 4-year institutions in the state. The year is the end date of the academic year. For example, data for 2011 represent costs for the 2010–11 academic year.

To improve educational attainment, the federal government, state governments, and academic institutions provide various kinds of financial aid that reduce the charge to students. The data in this indicator do not include any adjustments for such financial aid.

Table 8-26
Average undergraduate charge at public 4-year institutions, by state: 2001, 2006, and 2011
(Dollars)

State	2001	2006	2011
United States	8,653	12,108	15,918
Alabama	7,349	9,625	14,416
Alaska	8,390	10,620	14,053
Arizona	7,874	11,480	17,083
Arkansas	6,797	9,192	12,580
California	9,590	13,685	18,933
Colorado	8,362	11,569	16,208
Connecticut	10,521	14,658	19,400
Delaware	10,283	14,326	19,541
District of Columbia	NA	NA	NA
Florida	7,947	10,141	12,774
Georgia	7,463	10,062	14,019
Hawaii	8,272	9,042	15,133
Idaho	6,765	8,982	11,773
Illinois	9,532	13,976	20,054
Indiana	9,239	12,388	16,912
Iowa	7,587	12,329	14,855
Kansas	6,654	9,980	13,229
Kentucky	6,923	10,663	15,002
Louisiana	6,329	8,506	11,856
Maine	9,371	12,568	17,767
Maryland	10,834	14,793	16,963
Massachusetts	9,207	14,651	19,164
Michigan	9,825	13,693	18,333
Minnesota	8,127	12,777	16,385
Mississippi	7,195	9,461	12,051
Missouri	8,203	11,861	15,110
Montana	7,615	10,613	12,891
Nebraska	7,355	11,286	14,081
Nevada	8,247	10,865	14,172
New Hampshire	11,720	15,479	21,481
New Jersey	12,007	17,708	22,592
New Mexico	7,086	9,579	12,520
New York	10,260	13,275	16,606
North Carolina	7,076	9,675	12,874
North Dakota	6,418	9,829	12,503
Ohio	10,451	16,032	17,964
Oklahoma	6,022	9,404	11,938
Oregon	9,394	12,720	16,402
Pennsylvania	11,091	15,464	19,916
Rhode Island	11,095	14,315	19,815
South Carolina	9,096	13,145	17,641
South Dakota	6,975	9,493	12,603
Tennessee	7,658	9,956	13,759
Texas	7,614	10,973	14,585
Utah	6,598	8,745	10,768
Vermont	12,847	16,571	21,530
Virginia	8,751	12,279	18,110
Washington	8,909	12,384	16,253
West Virginia	7,290	9,992	12,799
Wisconsin	7,396	10,560	13,819
Wyoming	7,017	8,946	11,467
Puerto Rico	NA	NA	NA

NA = not available.

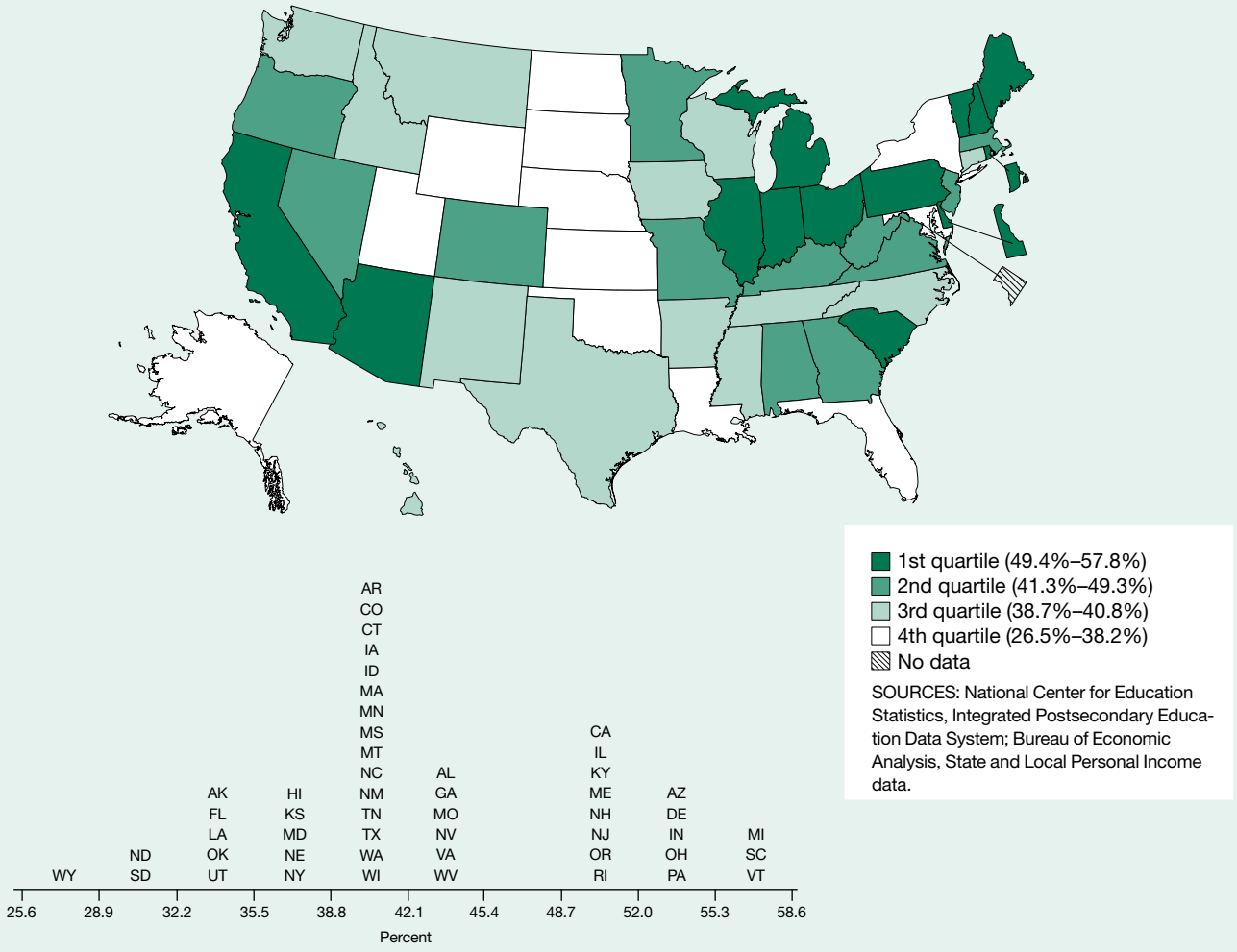
NOTES: The national average for the United States is from the *Digest of Education Statistics*. Average charges are for full-time equivalent students but are not adjusted for student residency. Average charges include tuition, fees, room, and board.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2014

Average Undergraduate Charge at Public 4-Year Institutions as a Percentage of Disposable Personal Income

Figure 8-27
Average undergraduate charge at public 4-year institutions as a percentage of disposable personal income: 2011



Findings

- In 2011, a year of undergraduate education at a state institution would have consumed, on average, 42.9% of a resident's disposable income, an increase from the 32.3% it would have consumed in 2001.
- The cost of a year of undergraduate education at a public institution exceeded 50% of the per capita disposable income for residents of 12 states in 2011.
- All states showed an increase in this indicator between 2001 and 2011.
- Residents in 26 states experienced major increases in the cost of a year of undergraduate education relative to their purchasing power (in excess of 10 percentage points of their per capita disposable income) between 2001 and 2011.

This indicator represents a broad measure of how affordable higher education at a public institution is for the average resident. It is calculated by dividing the average undergraduate charge at all public 4-year institutions in the state by the per capita disposable personal income of state residents. The average undergraduate charge includes standard in-state tuition, room, board, and required fees for a student who is a resident of the state. The year is the end date of the academic year. For example, data for 2011 represent costs for the 2010–11 academic year.

Disposable personal income is the income available to state residents for spending or saving. It is calculated as personal income minus personal current taxes paid to federal, state, and local governments. High values indicate that a year of undergraduate education consumes a high percentage of the disposable personal income of state residents. However, the data in this indicator do not include any adjustment for financial aid that a student might receive.

Table 8-27
Average undergraduate charge at public 4-year institutions as a percentage of disposable personal income, by state: 2001, 2006, and 2011

State	Average undergraduate charge ($)			Per capita disposable personal income ($)			Undergraduate charge/ disposable personal income (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	8,653	12,108	15,918	26,828	33,197	37,078	32.3	36.5	42.9
Alabama	7,349	9,625	14,416	22,353	28,054	31,854	32.9	34.3	45.3
Alaska	8,390	10,620	14,053	28,711	35,380	41,420	29.2	30.0	33.9
Arizona	7,874	11,480	17,083	23,815	30,557	32,015	33.1	37.6	53.4
Arkansas	6,797	9,192	12,580	21,291	26,627	30,819	31.9	34.5	40.8
California	9,590	13,685	18,933	28,526	36,042	38,308	33.6	38.0	49.4
Colorado	8,362	11,569	16,208	30,455	36,194	39,221	27.5	32.0	41.3
Connecticut	10,521	14,658	19,400	35,266	43,728	48,873	29.8	33.5	39.7
Delaware	10,283	14,326	19,541	27,520	33,875	36,721	37.4	42.3	53.2
District of Columbia	NA	NA	NA	38,342	52,769	65,233	NA	NA	NA
Florida	7,947	10,141	12,774	26,158	33,847	36,173	30.4	30.0	35.3
Georgia	7,463	10,062	14,019	25,438	30,144	32,430	29.3	33.4	43.2
Hawaii	8,272	9,042	15,133	25,706	33,249	39,073	32.2	27.2	38.7
Idaho	6,765	8,982	11,773	22,558	28,045	30,111	30.0	32.0	39.1
Illinois	9,532	13,976	20,054	28,564	35,081	38,797	33.4	39.8	51.7
Indiana	9,239	12,388	16,912	24,560	29,146	32,199	37.6	42.5	52.5
Iowa	7,587	12,329	14,855	24,736	30,320	37,406	30.7	40.7	39.7
Kansas	6,654	9,980	13,229	26,012	31,761	36,807	25.6	31.4	35.9
Kentucky	6,923	10,663	15,002	22,221	26,894	30,758	31.2	39.6	48.8
Louisiana	6,329	8,506	11,856	22,635	30,118	35,308	28.0	28.2	33.6
Maine	9,371	12,568	17,767	24,610	29,915	34,713	38.1	42.0	51.2
Maryland	10,834	14,793	16,963	30,640	38,686	44,404	35.4	38.2	38.2
Massachusetts	9,207	14,651	19,164	32,414	40,663	45,960	28.4	36.0	41.7
Michigan	9,825	13,693	18,333	26,080	29,830	32,651	37.7	45.9	56.1
Minnesota	8,127	12,777	16,385	28,570	34,831	39,257	28.4	36.7	41.7
Mississippi	7,195	9,461	12,051	20,699	25,681	29,514	34.8	36.8	40.8
Missouri	8,203	11,861	15,110	25,010	30,394	34,383	32.8	39.0	43.9
Montana	7,615	10,613	12,891	22,509	28,655	32,618	33.8	37.0	39.5
Nebraska	7,355	11,286	14,081	26,293	31,715	38,457	28.0	35.6	36.6
Nevada	8,247	10,865	14,172	27,199	34,314	33,536	30.3	31.7	42.3
New Hampshire	11,720	15,479	21,481	30,157	36,822	41,472	38.9	42.0	51.8
New Jersey	12,007	17,708	22,592	33,318	41,046	45,850	36.0	43.1	49.3
New Mexico	7,086	9,579	12,520	22,162	27,241	31,392	32.0	35.2	39.9
New York	10,260	13,275	16,606	29,031	37,417	43,524	35.3	35.5	38.2
North Carolina	7,076	9,675	12,874	24,715	29,553	32,505	28.6	32.7	39.6
North Dakota	6,418	9,829	12,503	23,915	29,891	42,492	26.8	32.9	29.4
Ohio	10,451	16,032	17,964	25,361	30,027	33,943	41.2	53.4	52.9
Oklahoma	6,022	9,404	11,938	23,198	29,555	34,327	26.0	31.8	34.8
Oregon	9,394	12,720	16,402	25,252	30,299	33,361	37.2	42.0	49.2
Pennsylvania	11,091	15,464	19,916	26,546	32,603	37,647	41.8	47.4	52.9
Rhode Island	11,095	14,315	19,815	26,918	33,819	39,383	41.2	42.3	50.3
South Carolina	9,096	13,145	17,641	22,722	27,646	30,528	40.0	47.5	57.8
South Dakota	6,975	9,493	12,603	25,253	31,024	41,133	27.6	30.6	30.6
Tennessee	7,658	9,956	13,759	24,845	30,026	33,954	30.8	33.2	40.5
Texas	7,614	10,973	14,585	25,867	31,844	36,631	29.4	34.5	39.8
Utah	6,598	8,745	10,768	22,576	27,468	30,405	29.2	31.8	35.4
Vermont	12,847	16,571	21,530	25,754	31,946	37,714	49.9	51.9	57.1
Virginia	8,751	12,279	18,110	28,302	35,857	40,608	30.9	34.2	44.6
Washington	8,909	12,384	16,253	28,868	35,545	39,960	30.9	34.8	40.7
West Virginia	7,290	9,992	12,799	21,093	25,747	30,369	34.6	38.8	42.1
Wisconsin	7,396	10,560	13,819	26,038	31,404	35,359	28.4	33.6	39.1
Wyoming	7,017	8,946	11,467	27,278	38,553	43,194	25.7	23.2	26.5
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available.

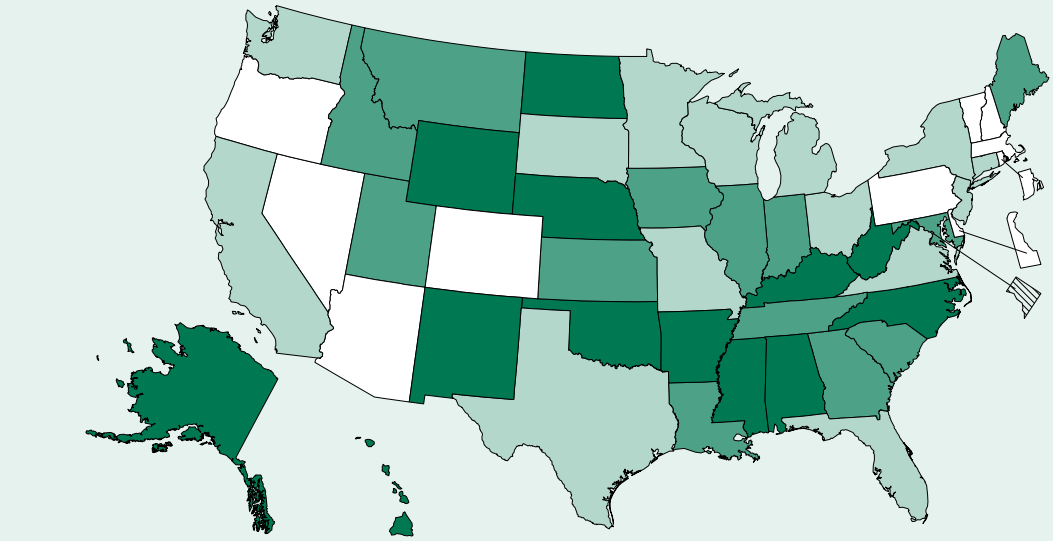
NOTES: The national average for the United States is from the *Digest of Education Statistics*. Average charges are for full-time equivalent students but are not adjusted for student residency. Average charges include tuition, fees, room, and board.

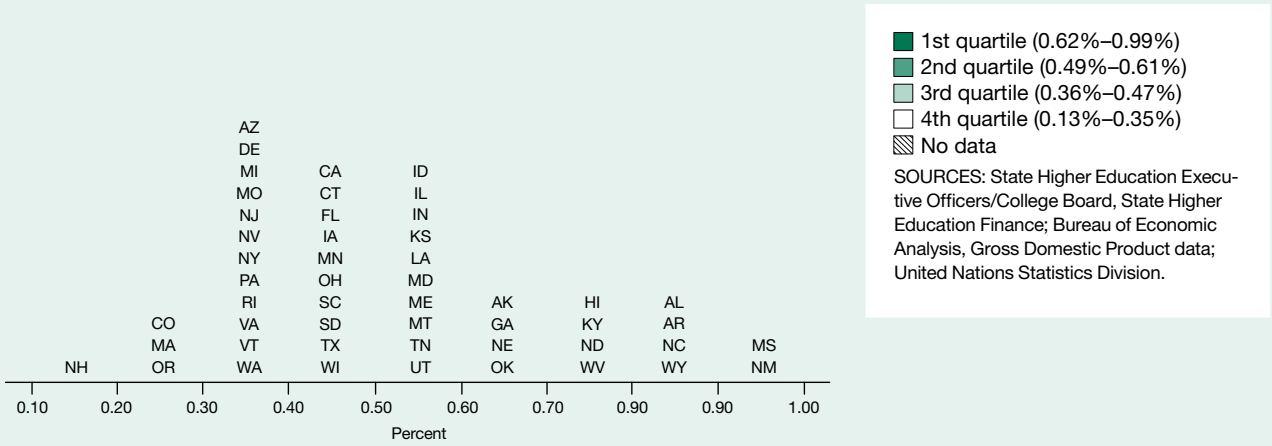
SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Bureau of Economic Analysis, State and Local Personal Income data.

Science and Engineering Indicators 2014

Appropriations of State Tax Funds for Operating Expenses of Higher Education as a Percentage of Gross Domestic Product

Figure 8-28
Appropriations of state tax funds for operating expenses of higher education as a percentage of gross domestic product: 2012





Findings

- Nationally, state appropriations for operating expenses of higher education as a share of the state's gross domestic product (GDP) decreased from 0.53% in 2004 to 0.46% in 2012.
- In 2012, the value of this indicator ranged from 0.13% to 0.99% across the states.
- Between 2004 and 2012, 38 states increased their appropriations for higher education. The states that showed the largest increase in appropriations of state tax funds for the operating expenses of higher education were North Carolina, New York, Texas, and Illinois.
- While many states reduced the percentage of their GDP that was allocated to higher education, the states of North Carolina and Alaska made significant increases between 2004 and 2012.

This indicator represents the extent of state spending for higher education operating expenses as a proportion of its GDP. A higher value on this indicator indicates that a state has made financial support of its higher education system more of a priority.

Because of decreases in state tax collections in FY 2009–11, state monies allocated to higher education decreased in many states. This decrease was offset to a degree by federal stimulus funds that were used to restore the level of state support for public higher education. The state monies used to calculate this indicator do not include federal stimulus funds for education stabilization or government funds for the modernization, renovation, or repair of higher education facilities.

Table 8-28
Appropriations of state tax funds for operating expenses of higher education as a percentage of gross domestic product, by state: 2004, 2008, and 2012

State	Appropriations of state tax funds for operating expenses of higher education ($millions)			State GDP ($millions)			Appropriations of state tax funds for operating expenses of higher education/state GDP (%)		
	2004	2008	2012	2004	2008	2012	2004	2008	2012
United States	62,375	80,698	72,220	11,774,408	14,193,121	15,566,076	0.53	0.57	0.46
Alabama	1,168	1,962	1,495	141,974	170,203	183,547	0.82	1.15	0.81
Alaska	216	299	357	34,367	49,809	51,859	0.63	0.60	0.69
Arizona	922	1,326	824	201,006	261,128	266,891	0.46	0.51	0.31
Arkansas	661	880	904	83,806	100,369	109,557	0.79	0.88	0.83
California	8,715	11,634	9,379	1,569,816	1,900,463	2,003,479	0.56	0.61	0.47
Colorado	578	747	647	201,564	252,487	274,048	0.29	0.30	0.24
Connecticut	748	1,034	950	187,545	219,449	229,317	0.40	0.47	0.41
Delaware	191	243	213	50,575	57,974	65,984	0.38	0.42	0.32
District of Columbia	NA	NA	NA	77,737	96,792	109,793	NA	NA	NA
Florida	3,285	4,449	3,631	621,417	748,117	777,164	0.53	0.59	0.47
Georgia	2,356	2,960	2,635	342,863	404,335	433,569	0.69	0.73	0.61
Hawaii	399	554	512	52,290	65,978	72,424	0.76	0.84	0.71
Idaho	340	411	334	44,069	55,143	58,243	0.77	0.75	0.57
Illinois	2,682	2,949	3,594	545,591	631,962	695,238	0.49	0.47	0.52
Indiana	1,360	1,525	1,549	231,762	260,971	298,625	0.59	0.58	0.52
Iowa	738	874	740	115,581	133,910	152,436	0.64	0.65	0.49
Kansas	686	826	740	99,733	124,330	138,953	0.69	0.66	0.53
Kentucky	1,109	1,321	1,238	131,701	153,570	173,466	0.84	0.86	0.71
Louisiana	1,245	1,708	1,237	171,461	213,970	243,264	0.73	0.80	0.51
Maine	232	271	269	44,352	49,500	53,656	0.52	0.55	0.50
Maryland	1,149	1,555	1,613	231,963	281,112	317,678	0.50	0.55	0.51
Massachusetts	915	1,347	1,158	310,341	361,716	403,823	0.29	0.37	0.29
Michigan	1,984	2,034	1,548	365,609	368,963	400,504	0.54	0.55	0.39
Minnesota	1,286	1,561	1,284	227,091	262,105	294,729	0.57	0.60	0.44
Mississippi	767	1,046	954	77,539	95,461	101,490	0.99	1.10	0.94
Missouri	905	1,022	933	208,375	241,406	258,832	0.43	0.42	0.36
Montana	151	197	202	27,831	35,802	40,422	0.54	0.55	0.50
Nebraska	509	657	650	69,572	85,181	99,557	0.73	0.77	0.65
Nevada	480	620	473	100,663	131,976	133,584	0.48	0.47	0.35
New Hampshire	112	133	83	51,335	58,473	64,697	0.22	0.23	0.13
New Jersey	1,741	2,045	1,998	410,790	482,099	508,003	0.42	0.42	0.39
New Mexico	710	1,016	799	64,196	77,117	80,600	1.11	1.32	0.99
New York	3,313	4,853	4,719	891,462	1,079,719	1,205,930	0.37	0.45	0.39
North Carolina	2,475	3,837	3,915	327,343	407,360	455,973	0.76	0.94	0.86
North Dakota	200	254	344	23,333	31,769	46,016	0.86	0.80	0.75
Ohio	2,072	2,288	2,014	428,172	465,527	509,393	0.48	0.49	0.40
Oklahoma	766	1,099	998	112,298	153,223	160,953	0.68	0.72	0.62
Oregon	589	726	566	137,290	174,990	198,702	0.43	0.41	0.28
Pennsylvania	1,947	2,193	1,801	461,721	544,712	600,897	0.42	0.40	0.30
Rhode Island	184	191	161	42,925	47,231	50,956	0.43	0.40	0.32
South Carolina	926	1,211	859	134,793	159,203	176,217	0.69	0.76	0.49
South Dakota	154	199	181	30,569	37,266	42,464	0.50	0.53	0.43
Tennessee	1,090	1,640	1,415	213,537	247,961	277,036	0.51	0.66	0.51
Texas	5,190	6,348	6,464	903,679	1,209,267	1,397,369	0.57	0.52	0.46
Utah	614	812	729	82,463	113,789	130,486	0.74	0.71	0.56
Vermont	77	91	90	21,876	24,445	27,296	0.35	0.37	0.33
Virginia	1,346	1,886	1,624	329,557	397,894	445,876	0.41	0.47	0.36
Washington	1,361	1,768	1,362	257,979	333,720	375,730	0.53	0.53	0.36
West Virginia	405	562	543	48,691	58,227	69,380	0.83	0.97	0.78
Wisconsin	1,125	1,243	1,154	208,904	236,094	261,548	0.54	0.53	0.44
Wyoming	201	291	338	23,301	38,853	38,422	0.86	0.75	0.88
Puerto Rico	NA	NA	NA	82,809	95,708	NA	NA	NA	NA

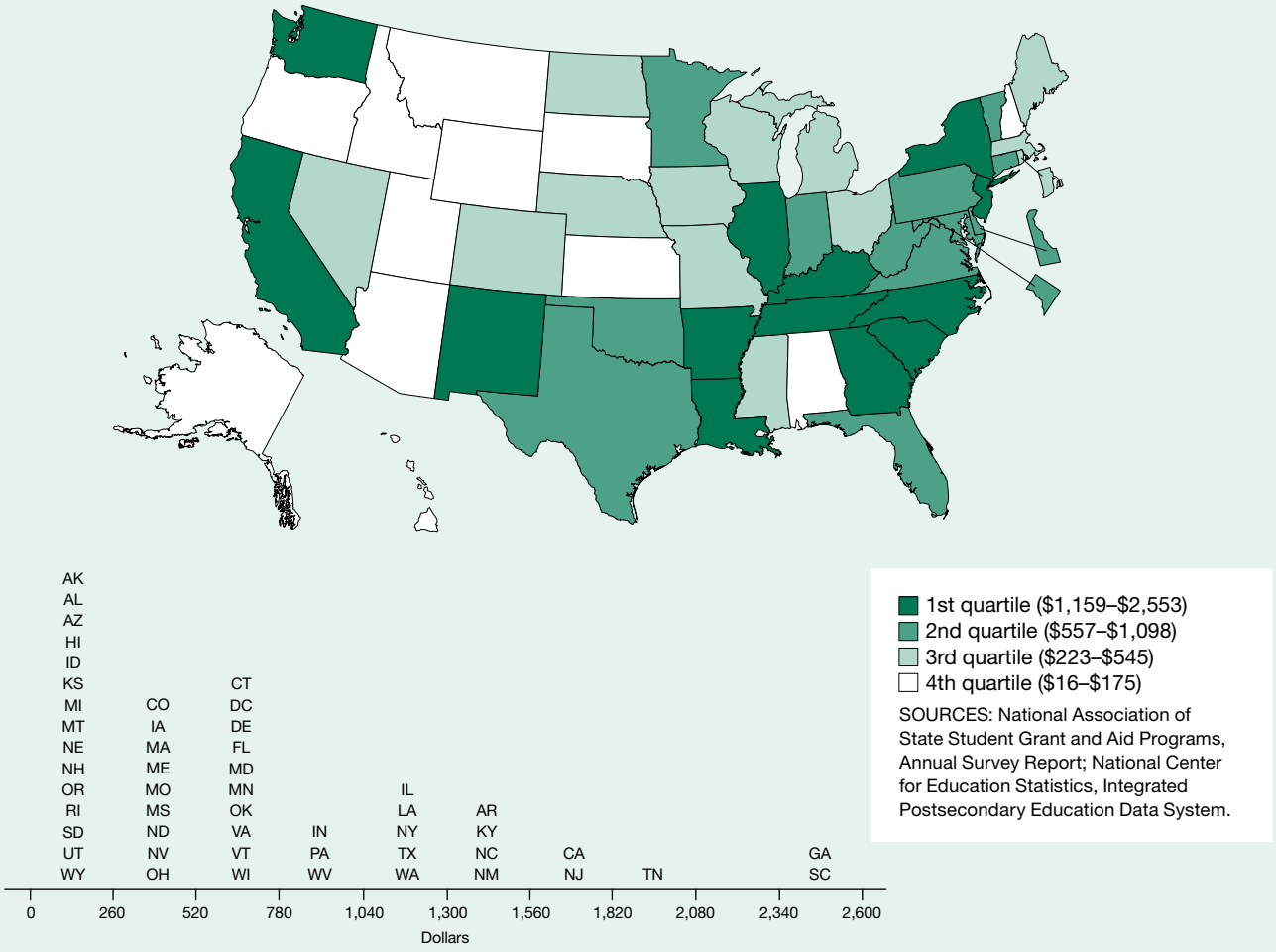
NA = not available.

GDP = gross domestic product.

SOURCES: State Higher Education Executive Officers College Board, State Higher Education Finance (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

State Expenditures on Student Aid per Full-Time Undergraduate Student

Figure 8-29
State expenditures on student aid per full-time undergraduate student: 2011



Findings

- The total amount of state financial aid from grants provided to undergraduates doubled nationwide, increasing from $4.6 billion in 2001 to $9.1 billion in 2011.
- On a per-student basis, state funding for student grants across the United States increased from $613 per undergraduate in 2001 to $858 per undergraduate in 2011.
- There are major differences in the amount of state aid provided to undergraduate students in different states. State values for this indicator ranged from $16 to $2,553 in 2011. Seven jurisdictions averaged less than $100 per undergraduate student, while 14 provided more than $1,000 per student.
- Eleven states reported spending less per student for student financial aid in 2011 than in 2001, even though the cost of undergraduate education rose rapidly during this period.

The cost of an undergraduate education can be reduced with financial assistance from the state or federal government or from an academic institution. This indicator is calculated by dividing the amount of financial support from state grants by the number of full-time undergraduate students who attend both public and private institutions in the state. A high value is one indicator of state efforts to provide access to higher education at a time of escalating undergraduate costs. The actual distribution of state grants to individual students may be affected by the percentage of undergraduates who are state residents.

This indicator should be viewed relative to the tuition charged to undergraduates in a state, as some states have chosen to subsidize tuition for all students at public institutions rather than provide grants. Other differences between states, such as the amount of scholarship aid available from other sources, the percentage of students attending out-of-state institutions, and their eligibility for state funding, mean that readers should exercise caution when making comparisons between states and examining changes over time.

Total state grant expenditures for financial aid include need-based and non–need-based grants. State assistance through subsidized or unsubsidized loans and awards to students at the graduate and first professional degree levels is not included. The year is the end date of the academic year. For example, data for 2011 represent costs for the 2010–11 academic year.

Table 8-29
State expenditures on student aid per full-time undergraduate student, by state: 2001, 2006, and 2011

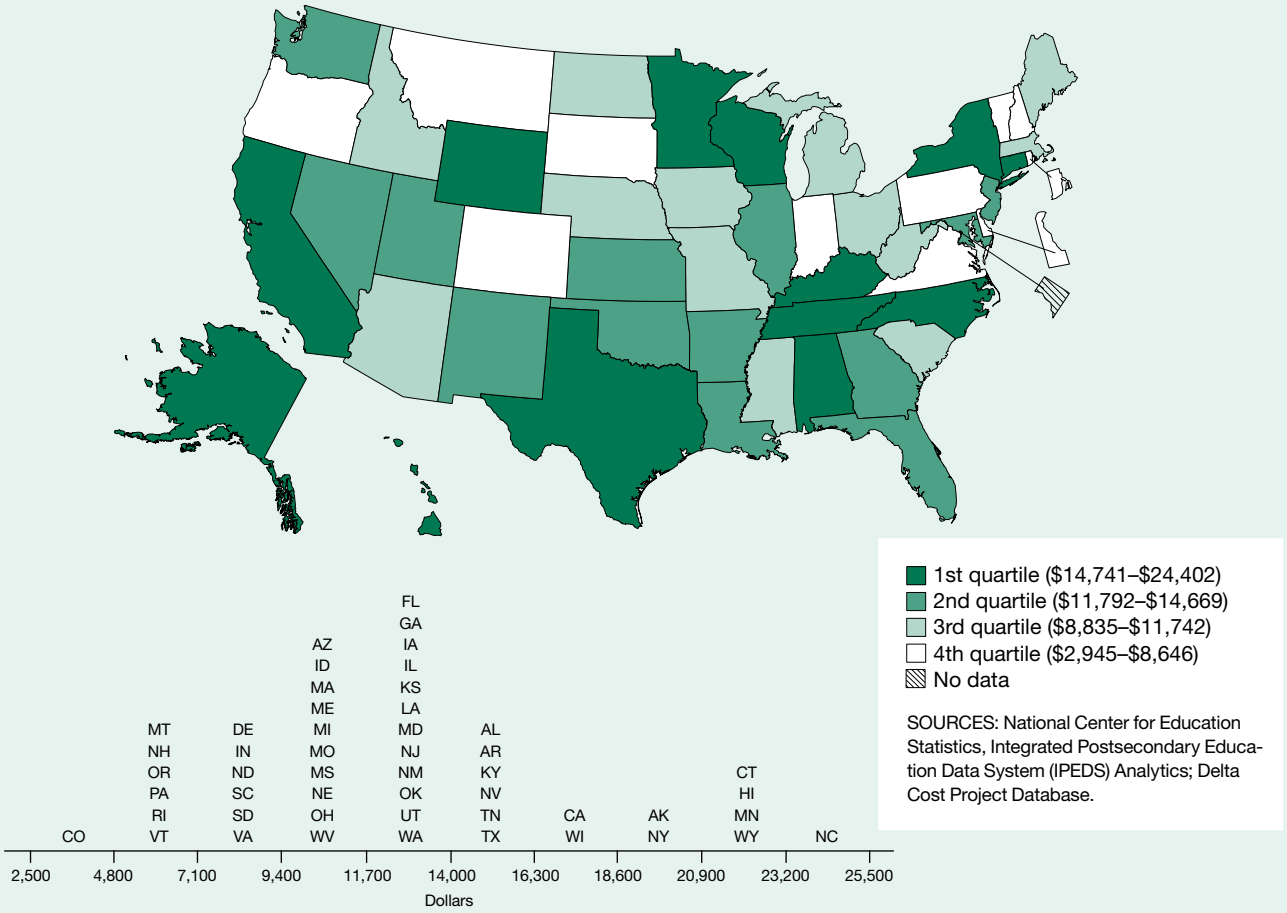
State	State expenditures on student aid ($thousands)			Undergraduate enrollment at 4-year institutions			State expenditures on student aid/ undergraduate enrollment at 4-year institutions ($)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	4,565,162	6,789,273	9,052,204	7,450,520	8,653,820	10,547,386	613	785	858
Alabama	7,413	7,626	19,193	127,475	143,386	176,759	58	53	109
Alaska	NA	502	1,514	24,939	26,382	30,749	NA	19	49
Arizona	2,990	2,798	19,932	124,389	262,642	433,785	24	11	46
Arkansas	39,151	28,364	146,496	73,369	82,437	97,013	534	344	1,510
California	461,914	757,809	1,269,917	636,105	714,347	809,090	726	1,061	1,570
Colorado	54,151	60,737	70,970	138,846	168,860	196,643	390	360	361
Connecticut	44,763	39,366	63,611	87,335	93,832	106,932	513	420	595
Delaware	1,432	10,240	19,435	28,125	28,268	31,640	51	362	614
District of Columbia	781	33,856	34,713	52,262	65,318	48,459	15	518	716
Florida	302,633	410,758	577,736	310,145	504,557	884,228	976	814	653
Georgia	310,995	461,615	768,449	198,254	236,664	322,458	1,569	1,951	2,383
Hawaii	535	410	3,339	27,637	33,963	38,071	19	12	88
Idaho	1,138	5,424	5,064	50,969	57,505	65,074	22	94	78
Illinois	382,566	380,349	407,825	281,619	330,331	351,725	1,358	1,151	1,159
Indiana	111,618	182,281	251,254	222,510	243,669	288,387	502	748	871
Iowa	53,100	53,815	57,848	99,468	127,886	221,384	534	421	261
Kansas	12,819	15,168	17,590	86,126	92,962	100,750	149	163	175
Kentucky	66,931	172,866	193,206	112,935	127,630	146,072	593	1,354	1,323
Louisiana	91,166	116,432	178,753	146,230	141,348	144,475	623	824	1,237
Maine	11,961	13,387	15,230	43,082	44,270	43,972	278	302	346
Maryland	50,416	76,362	90,535	122,430	135,317	155,690	412	564	582
Massachusetts	116,892	80,093	87,823	235,697	246,799	268,140	496	325	328
Michigan	102,164	197,674	85,612	295,912	320,345	341,985	345	617	250
Minnesota	120,465	131,010	130,073	152,381	170,616	203,079	791	768	641
Mississippi	20,163	22,285	22,198	62,595	65,791	75,152	322	339	295
Missouri	43,882	42,068	90,774	182,463	212,159	254,357	240	198	357
Montana	3,195	3,760	5,877	33,462	33,677	39,110	95	112	150
Nebraska	5,975	9,918	15,671	59,388	63,983	70,231	101	155	223
Nevada	13,449	39,671	47,838	34,274	81,180	93,013	392	489	514
New Hampshire	1,497	3,753	2,967	42,534	44,860	48,794	35	84	61
New Jersey	197,619	256,047	333,404	161,329	171,282	201,059	1,225	1,495	1,658
New Mexico	38,736	61,780	89,254	43,285	50,546	59,125	895	1,222	1,510
New York	659,394	895,129	896,266	581,671	624,730	712,725	1,134	1,433	1,258
North Carolina	121,153	192,018	378,366	196,748	230,576	259,914	616	833	1,456
North Dakota	1,152	1,864	12,198	29,951	34,017	41,423	38	55	294
Ohio	173,868	221,411	109,731	309,285	337,332	412,936	562	656	266
Oklahoma	29,035	58,216	92,122	102,808	114,011	128,649	282	511	716
Oregon	19,711	29,429	19,287	80,385	91,031	112,271	245	323	172
Pennsylvania	325,234	403,957	368,459	386,220	423,915	457,606	842	953	805
Rhode Island	6,164	12,883	13,170	50,452	54,189	56,056	122	238	235
South Carolina	98,095	255,744	325,348	95,652	105,408	127,415	1,026	2,426	2,553
South Dakota	NA	3,367	4,418	33,125	37,090	42,527	NA	91	104
Tennessee	30,156	173,907	353,309	142,697	162,843	192,406	211	1,068	1,836
Texas	108,628	366,873	684,905	449,177	538,069	623,983	242	682	1,098
Utah	2,511	7,409	9,674	128,285	140,967	190,067	20	53	51
Vermont	14,414	17,560	17,328	26,395	28,648	31,116	546	613	557
Virginia	115,242	132,720	188,585	180,228	218,857	285,448	639	606	661
Washington	98,533	173,835	234,238	110,310	128,585	183,650	893	1,352	1,275
West Virginia	18,217	70,981	100,916	69,795	66,302	111,857	261	1,071	902
Wisconsin	71,145	93,583	119,616	170,859	184,922	219,649	416	506	545
Wyoming	NA	163	167	8,907	9,516	10,287	NA	17	16
Puerto Rico	40,231	33,840	53,318	156,795	165,366	181,489	257	205	294

NA = not available.

SOURCES: National Association of State Student Grant and Aid Programs, Annual Survey Report (various years); National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

State Funding for Public Research Universities per Full-Time Equivalent Student

Figure 8-30
State funding for major public research universities per full-time equivalent student: 2010



Findings

- Across the nation, state funding for public research universities and their branch campuses increased from nearly $25 billion in 2000 to nearly $37 billion in 2010. Only two states did not increase their funding for public research universities and their branch campuses during this period.
- When adjusted for inflation, total state expenditures for public research universities increased by 18% between 2000 and 2010, while FTE enrollment increased by over 22%.
- Between 2000 and 2010, per-student state support to public research universities dropped by an average of 3% in inflation-adjusted dollars.

Public research universities rely on state support for a substantial share of their operating revenues, most of which support their education function. The amount of funding provided per full-time equivalent (FTE) student is an indicator of states' investment in the education of their students. Eventually, changes in these funds affect the institutions' financial health and the quality of education they provide.

Data for this indicator cover 101 public research universities with broad educational missions (excluding freestanding medical and engineering schools when possible). These institutions are either the leading recipient of academic R&D funding in their state or among the nation's top 100 recipients of academic R&D funding to public universities in 2008. State funds include state and local operating grants and contracts as well as state appropriations. Enrollment includes total FTE enrollment measured in the fall of each academic year.

Data were drawn from the National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS) Analytics: Delta Cost Project Database: 2000–2010. To maintain comparability over time, the database groups institutions that included data for branch campuses in their reporting to IPEDS in 1 or more years. Specifically, for 34 institutions in the database, data cover branch campuses with little or no research activity as well as main campuses for which research is central to the university's mission. Comparison between states and analysis of funding trends at the nation's most research-intensive institutions should take this into account.

State funds are one of many sources of public university revenue. This indicator does not include changes in these other revenue sources.

Table 8-30
State funding for public research universities per full-time equivalent student, by state: 2000, 2005, and 2010

State	State funding for major public research universities ($thousands)			FTE enrolled students			State funding for public research universities/ FTE enrolled student ($)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	24,865,422	31,273,013	36,859,219	2,353,173	2,622,287	2,877,469	10,567	11,926	12,810
Alabama	404,754	531,561	620,604	37,325	39,842	42,101	10,844	13,342	14,741
Alaska	185,564	286,687	400,048	16,096	18,722	19,614	11,529	15,313	20,396
Arizona	621,501	758,956	918,021	66,712	75,172	95,139	9,316	10,096	9,649
Arkansas	176,714	200,887	251,151	13,196	14,605	17,121	13,391	13,755	14,669
California	2,618,451	3,337,918	4,082,603	193,944	221,004	244,519	13,501	15,103	16,696
Colorado	218,806	223,086	161,033	47,525	52,820	54,687	4,604	4,224	2,945
Connecticut	380,456	445,039	608,193	19,219	24,158	26,294	19,796	18,422	23,130
Delaware	109,653	131,880	148,308	18,722	19,350	19,506	5,857	6,816	7,603
District of Columbia	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida	1,455,743	2,298,758	2,616,966	140,621	172,048	188,691	10,352	13,361	13,869
Georgia	920,671	986,136	1,055,577	58,504	67,614	76,588	15,737	14,585	13,783
Hawaii	183,164	296,004	359,025	14,398	17,103	16,899	12,721	17,307	21,245
Idaho	108,404	144,959	122,931	9,585	11,014	10,513	11,310	13,161	11,693
Illinois	927,641	1,001,944	1,122,660	79,863	82,597	86,474	11,615	12,131	12,983
Indiana	518,069	630,767	669,915	69,150	72,063	77,482	7,492	8,753	8,646
Iowa	563,423	591,598	611,004	48,712	49,286	52,037	11,566	12,003	11,742
Kansas	319,712	367,085	563,987	40,721	43,759	46,904	7,851	8,389	12,024
Kentucky	499,773	615,607	653,892	35,765	39,764	42,144	13,974	15,482	15,516
Louisiana	278,804	342,635	348,428	28,644	30,035	26,914	9,733	11,408	12,946
Maine	192,289	243,768	261,284	24,276	27,369	27,088	7,921	8,907	9,646
Maryland	433,340	588,915	593,753	37,442	41,522	44,629	11,574	14,183	13,304
Massachusetts	519,962	614,223	632,434	46,182	46,238	54,469	11,259	13,284	11,611
Michigan	1,002,738	1,253,549	1,241,363	94,551	102,013	107,487	10,605	12,288	11,549
Minnesota	592,159	783,777	1,001,761	35,330	41,521	43,254	16,761	18,877	23,160
Mississippi	260,204	267,310	294,249	24,684	27,367	31,205	10,541	9,768	9,430
Missouri	470,857	530,539	632,596	43,157	49,720	56,507	10,910	10,671	11,195
Montana	55,167	64,978	73,074	10,467	10,533	10,617	5,271	6,169	6,883
Nebraska	256,913	278,534	350,481	29,715	30,523	33,970	8,646	9,125	10,317
Nevada	135,194	198,948	197,496	9,677	13,039	13,946	13,971	15,258	14,161
New Hampshire	82,863	115,288	149,608	20,933	23,263	26,275	3,958	4,956	5,694
New Jersey	570,620	689,066	731,360	47,407	49,603	55,272	12,037	13,892	13,232
New Mexico	403,774	519,765	651,942	40,718	45,155	51,884	9,916	11,511	12,565
New York	725,971	1,063,088	1,547,586	63,096	69,203	77,091	11,506	15,362	20,075
North Carolina	794,917	990,950	1,350,270	45,492	49,458	55,334	17,474	20,036	24,402
North Dakota	136,245	178,899	258,148	21,900	26,713	27,976	6,221	6,697	9,227
Ohio	779,803	972,021	1,143,700	91,254	98,065	110,237	8,545	9,912	10,375
Oklahoma	346,788	390,760	506,624	37,533	43,948	41,226	9,240	8,891	12,289
Oregon	220,361	235,773	243,593	30,644	36,497	40,774	7,191	6,460	5,974
Pennsylvania	692,819	857,409	952,440	117,563	126,593	139,967	5,893	6,773	6,805
Rhode Island	81,968	95,139	71,880	11,806	12,618	14,566	6,943	7,540	4,935
South Carolina	376,372	389,544	383,147	35,248	38,235	43,365	10,678	10,188	8,835
South Dakota	48,496	64,110	78,464	7,252	9,163	10,367	6,687	6,997	7,569
Tennessee	444,873	794,529	706,906	37,970	38,289	43,905	11,716	20,751	16,101
Texas	2,293,537	2,781,144	3,914,463	190,114	225,357	246,847	12,064	12,341	15,858
Utah	321,948	476,882	541,400	35,839	41,437	44,037	8,983	11,509	12,294
Vermont	35,626	77,270	76,552	8,922	9,745	12,172	3,993	7,929	6,289
Virginia	815,759	866,207	933,792	94,170	104,625	120,454	8,663	8,279	7,752
Washington	565,588	726,238	822,927	52,296	58,997	69,789	10,815	12,310	11,792
West Virginia	219,310	239,083	281,888	22,640	26,121	29,613	9,687	9,153	9,519
Wisconsin	396,056	573,924	678,788	36,825	37,769	38,822	10,755	15,196	17,485
Wyoming	101,602	159,876	240,903	9,368	10,632	10,697	10,846	15,037	22,521
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

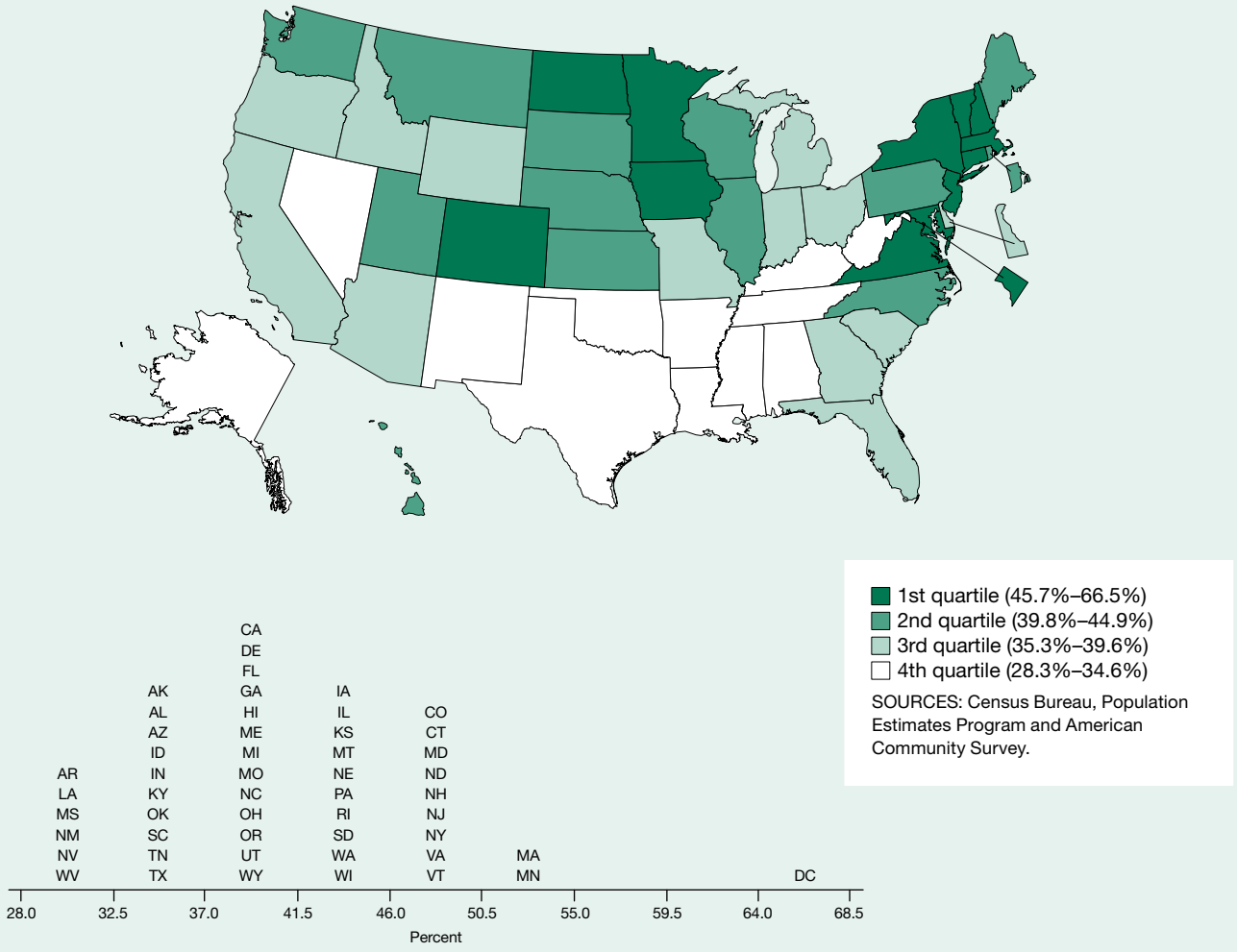
NA = not available.

FTE = full-time equivalent.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Analytics; Delta Cost Project Database: 2000–2010.

Postsecondary Degree Holders among Individuals 25–44 Years Old

Figure 8-31
Postsecondary degree holders among individuals 25–44 years old: 2011



Findings

- The early- to midcareer population with a postsecondary degree was 40.4% nationwide in 2011, an increase from 35.3% in 2001.
- In 2011, the percentage of this cohort with a postsecondary degree varied greatly among states, ranging from 28.3% to 53.5%.
- Between 2001 and 2011, all states, except Rhode Island and Kansas, showed an increase in the percentage of their early- to midcareer population with a postsecondary degree, ranging from approximately 2 to 9 percentage points over the time period.
- States with the lowest cost of living tended to rank lowest on this indicator.

This indicator represents the percentage of the early- to midcareer population that has earned a postsecondary degree. That degree may be an associate's, bachelor's, master's, or doctoral degree. The indicator represents where postsecondary degree holders live rather than where they were educated. The age cohort of 25–44 years represents the group most likely to have completed a postsecondary program.

Estimates of educational attainment and of the population of individuals aged 25–44 years old are provided by the U.S. Census Bureau. Small differences in the value of this indicator between states and across time generally are not meaningful.

Table 8-31
Postsecondary degree holders among individuals 25–44 years old, by state: 2001, 2006, and 2011

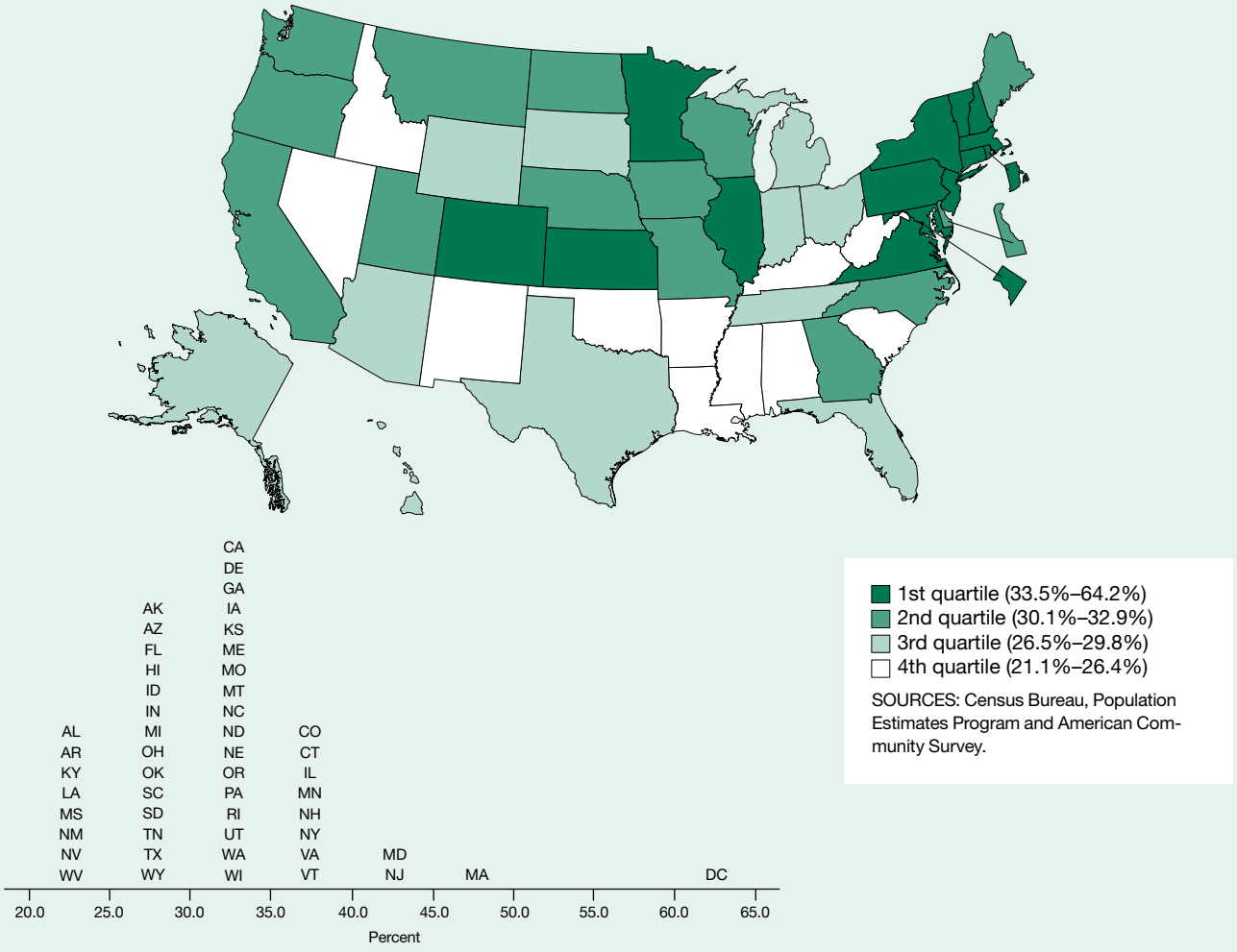
State	Postsecondary degree holders 25–44 years old			Individuals 25–44 years old			Postsecondary degree holders/ individuals 25–44 years old (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	29,834,331	31,653,483	33,261,456	84,523,274	82,638,980	82,432,298	35.3	38.3	40.4
Alabama	368,495	382,124	410,753	1,266,952	1,233,767	1,223,076	29.1	31.0	33.6
Alaska	59,787	63,331	68,881	198,158	188,470	198,914	30.2	33.6	34.6
Arizona	460,938	586,052	595,767	1,526,458	1,664,223	1,688,279	30.2	35.2	35.3
Arkansas	185,372	202,594	225,881	743,315	747,504	745,421	24.9	27.1	30.3
California	3,618,304	3,942,407	4,095,176	10,750,718	10,578,738	10,565,342	33.7	37.3	38.8
Colorado	591,620	616,562	686,256	1,412,620	1,380,451	1,448,033	41.9	44.7	47.4
Connecticut	445,850	425,024	426,066	1,017,477	944,217	898,232	43.8	45.0	47.4
Delaware	81,009	92,375	89,768	233,890	232,516	227,578	34.6	39.7	39.4
District of Columbia	94,690	110,819	143,688	190,251	187,870	216,233	49.8	59.0	66.5
Florida	1,564,716	1,766,287	1,807,574	4,591,807	4,804,621	4,758,046	34.1	36.8	38.0
Georgia	874,366	993,730	1,032,857	2,668,017	2,727,666	2,741,412	32.8	36.4	37.7
Hawaii	129,438	149,841	151,199	357,271	358,311	366,855	36.2	41.8	41.2
Idaho	102,492	133,521	145,300	362,154	383,267	402,781	28.3	34.8	36.1
Illinois	1,488,602	1,515,472	1,567,172	3,756,180	3,572,420	3,491,104	39.6	42.4	44.9
Indiana	561,655	582,550	614,145	1,769,492	1,705,535	1,665,758	31.7	34.2	36.9
Iowa	299,357	314,362	342,653	793,288	747,836	749,530	37.7	42.0	45.7
Kansas	304,258	288,709	308,235	755,887	713,707	727,160	40.3	40.5	42.4
Kentucky	321,357	367,007	377,645	1,194,291	1,162,541	1,138,883	26.9	31.6	33.2
Louisiana	318,160	316,725	365,789	1,268,704	1,152,042	1,203,069	25.1	27.5	30.4
Maine	121,914	126,998	127,825	364,111	337,692	312,002	33.5	37.6	41.0
Maryland	690,575	727,195	732,628	1,652,198	1,598,650	1,565,884	41.8	45.5	46.8
Massachusetts	974,665	925,921	929,155	1,967,815	1,795,786	1,738,118	49.5	51.6	53.5
Michigan	1,030,376	1,001,040	940,460	2,905,689	2,658,755	2,414,603	35.5	37.7	38.9
Minnesota	665,624	674,897	710,688	1,486,814	1,412,852	1,400,438	44.8	47.8	50.7
Mississippi	218,184	230,625	241,695	794,888	767,066	760,122	27.4	30.1	31.8
Missouri	518,314	560,544	602,937	1,606,777	1,547,126	1,523,458	32.3	36.2	39.6
Montana	79,849	90,992	99,689	238,899	228,548	237,269	33.4	39.8	42.0
Nebraska	194,601	198,392	207,888	478,968	458,133	469,737	40.6	43.3	44.3
Nevada	152,489	208,988	216,971	648,880	747,896	766,544	23.5	27.9	28.3
New Hampshire	164,905	161,622	151,036	378,536	348,846	319,411	43.6	46.3	47.3
New Jersey	1,137,167	1,115,872	1,105,760	2,603,347	2,446,589	2,338,637	43.7	45.6	47.3
New Mexico	141,690	160,603	166,658	506,151	507,378	519,946	28.0	31.7	32.1
New York	2,335,677	2,450,307	2,534,197	5,775,563	5,417,603	5,280,570	40.4	45.2	48.0
North Carolina	826,717	921,080	1,024,597	2,504,293	2,518,651	2,577,307	33.0	36.6	39.8
North Dakota	73,317	74,021	82,796	168,631	156,114	170,010	43.5	47.4	48.7
Ohio	1,104,034	1,085,140	1,110,323	3,259,384	3,037,836	2,873,075	33.9	35.7	38.6
Oklahoma	264,301	290,732	329,554	960,435	938,630	975,445	27.5	31.0	33.8
Oregon	337,122	377,058	404,801	992,783	994,743	1,031,267	34.0	37.9	39.3
Pennsylvania	1,262,106	1,282,537	1,335,850	3,435,158	3,224,924	3,123,097	36.7	39.8	42.8
Rhode Island	126,318	124,009	113,495	306,912	284,670	261,020	41.2	43.6	43.5
South Carolina	380,304	383,505	424,313	1,175,787	1,179,555	1,193,581	32.3	32.5	35.5
South Dakota	78,120	81,430	85,994	202,454	193,284	201,235	38.6	42.1	42.7
Tennessee	495,231	524,652	574,932	1,699,828	1,690,961	1,678,144	29.1	31.0	34.3
Texas	1,979,704	2,183,005	2,486,642	6,529,822	6,742,164	7,180,834	30.3	32.4	34.6
Utah	222,744	278,685	323,281	633,099	701,224	793,074	35.2	39.7	40.8
Vermont	70,565	68,160	70,427	172,405	155,997	146,497	40.9	43.7	48.1
Virginia	892,862	949,488	1,049,674	2,227,441	2,190,642	2,215,775	40.1	43.3	47.4
Washington	704,284	771,750	813,490	1,805,606	1,791,998	1,868,055	39.0	43.1	43.5
West Virginia	110,362	130,214	143,431	487,860	468,119	455,269	22.6	27.8	31.5
Wisconsin	568,689	599,292	610,184	1,561,327	1,479,447	1,440,314	36.4	40.5	42.4
Wyoming	41,055	45,237	55,280	134,483	131,399	145,854	30.5	34.4	37.9
Puerto Rico	NA	411,191	390,538	1,055,380	1,080,801	955,369	NA	38.0	40.9

NA = not available.

SOURCES: Census Bureau, 2000 and 2010 Decennial Censuses, Population Estimates Program (various years), and American Community Survey (various years).

Bachelor's Degree Holders among Individuals 25–44 Years Old

Figure 8-32
Bachelor's degree holders among individuals 25–44 years old: 2011



Findings

- The early- to midcareer population with at least a bachelor's degree was 31.7% nationwide in 2011, an increase from 27.4% in 2001.
- All states, except South Dakota and New Mexico, showed an increase in the percentage of their early-career population with at least a bachelor's degree between 2001 and 2011.
- In 2011, the percentage of the early-career population with at least a bachelor's degree varied among states, ranging from 21.1 % to 45.8%. The highest percentages tended to be found in the New England and Middle Atlantic states.
- States with the lowest cost of living tended to rank lowest on this indicator.
- The difference between Experimental Program to Stimulate Competitive Research (EPSCoR) and non-EPSCoR states, as a group, remained relatively unchanged and may have increased slightly between 2001 and 2011.

This indicator represents the percentage of the early- to midcareer population that has earned at least a 4-year undergraduate degree. The indicator represents where college degree holders live rather than where they were educated. The age cohort of 25–44 years represents a group of individuals who are potential long-term participants in a state's workforce.

Estimates of educational attainment are developed by the U.S. Census Bureau. Small differences in the value of this indicator between states and across time generally are not meaningful.

Table 8-32
Bachelor's degree holders among individuals 25–44 years old, by state: 2001, 2006, and 2011

State	Bachelor's degree holders 25–44 years old			Individuals 25–44 years old			Bachelor's degree holders/individuals 25–44 years old (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
EPSCoR states	2,881,370	3,071,085	3,318,921	12,874,120	12,561,027	12,630,814	22.0	24.0	26.0
Non-EPSCoR states	20,034,473	21,178,682	22,506,261	70,933,001	69,375,658	69,048,386	28.0	31.0	33.0
Average EPSCoR state value	na	na	na	na	na	na	23.6	26.2	28.1
Average non-EPSCoR state value	na	na	na	na	na	na	28.7	31.1	33.2
United States	23,146,638	24,511,980	26,126,620	84,523,274	82,638,980	82,432,298	27.4	29.7	31.7
Alabama	260,871	279,106	302,531	1,266,952	1,233,767	1,223,076	20.6	22.6	24.7
Alaska	41,179	49,715	54,019	198,158	188,470	198,914	20.8	26.4	27.2
Arizona	345,585	439,549	447,271	1,526,458	1,664,223	1,688,279	22.6	26.4	26.5
Arkansas	140,169	154,707	171,718	743,315	747,504	745,421	18.9	20.7	23.0
California	2,902,253	3,139,598	3,325,565	10,750,718	10,578,738	10,565,342	27.0	29.7	31.5
Colorado	479,814	502,928	559,124	1,412,620	1,380,451	1,448,033	34.0	36.4	38.6
Connecticut	364,317	353,075	357,969	1,017,477	944,217	898,232	35.8	37.4	39.9
Delaware	62,714	73,850	73,414	233,890	232,516	227,578	26.8	31.8	32.3
District of Columbia	90,167	104,724	138,826	190,251	187,870	216,233	47.4	55.7	64.2
Florida	1,116,118	1,261,961	1,291,828	4,591,807	4,804,621	4,758,046	24.3	26.3	27.2
Georgia	711,728	788,910	829,700	2,668,017	2,727,666	2,741,412	26.7	28.9	30.3
Hawaii	91,816	108,311	106,724	357,271	358,311	366,855	25.7	30.2	29.1
Idaho	74,079	94,112	106,168	362,154	383,267	402,781	20.5	24.6	26.4
Illinois	1,188,735	1,207,920	1,280,116	3,756,180	3,572,420	3,491,104	31.6	33.8	36.7
Indiana	414,582	421,398	448,594	1,769,492	1,705,535	1,665,758	23.4	24.7	26.9
Iowa	210,690	219,911	238,650	793,288	747,836	749,530	26.6	29.4	31.8
Kansas	234,772	228,389	243,650	755,887	713,707	727,160	31.1	32.0	33.5
Kentucky	242,002	265,168	279,374	1,194,291	1,162,541	1,138,883	20.3	22.8	24.5
Louisiana	258,592	250,100	283,642	1,268,704	1,152,042	1,203,069	20.4	21.7	23.6
Maine	85,043	90,374	96,292	364,111	337,692	312,002	23.4	26.8	30.9
Maryland	580,246	605,876	627,067	1,652,198	1,598,650	1,565,884	35.1	37.9	40.0
Massachusetts	797,799	775,630	795,926	1,967,815	1,795,786	1,738,118	40.5	43.2	45.8
Michigan	765,478	759,116	711,953	2,905,689	2,658,755	2,414,603	26.3	28.6	29.5
Minnesota	500,619	500,908	535,146	1,486,814	1,412,852	1,400,438	33.7	35.5	38.2
Mississippi	154,507	159,018	162,731	794,888	767,066	760,122	19.4	20.7	21.4
Missouri	421,368	436,851	466,569	1,606,777	1,547,126	1,523,458	26.2	28.2	30.6
Montana	60,140	68,280	76,273	238,899	228,548	237,269	25.2	29.9	32.1
Nebraska	138,097	145,722	153,063	478,968	458,133	469,737	28.8	31.8	32.6
Nevada	112,005	151,981	161,563	648,880	747,896	766,544	17.3	20.3	21.1
New Hampshire	119,801	121,670	118,254	378,536	348,846	319,411	31.6	34.9	37.0
New Jersey	965,627	940,691	945,454	2,603,347	2,446,589	2,338,637	37.1	38.4	40.4
New Mexico	107,707	116,419	119,738	506,151	507,378	519,946	21.3	22.9	23.0
New York	1,807,717	1,934,138	2,066,561	5,775,563	5,417,603	5,280,570	31.3	35.7	39.1
North Carolina	620,220	689,731	776,393	2,504,293	2,518,651	2,577,307	24.8	27.4	30.1
North Dakota	48,812	49,178	55,888	168,631	156,114	170,010	28.9	31.5	32.9
Ohio	829,739	820,656	840,370	3,259,384	3,037,836	2,873,075	25.5	27.0	29.2
Oklahoma	203,189	217,214	249,805	960,435	938,630	975,445	21.2	23.1	25.6
Oregon	256,959	291,514	317,301	992,783	994,743	1,031,267	25.9	29.3	30.8
Pennsylvania	966,550	981,799	1,045,715	3,435,158	3,224,924	3,123,097	28.1	30.4	33.5
Rhode Island	92,810	98,999	91,168	306,912	284,670	261,020	30.2	34.8	34.9
South Carolina	274,797	276,216	315,050	1,175,787	1,179,555	1,193,581	23.4	23.4	26.4
South Dakota	56,014	56,968	59,989	202,454	193,284	201,235	27.7	29.5	29.8
Tennessee	390,824	406,110	455,453	1,699,828	1,690,961	1,678,144	23.0	24.0	27.1
Texas	1,562,573	1,710,381	1,972,064	6,529,822	6,742,164	7,180,834	23.9	25.4	27.5
Utah	156,274	201,175	238,953	633,099	701,224	793,074	24.7	28.7	30.1
Vermont	53,430	51,825	56,930	172,405	155,997	146,497	31.0	33.2	38.9
Virginia	739,779	777,630	878,899	2,227,441	2,190,642	2,215,775	33.2	35.5	39.7
Washington	534,153	578,583	610,787	1,805,606	1,791,998	1,868,055	29.6	32.3	32.7
West Virginia	78,782	91,847	104,925	487,860	468,119	455,269	16.1	19.6	23.0
Wisconsin	404,726	432,643	442,833	1,561,327	1,479,447	1,440,314	25.9	29.2	30.7
Wyoming	30,670	29,405	38,624	134,483	131,399	145,854	22.8	22.4	26.5
Puerto Rico	NA	279,953	278,782	1,055,380	1,080,801	955,369	NA	25.9	29.2

na = not applicable; NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research.

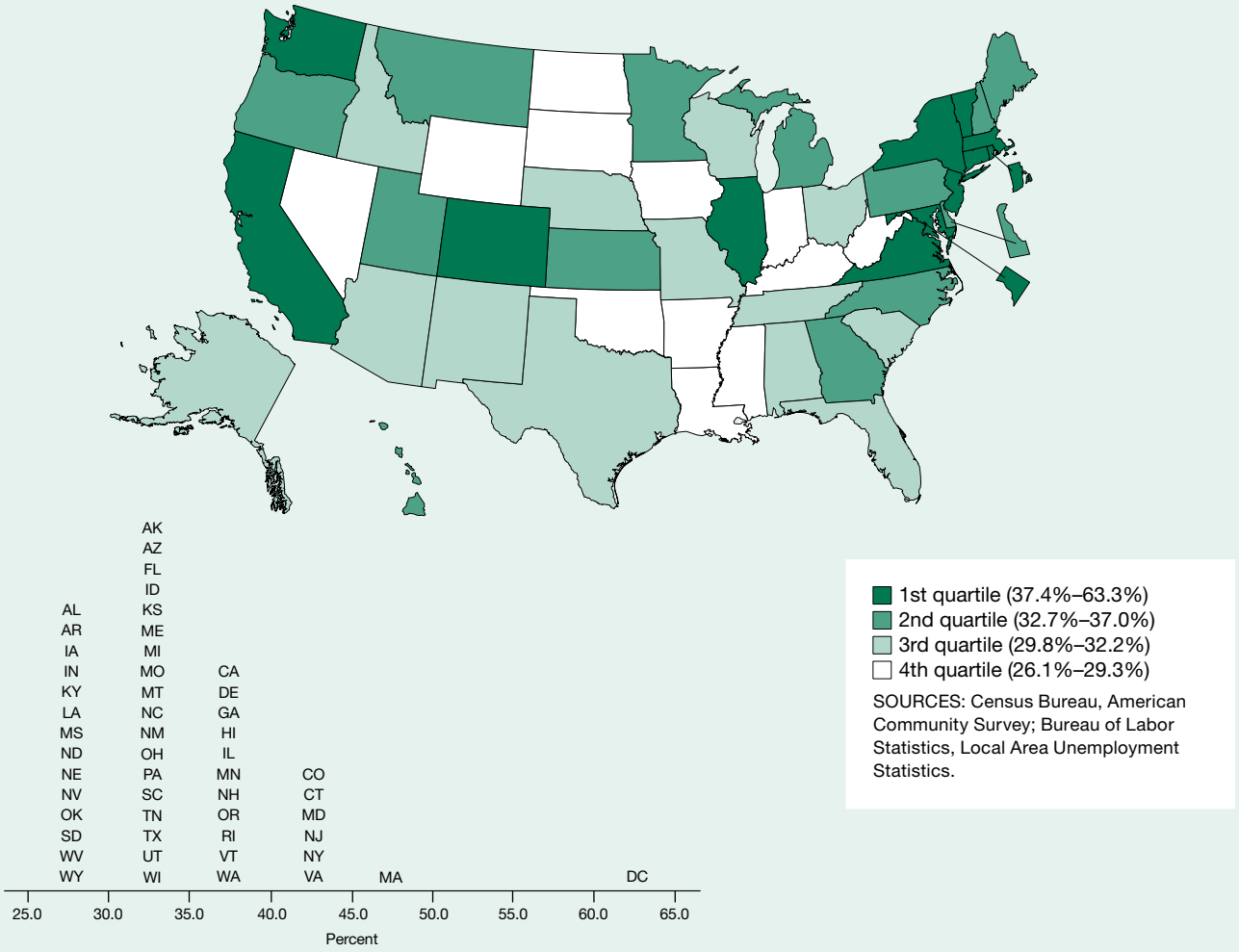
NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: Census Bureau, 2000 and 2010 Decennial Censuses, Population Estimates Program (various years), and American Community Survey (various years).

Science and Engineering Indicators 2014

Bachelor's Degree Holders Potentially in the Workforce

Figure 8-33
Bachelor's degree holders potentially in the workforce: 2011



Findings

- In 2011, nearly 50 million individuals between ages 25 and 64 held bachelor's degrees in the United States, up from nearly 41 million in 2001.
- Nationwide, the ratio of bachelor's degree holders to the size of the workforce rose from 29.6% in 2001 to 35.4% in 2011. This ratio varied considerably among the states, ranging from 26.1% to 47.2% in 2011.
- The value of this indicator increased in all jurisdictions, except Alaska, between 2001 and 2011. This increase may reflect a replacement of older cohorts of workers with younger, more educated ones. It may also indicate the restructuring of state economies to emphasize work that requires a higher level of education or credentials.
- In 2011, the jurisdictions in which the highest concentrations of bachelor's degree holders lived included the District of Columbia, Massachusetts, New Jersey, Colorado, and Maryland.

The ratio of degree holders (bachelor's, graduate, or professional) to the population potentially available for work is an indicator of the concentration of individuals with higher education qualifications in a jurisdiction. This indicator does not imply that all degree holders are currently employed; rather, it indicates the educational level of the workforce if all degree holders were employed. Knowledge-intensive businesses seeking to relocate may be attracted to states with high values on this indicator. Workers with at least a bachelor's degree have a clear advantage over less-educated workers in expected lifetime earnings.

Estimates of degree data are provided by the U.S. Census Bureau and are limited to individuals 25–64 years old, the age range most representative of a jurisdiction's workforce. Individuals younger than age 25 are considered to be in the process of completing their education. Individuals older than 64 are considered to be largely retired, so their educational attainment would have limited applicability to the quality of the workforce. Employed workforce data are Bureau of Labor Statistics estimates of employed civilians based on Local Area Unemployment Statistics. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-33
Bachelor's degree holders potentially in the workforce, by state: 2001, 2006, and 2011

State	Bachelor's degree holders 25–64 years old			Employed workforce			Bachelor's degree holders/employed workforce (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	40,527,497	45,935,309	49,761,556	137,107,779	143,729,350	140,695,662	29.6	32.0	35.4
Alabama	476,157	550,302	593,859	2,034,909	2,098,462	1,992,522	23.4	26.2	29.8
Alaska	89,504	102,153	105,780	301,694	326,109	337,796	29.7	31.3	31.3
Arizona	621,567	834,211	881,399	2,453,453	2,836,638	2,761,984	25.3	29.4	31.9
Arkansas	260,535	289,510	326,754	1,194,024	1,286,887	1,251,877	21.8	22.5	26.1
California	5,140,460	5,788,525	6,209,917	16,220,033	16,821,266	16,237,286	31.7	34.4	38.2
Colorado	851,265	949,265	1,067,811	2,303,494	2,541,828	2,490,004	37.0	37.3	42.9
Connecticut	656,272	693,564	740,397	1,700,046	1,745,993	1,732,807	38.6	39.7	42.7
Delaware	111,152	131,601	143,550	404,135	424,618	407,772	27.5	31.0	35.2
District of Columbia	141,159	160,332	197,942	286,649	303,791	312,859	49.2	52.8	63.3
Florida	2,086,928	2,516,214	2,657,913	7,624,718	8,584,095	8,322,237	27.4	29.3	31.9
Georgia	1,144,463	1,426,071	1,524,738	4,112,868	4,500,150	4,295,113	27.8	31.7	35.5
Hawaii	180,610	218,941	221,769	589,216	617,807	614,824	30.7	35.4	36.1
Idaho	152,726	184,486	210,656	644,816	718,077	702,920	23.7	25.7	30.0
Illinois	1,987,145	2,143,825	2,307,808	6,113,536	6,225,095	5,942,809	32.5	34.4	38.8
Indiana	707,529	782,232	843,402	3,020,985	3,080,047	2,874,722	23.4	25.4	29.3
Iowa	368,722	408,648	449,951	1,568,638	1,595,136	1,562,156	23.5	25.6	28.8
Kansas	407,954	440,261	474,072	1,347,715	1,403,938	1,401,055	30.3	31.4	33.8
Kentucky	410,170	495,800	529,836	1,852,056	1,904,467	1,875,447	22.1	26.0	28.3
Louisiana	453,105	477,352	528,592	1,922,110	1,900,240	1,919,021	23.6	25.1	27.5
Maine	171,041	199,868	217,867	650,699	665,856	649,312	26.3	30.0	33.6
Maryland	1,015,855	1,144,963	1,228,462	2,712,268	2,892,733	2,868,191	37.5	39.6	42.8
Massachusetts	1,350,105	1,423,262	1,519,049	3,275,343	3,255,504	3,216,160	41.2	43.7	47.2
Michigan	1,330,224	1,427,656	1,422,628	4,876,338	4,722,716	4,189,792	27.3	30.2	34.0
Minnesota	822,940	914,823	994,234	2,755,808	2,774,524	2,777,285	29.9	33.0	35.8
Mississippi	284,057	295,278	317,872	1,229,884	1,199,871	1,197,641	23.1	24.6	26.5
Missouri	731,969	818,224	889,754	2,867,853	2,889,461	2,767,043	25.5	28.3	32.2
Montana	127,026	146,640	155,461	447,827	476,412	466,372	28.4	30.8	33.3
Nebraska	242,112	271,596	287,925	925,783	943,176	961,786	26.2	28.8	29.9
Nevada	214,614	292,151	329,238	1,042,182	1,222,277	1,207,799	20.6	23.9	27.3
New Hampshire	215,907	248,086	258,118	680,706	708,748	697,383	31.7	35.0	37.0
New Jersey	1,644,820	1,745,454	1,835,382	4,117,543	4,257,899	4,120,017	39.9	41.0	44.5
New Mexico	227,129	261,942	274,058	821,003	886,708	862,043	27.7	29.5	31.8
New York	3,054,065	3,493,031	3,725,582	8,743,924	9,062,464	8,740,642	34.9	38.5	42.6
North Carolina	1,043,271	1,265,162	1,461,123	3,929,977	4,261,325	4,183,052	26.5	29.7	34.9
North Dakota	85,926	92,568	103,117	336,228	349,368	368,677	25.6	26.5	28.0
Ohio	1,423,694	1,528,942	1,623,724	5,566,735	5,602,764	5,303,655	25.6	27.3	30.6
Oklahoma	379,436	433,967	490,304	1,614,627	1,650,070	1,678,953	23.5	26.3	29.2
Oregon	497,208	587,174	629,810	1,711,041	1,792,039	1,785,400	29.1	32.8	35.3
Pennsylvania	1,676,416	1,863,711	2,006,801	5,874,153	6,021,084	5,892,519	28.5	31.0	34.1
Rhode Island	167,178	182,749	188,849	520,677	543,973	499,481	32.1	33.6	37.8
South Carolina	495,647	546,986	607,286	1,834,871	1,970,912	1,941,654	27.0	27.8	31.3
South Dakota	98,686	108,994	116,560	400,352	421,799	422,696	24.6	25.8	27.6
Tennessee	676,912	765,687	863,852	2,728,523	2,852,509	2,828,617	24.8	26.8	30.5
Texas	2,714,923	3,162,391	3,660,238	9,991,920	10,757,510	11,493,519	27.2	29.4	31.8
Utah	266,153	354,651	410,367	1,108,547	1,285,389	1,254,151	24.0	27.6	32.7
Vermont	107,928	118,680	126,695	330,099	343,149	338,632	32.7	34.6	37.4
Virginia	1,292,274	1,467,254	1,640,903	3,537,719	3,862,508	3,928,267	36.5	38.0	41.8
Washington	988,658	1,123,956	1,215,053	2,863,705	3,155,384	3,161,818	34.5	35.6	38.4
West Virginia	156,241	179,015	202,206	758,904	777,210	740,175	20.6	23.0	27.3
Wisconsin	714,317	812,662	865,610	2,897,937	2,932,482	2,832,826	24.6	27.7	30.6
Wyoming	63,342	64,493	77,282	259,508	276,882	284,893	24.4	23.3	27.1
Puerto Rico	NA	465,722	498,515	1,128,704	1,270,693	1,032,765	NA	36.7	48.3

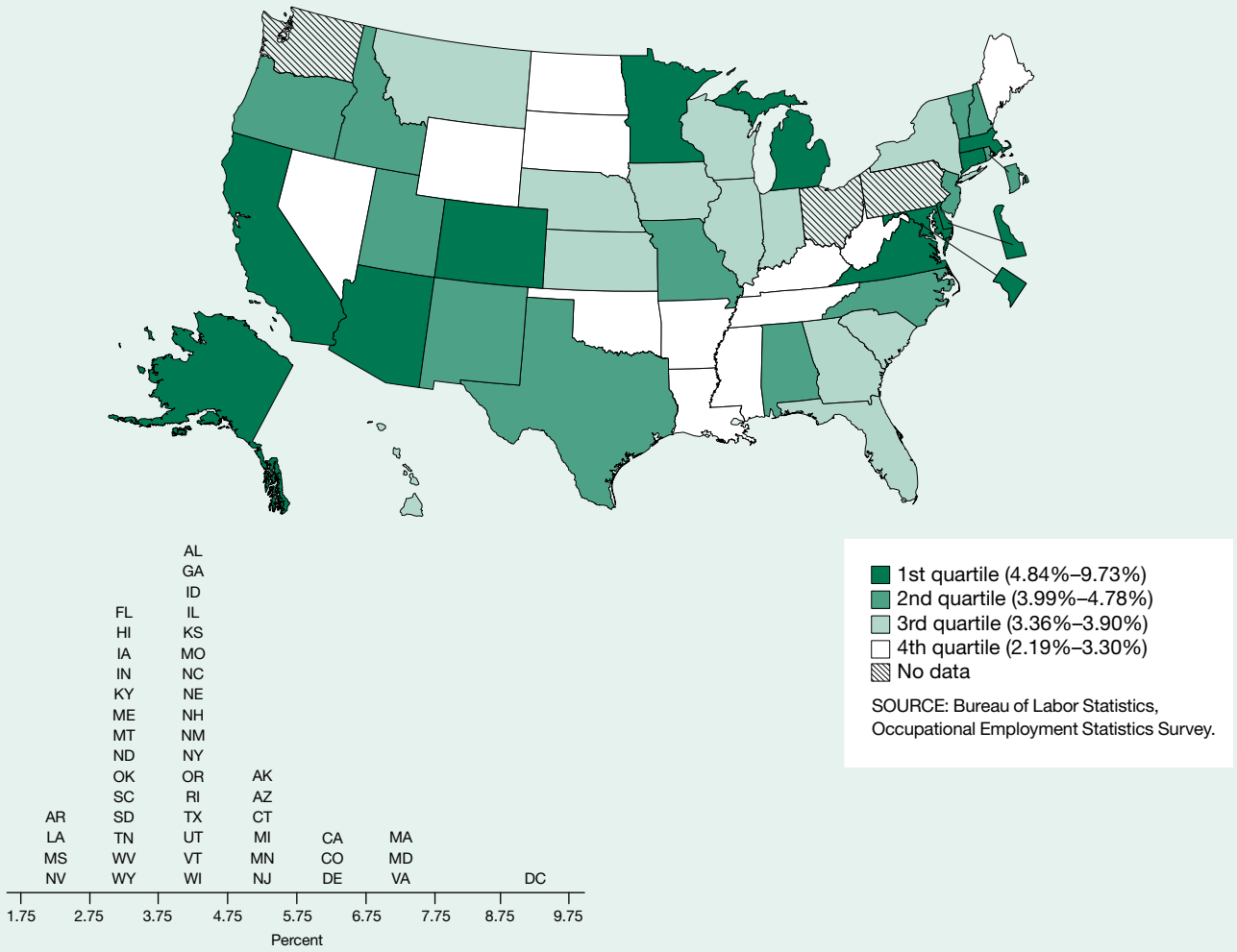
NA = not available.

NOTES: Bachelor's degree holders include those who completed a bachelor's or higher degree. Workforce represents the employed component of the civilian labor force and is reported as annual data not seasonally adjusted.

SOURCES: Census Bureau, 2000 and 2010 Decennial Censuses, and American Community Survey (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics (various years).

Individuals in Science and Engineering Occupations as a Percentage of All Occupations

Figure 8-34
Individuals in science and engineering occupations as a percentage of all occupations: 2012



Findings

- In 2012, about 5.97 million people worked in occupations classified as S&E. This is an increase from the 4.96 million S&E workers in 2003.
- In 2012, the percentage of the workforce engaged in S&E occupations ranged from 2.19% to 7.63% in individual states.
- The highest percentages of employment in S&E occupations were found in the District of Columbia and the adjacent states of Maryland and Virginia as well as in Massachusetts and Colorado in 2012.

This indicator represents the extent to which a state's workforce is employed in S&E occupations. A high value indicates that a state's economy has a high percentage of technical jobs relative to other states.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations and total occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies. Due to the way the data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-34
Individuals in science and engineering occupations as a percentage of all occupations, by state: 2003, 2008, and 2012

State	Individuals in S&E occupations			All occupations			S&E occupations/ all occupations (%)		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
United States	4,961,550	5,781,460	5,968,240	127,420,170	135,185,230	130,287,700	3.89	4.28	4.58
Alabama	56,380	68,580	72,880	1,817,240	1,945,300	1,824,400	3.10	3.53	3.99
Alaska	10,600	13,260	16,260	290,740	307,790	318,700	3.65	4.31	5.10
Arizona	92,120	102,100	116,930	2,275,410	2,637,830	2,414,340	4.05	3.87	4.84
Arkansas	21,340	29,310	29,530	1,118,690	1,176,050	1,155,020	1.91	2.49	2.56
California	676,180	791,750	821,780	14,460,860	15,212,610	14,303,630	4.68	5.20	5.75
Colorado	124,140	147,000	149,020	2,097,650	2,302,340	2,226,160	5.92	6.38	6.69
Connecticut	81,380	80,290	78,450	1,631,610	1,697,810	1,620,620	4.99	4.73	4.84
Delaware	17,370	22,330	23,440	403,650	425,210	405,750	4.30	5.25	5.78
District of Columbia	54,890	63,360	63,600	595,220	635,500	653,760	9.22	9.97	9.73
Florida	221,070	248,200	248,300	7,217,400	7,771,740	7,273,850	3.06	3.19	3.41
Georgia	144,170	147,380	148,830	3,770,430	4,068,270	3,815,530	3.82	3.62	3.90
Hawaii	16,090	18,830	20,930	557,400	612,420	588,210	2.89	3.07	3.56
Idaho	22,150	23,310	25,260	563,200	650,240	598,540	3.93	3.58	4.22
Illinois	211,230	224,370	220,170	5,719,150	5,910,630	5,640,740	3.69	3.80	3.90
Indiana	78,410	90,840	94,620	2,851,210	2,927,620	2,811,920	2.75	3.10	3.36
Iowa	37,320	46,180	50,950	1,413,220	1,502,600	1,470,740	2.64	3.07	3.46
Kansas	51,970	54,260	50,930	1,292,170	1,374,560	1,320,920	4.02	3.95	3.86
Kentucky	45,230	NA	51,830	1,719,620	1,817,860	1,764,750	2.63	NA	2.94
Louisiana	41,900	41,790	45,920	1,851,870	1,887,370	1,868,210	2.26	2.21	2.46
Maine	15,020	17,000	17,910	591,750	604,150	581,110	2.54	2.81	3.08
Maryland	149,250	167,070	179,550	2,448,580	2,561,530	2,510,680	6.10	6.52	7.15
Massachusetts	184,690	217,310	229,160	3,130,720	3,234,860	3,202,080	5.90	6.72	7.16
Michigan	182,940	204,290	198,610	4,310,420	4,142,750	3,918,120	4.24	4.93	5.07
Minnesota	117,120	134,440	131,690	2,591,720	2,704,860	2,641,110	4.52	4.97	4.99
Mississippi	22,190	27,270	23,640	1,089,350	1,138,210	1,080,420	2.04	2.40	2.19
Missouri	84,150	105,390	109,650	2,623,020	2,740,170	2,605,910	3.21	3.85	4.21
Montana	11,450	NA	15,360	394,820	444,090	432,380	2.90	NA	3.55
Nebraska	30,710	31,820	34,720	879,550	928,120	914,830	3.49	3.43	3.80
Nevada	22,330	27,300	27,000	1,086,110	1,278,230	1,127,160	2.06	2.14	2.40
New Hampshire	23,430	29,150	28,950	607,570	634,570	612,710	3.86	4.59	4.72
New Jersey	161,420	198,060	181,480	3,878,020	3,986,310	3,793,720	4.16	4.97	4.78
New Mexico	33,600	34,560	35,310	747,050	819,480	773,860	4.50	4.22	4.56
New York	272,440	326,510	321,480	8,236,200	8,633,580	8,542,280	3.31	3.78	3.76
North Carolina	132,440	153,680	167,900	3,702,170	4,063,420	3,878,800	3.58	3.78	4.33
North Dakota	8,430	9,450	13,120	314,620	350,360	403,290	2.68	2.70	3.25
Ohio	177,100	206,320	NA	5,308,270	5,323,130	5,054,250	3.34	3.88	NA
Oklahoma	44,360	48,900	50,420	1,416,640	1,557,750	1,529,900	3.13	3.14	3.30
Oregon	61,230	70,070	75,780	1,537,000	1,706,740	1,609,900	3.98	4.11	4.71
Pennsylvania	185,560	227,170	NA	5,494,430	5,705,170	5,596,480	3.38	3.98	NA
Rhode Island	18,740	18,090	20,180	477,320	478,420	453,020	3.93	3.78	4.45
South Carolina	48,740	57,770	63,170	1,764,170	1,892,690	1,796,550	2.76	3.05	3.52
South Dakota	9,150	11,870	12,000	364,970	395,960	398,680	2.51	3.00	3.01
Tennessee	63,680	72,760	79,830	2,614,830	2,755,800	2,657,280	2.44	2.64	3.00
Texas	365,270	463,850	493,980	9,248,660	10,391,420	10,579,400	3.95	4.46	4.67
Utah	45,570	52,570	54,720	1,043,500	1,230,320	1,200,850	4.37	4.27	4.56
Vermont	11,420	12,360	12,870	291,400	301,130	294,090	3.92	4.10	4.38
Virginia	209,280	259,280	274,280	3,412,070	3,670,980	3,597,100	6.13	7.06	7.63
Washington	150,230	NA	NA	2,560,190	2,868,910	2,764,080	5.87	NA	NA
West Virginia	16,220	17,000	19,900	680,200	717,740	710,540	2.38	2.37	2.80
Wisconsin	93,320	101,680	103,030	2,687,400	2,776,690	2,673,280	3.47	3.66	3.85
Wyoming	6,130	8,850	8,710	240,730	283,980	278,040	2.55	3.12	3.13
Puerto Rico	19,940	22,970	21,750	962,000	999,010	942,080	2.07	2.30	2.31

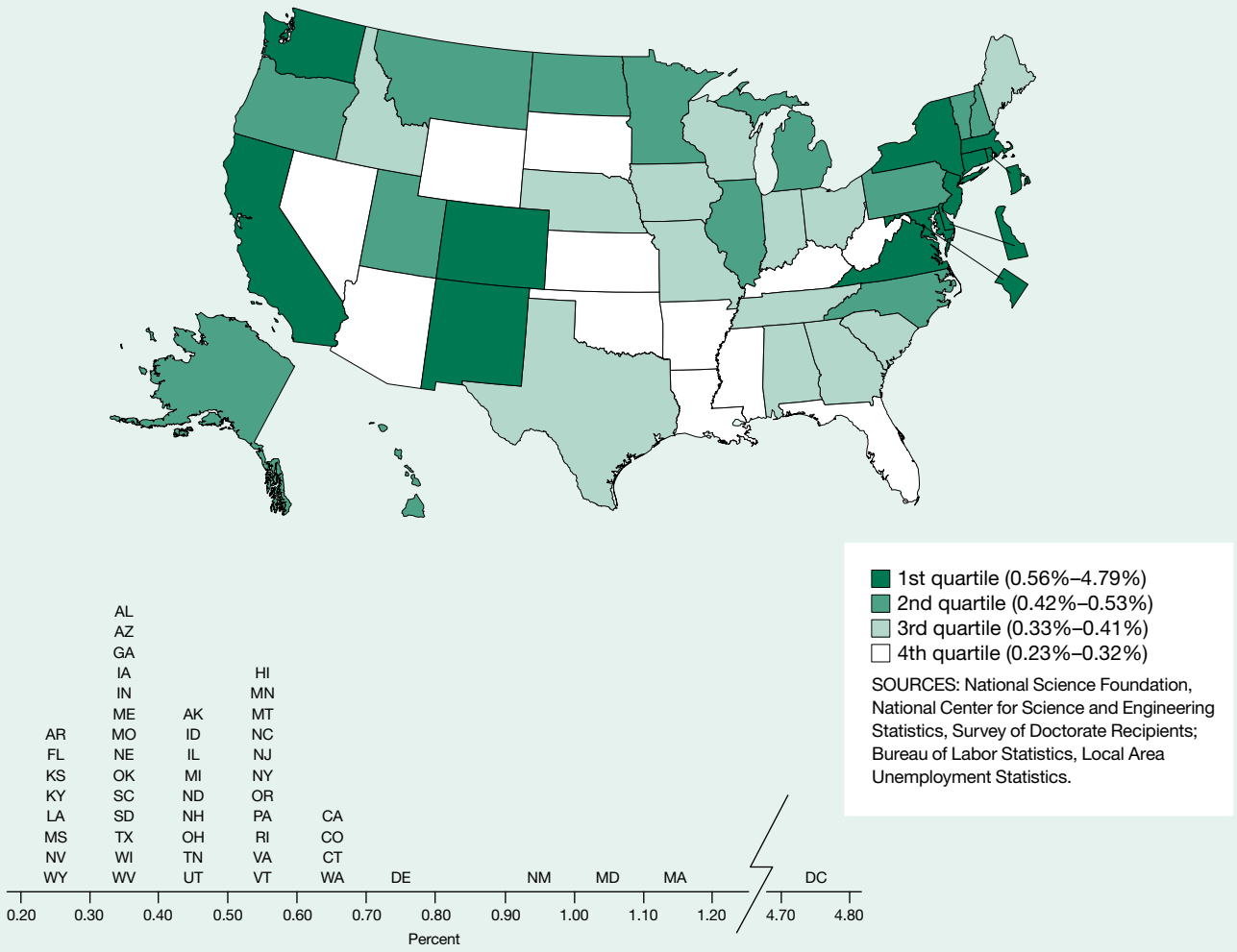
NA = not available.

NOTES: United States total includes states with suppressed data. Occupational Employment Statistics survey estimates for 2003 are based on November data; estimates for the remaining years are based on May data.

SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Employed Science and Engineering Doctorate Holders as a Percentage of the Workforce

Figure 8-35
Employed science and engineering doctorate holders as a percentage of the workforce: 2010



Findings

- The number of employed S&E doctorate holders in the United States rose from almost 573,000 in 2001 to about 688,000 in 2010, an increase of 20%.
- Overall, the value of this indicator rose from 0.42% in 2001 to 0.49% in 2010 because the number of employed S&E doctorate holders nationwide increased more rapidly than the size of the workforce.
- In 2010, the values for this indicator in individual states ranged from 0.23% to 1.16% of a state's workforce.
- States in the top quartile tended to be homes to major research laboratories, research universities, or research-intensive industries.

This indicator represents a state's ability to attract and retain highly trained scientists and engineers. These individuals often conduct R&D, manage R&D activities, or are otherwise engaged in knowledge-intensive activities. A high value for this indicator in a state suggests employment opportunities for individuals with highly advanced training in S&E fields.

Data on employed S&E doctorate holders include those with doctoral degrees in computer and mathematical sciences; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data exclude individuals with doctorates from foreign institutions and those older than the age of 75. S&E doctorate holders are assigned to a state based on where they work.

Employed workforce data are developed by the Bureau of Labor Statistics, which assigns workers to a state based on where they live. Workforce data represent annual estimates of the employed civilian labor force; estimates are not seasonally adjusted.

Small differences in the values of the indicator between states or across time are generally not meaningful.

Table 8-35
Employed science and engineering doctorate holders as a percentage of the workforce, by state: 2001, 2006, and 2010

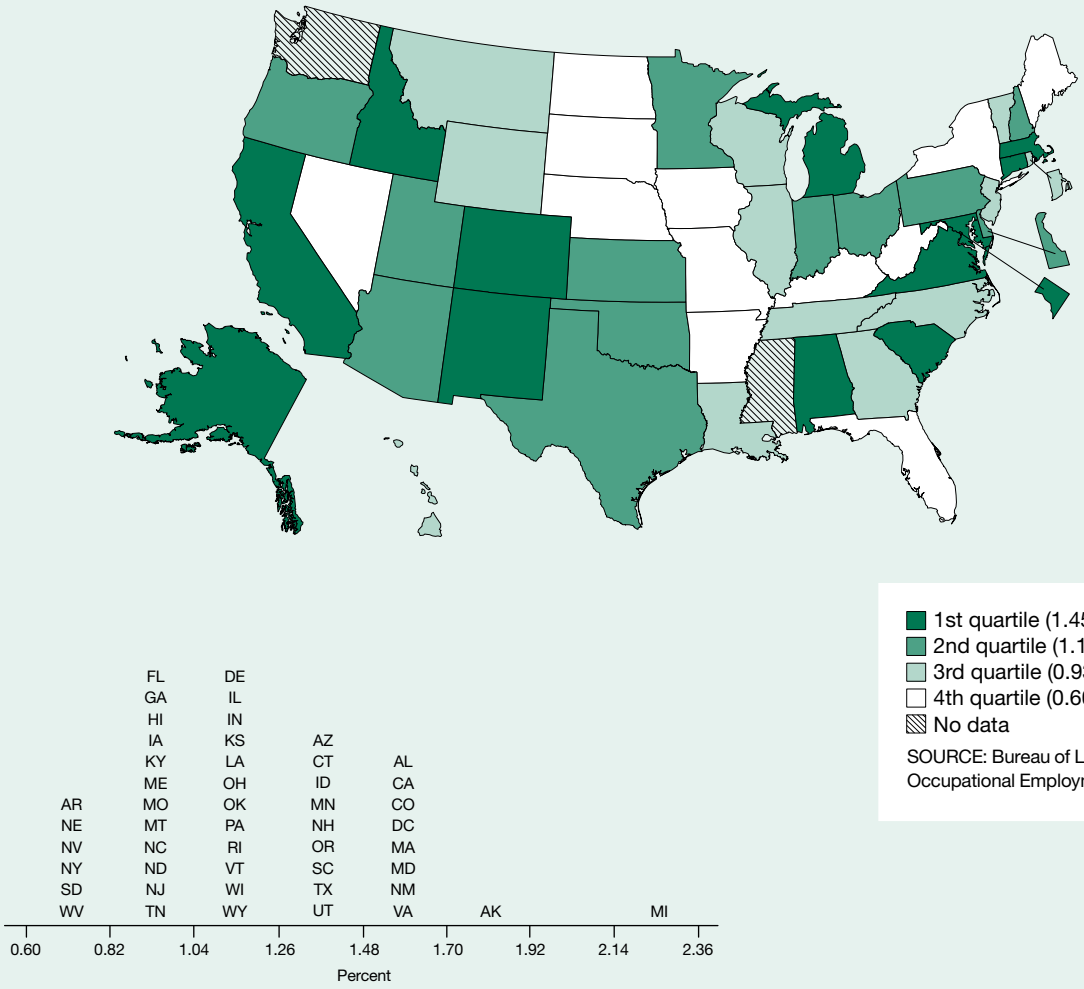
State	Employed S&E doctorate holders			Employed workforce			S&E doctorate holders/all workers (%)		
	2001	2006	2010	2001	2006	2010	2001	2006	2010
United States	572,800	618,400	688,300	137,107,779	143,729,350	139,395,958	0.42	0.43	0.49
Alabama	5,300	5,900	6,600	2,034,909	2,098,462	1,969,557	0.26	0.28	0.34
Alaska	1,200	1,100	1,400	301,694	326,109	333,538	0.40	0.34	0.42
Arizona	7,100	8,400	9,000	2,453,453	2,836,638	2,780,328	0.29	0.30	0.32
Arkansas	2,600	2,800	2,900	1,194,024	1,286,887	1,242,088	0.22	0.22	0.23
California	80,900	87,400	102,300	16,220,033	16,821,266	16,063,550	0.50	0.52	0.64
Colorado	11,800	13,100	14,800	2,303,494	2,541,828	2,475,831	0.51	0.52	0.60
Connecticut	9,500	10,300	11,300	1,700,046	1,745,993	1,735,059	0.56	0.59	0.65
Delaware	3,500	3,100	3,000	404,135	424,618	402,612	0.87	0.73	0.75
District of Columbia	14,200	13,300	14,900	286,649	303,791	310,842	4.95	4.38	4.79
Florida	15,700	17,600	20,600	7,624,718	8,584,095	8,141,447	0.21	0.21	0.25
Georgia	12,000	13,000	15,200	4,112,868	4,500,150	4,241,718	0.29	0.29	0.36
Hawaii	2,600	2,800	3,000	589,216	617,807	603,894	0.44	0.45	0.50
Idaho	2,200	2,800	2,800	644,816	718,077	694,976	0.34	0.39	0.40
Illinois	22,100	24,100	25,300	6,113,536	6,225,095	5,925,554	0.36	0.39	0.43
Indiana	9,600	9,900	10,900	3,020,985	3,080,047	2,843,268	0.32	0.32	0.38
Iowa	4,400	4,900	5,600	1,568,638	1,595,136	1,566,307	0.28	0.31	0.36
Kansas	4,000	4,300	4,000	1,347,715	1,403,938	1,398,046	0.30	0.31	0.29
Kentucky	4,600	5,000	5,100	1,852,056	1,904,467	1,854,279	0.25	0.26	0.28
Louisiana	5,300	5,500	5,300	1,922,110	1,900,240	1,920,732	0.28	0.29	0.28
Maine	2,000	2,400	2,400	650,699	665,856	643,499	0.31	0.36	0.37
Maryland	22,700	26,200	29,800	2,712,268	2,892,733	2,831,069	0.84	0.91	1.05
Massachusetts	29,100	32,400	36,900	3,275,343	3,255,504	3,187,622	0.89	1.00	1.16
Michigan	17,400	17,900	18,000	4,876,338	4,722,716	4,147,952	0.36	0.38	0.43
Minnesota	11,400	11,800	13,700	2,755,808	2,774,524	2,744,470	0.41	0.43	0.50
Mississippi	3,200	3,300	3,300	1,229,884	1,199,871	1,177,276	0.26	0.28	0.28
Missouri	9,300	9,300	10,700	2,867,853	2,889,461	2,755,946	0.32	0.32	0.39
Montana	1,400	2,000	2,400	447,827	476,412	462,278	0.31	0.42	0.52
Nebraska	2,900	3,000	3,100	925,783	943,176	944,562	0.31	0.32	0.33
Nevada	2,000	2,600	3,000	1,042,182	1,222,277	1,199,517	0.19	0.21	0.25
New Hampshire	2,500	2,500	3,000	680,706	708,748	693,679	0.37	0.35	0.43
New Jersey	22,700	20,800	23,000	4,117,543	4,257,899	4,111,155	0.55	0.49	0.56
New Mexico	7,700	8,300	8,000	821,003	886,708	861,503	0.94	0.94	0.93
New York	44,000	45,900	50,900	8,743,924	9,062,464	8,760,743	0.50	0.51	0.58
North Carolina	16,800	18,900	20,600	3,929,977	4,261,325	4,136,257	0.43	0.44	0.50
North Dakota	1,100	1,400	1,500	336,228	349,368	360,921	0.33	0.40	0.42
Ohio	20,100	20,500	21,700	5,566,735	5,602,764	5,271,394	0.36	0.37	0.41
Oklahoma	4,400	4,400	4,900	1,614,627	1,650,070	1,657,099	0.27	0.27	0.30
Oregon	7,000	8,300	9,100	1,711,041	1,792,039	1,761,867	0.41	0.46	0.52
Pennsylvania	26,100	29,100	31,300	5,874,153	6,021,084	5,854,537	0.44	0.48	0.53
Rhode Island	2,600	3,000	3,000	520,677	543,973	505,131	0.50	0.55	0.59
South Carolina	5,100	5,900	6,400	1,834,871	1,970,912	1,917,747	0.28	0.30	0.33
South Dakota	1,000	1,000	1,300	400,352	421,799	420,171	0.25	0.24	0.31
Tennessee	9,000	10,000	11,500	2,728,523	2,852,509	2,777,213	0.33	0.35	0.41
Texas	32,500	36,000	42,400	9,991,920	10,757,510	11,273,239	0.33	0.33	0.38
Utah	4,800	5,500	5,900	1,108,547	1,285,389	1,252,466	0.43	0.43	0.47
Vermont	1,800	1,700	1,800	330,099	343,149	337,049	0.55	0.50	0.53
Virginia	17,500	19,800	22,000	3,537,719	3,862,508	3,840,619	0.49	0.51	0.57
Washington	14,800	16,900	18,900	2,863,705	3,155,384	3,166,880	0.52	0.54	0.60
West Virginia	1,900	2,000	2,200	758,904	777,210	737,115	0.25	0.26	0.30
Wisconsin	8,700	9,500	10,600	2,897,937	2,932,482	2,820,453	0.30	0.32	0.38
Wyoming	800	700	800	259,508	276,882	280,903	0.31	0.25	0.28
Puerto Rico	1,400	1,700	2,300	1,128,704	1,270,693	1,061,519	0.12	0.13	0.22

NOTE: Employed S&E doctorate holders are classified by employment lcoation; employed workers are classified by residence.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics (various years).

Engineers as a Percentage of All Occupations

Figure 8-36
Engineers as a percentage of all occupations: 2012



Findings

- In the United States, 1.63 million individuals were employed in engineering occupations in 2012, an increase from the 1.47 million engineers employed in 2003. Between 2003 and 2012, the percentage of the workforce employed in engineering occupations increased from 1.15% to 1.25%.
- The concentration of engineers in individual states ranged from 0.60% to 2.25% in 2012.
- States ranking highest on this indicator also ranked high on employment in high-technology establishments as a share of total employment.

Engineers design and operate production processes and create new products and services. This indicator represents the percentage of trained engineers in a state's workforce. It includes the standard occupational codes for engineering fields: aerospace, agricultural, biomedical, chemical, civil, computer hardware, electrical and electronics, environmental, industrial, marine and naval architectural, materials, mechanical, mining and geological, nuclear, and petroleum.

Data on individuals in engineering occupations and total occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-36
Engineers as a percentage of all occupations, by state: 2003, 2008, and 2012

State	Engineers			All occupations			Engineers in all occupations (%)		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
United States	1,465,670	1,626,330	1,629,470	127,420,170	135,185,230	130,287,700	1.15	1.20	1.25
Alabama	21,660	26,430	29,240	1,817,240	1,945,300	1,824,400	1.19	1.36	1.60
Alaska	3,570	4,450	5,540	290,740	307,790	318,700	1.23	1.45	1.74
Arizona	34,500	35,850	32,880	2,275,410	2,637,830	2,414,340	1.52	1.36	1.36
Arkansas	5,610	7,340	6,940	1,118,690	1,176,050	1,155,020	0.50	0.62	0.60
California	212,620	240,860	234,600	14,460,860	15,212,610	14,303,630	1.47	1.58	1.64
Colorado	35,180	41,130	37,050	2,097,650	2,302,340	2,226,160	1.68	1.79	1.66
Connecticut	26,020	23,920	23,480	1,631,610	1,697,810	1,620,620	1.59	1.41	1.45
Delaware	3,440	5,120	4,910	403,650	425,210	405,750	0.85	1.20	1.21
District of Columbia	10,070	8,220	9,840	595,220	635,500	653,760	1.69	1.29	1.51
Florida	58,300	69,040	62,860	7,217,400	7,771,740	7,273,850	0.81	0.89	0.86
Georgia	30,060	36,020	36,360	3,770,430	4,068,270	3,815,530	0.80	0.89	0.95
Hawaii	4,670	5,020	5,800	557,400	612,420	588,210	0.84	0.82	0.99
Idaho	8,530	7,870	8,760	563,200	650,240	598,540	1.51	1.21	1.46
Illinois	58,150	55,840	61,420	5,719,150	5,910,630	5,640,740	1.02	0.94	1.09
Indiana	30,110	30,780	32,230	2,851,210	2,927,620	2,811,920	1.06	1.05	1.15
Iowa	NA	10,270	12,100	1,413,220	1,502,600	1,470,740	NA	0.68	0.82
Kansas	19,870	16,930	15,320	1,292,170	1,374,560	1,320,920	1.54	1.23	1.16
Kentucky	13,090	13,880	14,690	1,719,620	1,817,860	1,764,750	0.76	0.76	0.83
Louisiana	15,940	18,270	19,940	1,851,870	1,887,370	1,868,210	0.86	0.97	1.07
Maine	4,880	4,480	5,070	591,750	604,150	581,110	0.82	0.74	0.87
Maryland	33,610	39,390	41,130	2,448,580	2,561,530	2,510,680	1.37	1.54	1.64
Massachusetts	49,430	54,330	52,610	3,130,720	3,234,860	3,202,080	1.58	1.68	1.64
Michigan	92,190	92,190	87,980	4,310,420	4,142,750	3,918,120	2.14	2.23	2.25
Minnesota	30,650	29,490	33,210	2,591,720	2,704,860	2,641,110	1.18	1.09	1.26
Mississippi	7,770	10,160	NA	1,089,350	1,138,210	1,080,420	0.71	0.89	NA
Missouri	20,090	25,950	23,100	2,623,020	2,740,170	2,605,910	0.77	0.95	0.89
Montana	2,680	3,570	4,020	394,820	444,090	432,380	0.68	0.80	0.93
Nebraska	5,890	6,350	6,330	879,550	928,120	914,830	0.67	0.68	0.69
Nevada	6,660	7,870	7,180	1,086,110	1,278,230	1,127,160	0.61	0.62	0.64
New Hampshire	7,490	7,870	8,290	607,570	634,570	612,710	1.23	1.24	1.35
New Jersey	37,190	40,720	39,140	3,878,020	3,986,310	3,793,720	0.96	1.02	1.03
New Mexico	12,710	11,500	12,350	747,050	819,480	773,860	1.70	1.40	1.60
New York	65,600	74,570	61,980	8,236,200	8,633,580	8,542,280	0.80	0.86	0.73
North Carolina	31,020	33,400	36,710	3,702,170	4,063,420	3,878,800	0.84	0.82	0.95
North Dakota	2,130	2,530	3,520	314,620	350,360	403,290	0.68	0.72	0.87
Ohio	61,960	60,120	60,790	5,308,270	5,323,130	5,054,250	1.17	1.13	1.20
Oklahoma	12,830	14,040	17,740	1,416,640	1,557,750	1,529,900	0.91	0.90	1.16
Oregon	17,970	18,740	21,440	1,537,000	1,706,740	1,609,900	1.17	1.10	1.33
Pennsylvania	NA	63,340	66,970	5,494,430	5,705,170	5,596,480	NA	1.11	1.20
Rhode Island	5,080	5,150	5,110	477,320	478,420	453,020	1.06	1.08	1.13
South Carolina	19,960	22,750	26,470	1,764,170	1,892,690	1,796,550	1.13	1.20	1.47
South Dakota	1,990	2,440	2,770	364,970	395,960	398,680	0.55	0.62	0.69
Tennessee	20,880	23,130	26,420	2,614,830	2,755,800	2,657,280	0.80	0.84	0.99
Texas	116,160	146,520	152,120	9,248,660	10,391,420	10,579,400	1.26	1.41	1.44
Utah	12,120	14,350	15,940	1,043,500	1,230,320	1,200,850	1.16	1.17	1.33
Vermont	3,600	3,790	3,120	291,400	301,130	294,090	1.24	1.26	1.06
Virginia	46,400	54,280	54,050	3,412,070	3,670,980	3,597,100	1.36	1.48	1.50
Washington	45,460	55,490	NA	2,560,190	2,868,910	2,764,080	1.78	1.93	NA
West Virginia	4,890	5,320	4,990	680,200	717,740	710,540	0.72	0.74	0.70
Wisconsin	29,850	32,010	30,570	2,687,400	2,776,690	2,673,280	1.11	1.15	1.14
Wyoming	2,110	3,260	3,050	240,730	283,980	278,040	0.88	1.15	1.10
Puerto Rico	7,200	7,990	7,640	962,000	999,010	942,080	0.75	0.80	0.81

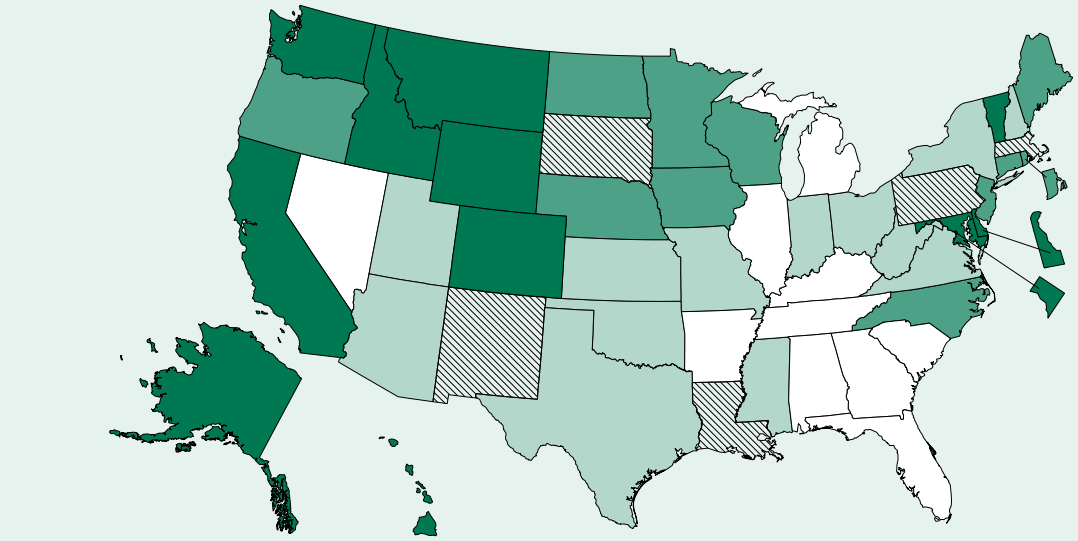
NA = not available.

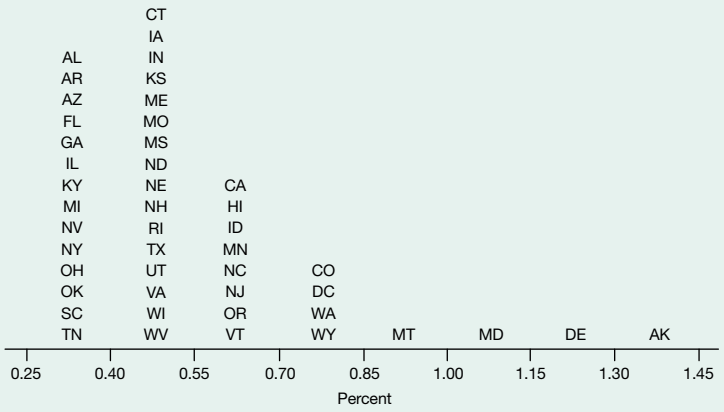
NOTE: United States total includes states with suppressed data.

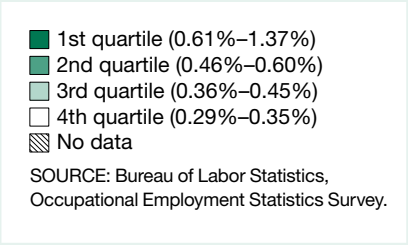
SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Life and Physical Scientists as a Percentage of All Occupations

Figure 8-37
Life and physical scientists as a percentage of all occupations: 2012







SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey.

Findings

- About 648,000 individuals (0.50% of the workforce) were employed as life and physical scientists in the United States in 2012, an increase from the 544,000 life and physical scientists employed in 2003, which represented 0.43% of the workforce.
- In 2012, individual states had indicator values ranging from 0.27% to 1.37%, which showed major differences in the concentration of jobs in the life and physical sciences.
- States with the highest concentrations of life and physical scientists in their workforces were widely distributed throughout the United States.

This indicator represents the percentage of life and physical scientists in a state's workforce. Life scientists are identified from standard occupational codes and include agricultural and food scientists, biological scientists, conservation scientists and foresters, and medical scientists. Physical scientists are identified from standard occupational codes and include astronomers, physicists, atmospheric and space scientists, chemists, materials scientists, environmental scientists, and geoscientists. A high share of life and physical scientists in a state's workforce could be due to a variety of factors, ranging from a cluster of life sciences companies in the state to the presence of forests or national parks, which require foresters, wildlife specialists, and conservationists to manage the natural assets in these areas.

Data on individuals in life and physical sciences occupations and total occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-37
Life and physical scientists as a percentage of all occupations, by state: 2003, 2008, and 2012

State	Life and physical scientists			All occupations			Life and physical scientists in all occupations (%)		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
United States	543,540	621,020	647,850	127,420,170	135,185,230	130,287,700	0.43	0.46	0.50
Alabama	5,720	7,570	6,370	1,817,240	1,945,300	1,824,400	0.31	0.39	0.35
Alaska	3,020	3,720	4,380	290,740	307,790	318,700	1.04	1.21	1.37
Arizona	6,760	7,660	9,210	2,275,410	2,637,830	2,414,340	0.30	0.29	0.38
Arkansas	2,950	3,180	4,020	1,118,690	1,176,050	1,155,020	0.26	0.27	0.35
California	65,400	92,000	99,360	14,460,860	15,212,610	14,303,630	0.45	0.60	0.69
Colorado	NA	15,040	17,220	2,097,650	2,302,340	2,226,160	NA	0.65	0.77
Connecticut	8,210	7,550	8,640	1,631,610	1,697,810	1,620,620	0.50	0.44	0.53
Delaware	3,250	3,420	5,210	403,650	425,210	405,750	0.81	0.80	1.28
District of Columbia	5,650	5,650	5,240	595,220	635,500	653,760	0.95	0.89	0.80
Florida	19,820	22,280	23,140	7,217,400	7,771,740	7,273,850	0.27	0.29	0.32
Georgia	12,290	9,610	11,200	3,770,430	4,068,270	3,815,530	0.33	0.24	0.29
Hawaii	2,450	3,570	3,570	557,400	612,420	588,210	0.44	0.58	0.61
Idaho	3,630	3,100	3,980	563,200	650,240	598,540	0.64	0.48	0.66
Illinois	18,990	20,370	19,240	5,719,150	5,910,630	5,640,740	0.33	0.34	0.34
Indiana	9,100	11,530	11,350	2,851,210	2,927,620	2,811,920	0.32	0.39	0.40
Iowa	4,370	5,900	7,190	1,413,220	1,502,600	1,470,740	0.31	0.39	0.49
Kansas	4,470	6,010	5,520	1,292,170	1,374,560	1,320,920	0.35	0.44	0.42
Kentucky	5,410	NA	5,680	1,719,620	1,817,860	1,764,750	0.31	NA	0.32
Louisiana	6,170	NA	NA	1,851,870	1,887,370	1,868,210	0.33	NA	NA
Maine	2,290	2,750	2,870	591,750	604,150	581,110	0.39	0.46	0.49
Maryland	18,630	22,630	25,880	2,448,580	2,561,530	2,510,680	0.76	0.88	1.03
Massachusetts	20,480	26,930	NA	3,130,720	3,234,860	3,202,080	0.65	0.83	NA
Michigan	10,450	NA	13,300	4,310,420	4,142,750	3,918,120	0.24	NA	0.34
Minnesota	11,530	13,990	15,400	2,591,720	2,704,860	2,641,110	0.44	0.52	0.58
Mississippi	4,430	4,890	4,760	1,089,350	1,138,210	1,080,420	0.41	0.43	0.44
Missouri	9,370	10,620	10,400	2,623,020	2,740,170	2,605,910	0.36	0.39	0.40
Montana	2,870	NA	4,010	394,820	444,090	432,380	0.73	NA	0.93
Nebraska	4,070	3,580	4,280	879,550	928,120	914,830	0.46	0.39	0.47
Nevada	3,130	3,400	3,920	1,086,110	1,278,230	1,127,160	0.29	0.27	0.35
New Hampshire	1,720	2,690	2,720	607,570	634,570	612,710	0.28	0.42	0.44
New Jersey	20,970	25,170	21,380	3,878,020	3,986,310	3,793,720	0.54	0.63	0.56
New Mexico	7,580	6,870	NA	747,050	819,480	773,860	1.01	0.84	NA
New York	30,430	28,460	30,780	8,236,200	8,633,580	8,542,280	0.37	0.33	0.36
North Carolina	18,330	21,860	23,190	3,702,170	4,063,420	3,878,800	0.50	0.54	0.60
North Dakota	1,610	1,650	2,130	314,620	350,360	403,290	0.51	0.47	0.53
Ohio	15,550	19,040	18,140	5,308,270	5,323,130	5,054,250	0.29	0.36	0.36
Oklahoma	6,500	5,720	5,820	1,416,640	1,557,750	1,529,900	0.46	0.37	0.38
Oregon	8,130	9,170	9,610	1,537,000	1,706,740	1,609,900	0.53	0.54	0.60
Pennsylvania	25,470	28,610	NA	5,494,430	5,705,170	5,596,480	0.46	0.50	NA
Rhode Island	2,670	2,080	2,200	477,320	478,420	453,020	0.56	0.43	0.49
South Carolina	4,920	5,220	5,200	1,764,170	1,892,690	1,796,550	0.28	0.28	0.29
South Dakota	1,800	2,350	NA	364,970	395,960	398,680	0.49	0.59	NA
Tennessee	7,240	7,920	8,470	2,614,830	2,755,800	2,657,280	0.28	0.29	0.32
Texas	47,660	46,710	47,770	9,248,660	10,391,420	10,579,400	0.52	0.45	0.45
Utah	5,730	6,520	5,200	1,043,500	1,230,320	1,200,850	0.55	0.53	0.43
Vermont	1,230	1,460	1,860	291,400	301,130	294,090	0.42	0.48	0.63
Virginia	14,750	14,810	15,420	3,412,070	3,670,980	3,597,100	0.43	0.40	0.43
Washington	17,970	NA	21,730	2,560,190	2,868,910	2,764,080	0.70	NA	0.79
West Virginia	2,830	2,890	2,930	680,200	717,740	710,540	0.42	0.40	0.41
Wisconsin	11,600	14,580	12,200	2,687,400	2,776,690	2,673,280	0.43	0.53	0.46
Wyoming	1,670	2,320	2,290	240,730	283,980	278,040	0.69	0.82	0.82
Puerto Rico	4,870	5,380	4,070	962,000	999,010	942,080	0.51	0.54	0.43

NA = not available.

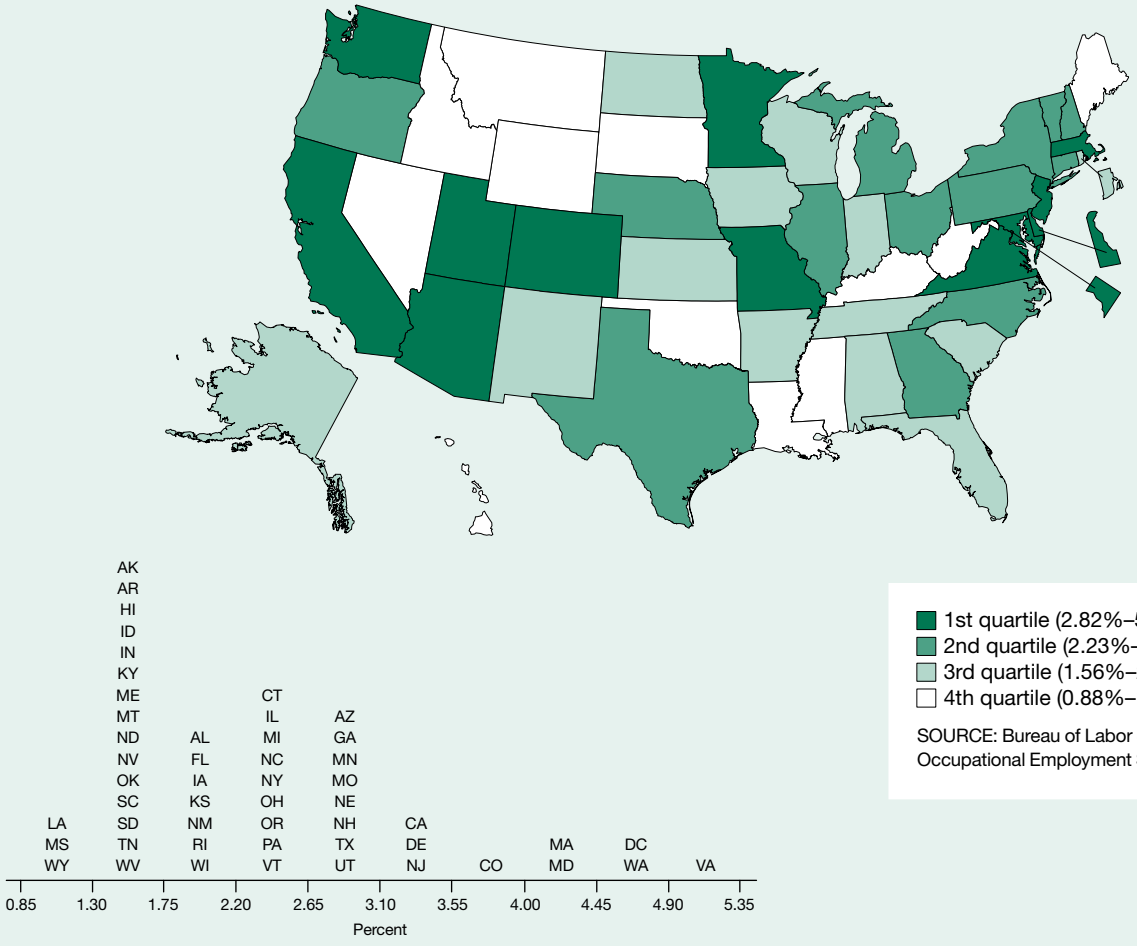
NOTE: United States total includes states with suppressed data.

SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Science and Engineering Indicators 2014

Computer Specialists as a Percentage of All Occupations

Figure 8-38
Computer specialists as a percentage of all occupations: 2012



Findings

- In the United States, 3.46 million individuals (2.65% of the workforce) were employed as computer specialists in 2012, an increase from the 2.73 million computer specialists employed in 2003, which accounted for 2.14% of the workforce.
- States showed large differences in the intensity of computer-related operations in their economies, with 0.88% to 5.35% of their workforces employed in computer-related occupations in 2012.
- Computer-intensive occupations were especially concentrated in the District of Columbia and the adjacent states of Maryland and Virginia. This may be due to the presence of many government offices, colleges and universities, and government contractors in the area that employ individuals in computer occupations.
- Experimental Program to Stimulate Competitive Research states tended to have smaller percentages of computer specialists in their workforces and accounted in total for 10% of computer specialists nationally.

This indicator represents the percentage of specialists with advanced computer training in a state's workforce. Computer specialists are identified from standard occupational codes that include computer and information scientists, programmers, software engineers, support specialists, systems analysts, database administrators, and network and computer system administrators. Higher values may indicate a state workforce that is better able to thrive in an information economy or to embrace and use computer technology.

Data on individuals in computer occupations and total occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-38
Computer specialists as a percentage of all occupations, by state: 2003, 2008, and 2012

State	Computer specialists			All occupations			Computer specialists in all occupations (%)		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
EPSCoR states	261,450	321,940	337,260	19,688,810	21,058,900	20,239,580	1.33	1.53	1.67
Non-EPSCoR states	2,389,820	2,826,110	3,067,180	106,264,140	112,528,090	108,402,850	2.25	2.51	2.83
Average EPSCoR state value	na	na	na	na	na	na	1.37	1.57	1.74
Average non-EPSCoR state value	na	na	na	na	na	na	2.30	2.55	2.87
United States	2,732,640	3,198,050	3,456,500	127,420,190	135,185,230	130,287,700	2.14	2.37	2.65
Alabama	28,010	33,570	37,140	1,817,240	1,945,300	1,824,400	1.54	1.73	2.04
Alaska	3,170	4,120	5,000	290,740	307,790	318,700	1.09	1.34	1.57
Arizona	45,020	55,840	68,770	2,275,410	2,637,830	2,414,340	1.98	2.12	2.85
Arkansas	11,770*	18,230	18,020*	1,118,690	1,176,050	1,155,020	1.05	1.55	1.56
California	361,640	401,690	458,630	14,460,860	15,212,610	14,303,630	2.50	2.64	3.21
Colorado	73,490	84,680	88,840	2,097,650	2,302,340	2,226,160	3.50	3.68	3.99
Connecticut	42,600	44,470	41,610	1,631,610	1,697,810	1,620,620	2.61	2.62	2.57
Delaware	8,930*	11,800*	13,130	403,650	425,210	405,750	2.21	2.78	3.24
District of Columbia	26,590	32,170	31,340	595,220	635,500	653,760	4.47	5.06	4.79
Florida	132,520	147,920	153,030	7,217,400	7,771,740	7,273,850	1.84	1.90	2.10
Georgia	86,970	91,760	101,120	3,770,430	4,068,270	3,815,530	2.31	2.26	2.65
Hawaii	7,170	8,040	8,950	557,400	612,420	588,210	1.29	1.31	1.52
Idaho	7,720	10,990*	9,010*	563,200	650,240	598,540	1.37	1.69	1.51
Illinois	120,840*	138,900	142,000	5,719,150	5,910,630	5,640,740	2.11	2.35	2.52
Indiana	36,440	43,090	45,450*	2,851,210	2,927,620	2,811,920	1.28	1.47	1.62
Iowa	20,640	26,920	29,300	1,413,220	1,502,600	1,470,740	1.46	1.79	1.99
Kansas	19,980	28,170	27,790	1,292,170	1,374,560	1,320,920	1.55	2.05	2.10
Kentucky	24,370	27,770	27,410	1,719,620	1,817,860	1,764,750	1.42	1.53	1.55
Louisiana	18,190	16,770	19,050	1,851,870	1,887,370	1,868,210	0.98	0.89	1.02
Maine	6,730	7,960	8,550	591,750	604,150	581,110	1.14	1.32	1.47
Maryland	87,350	91,600	101,660	2,448,580	2,561,530	2,510,680	3.57	3.58	4.05
Massachusetts	102,180	117,580	133,370	3,130,720	3,234,860	3,202,080	3.26	3.63	4.17
Michigan	71,830*	88,570	91,460	4,310,420	4,142,750	3,918,120	1.67	2.14	2.33
Minnesota	67,110	79,500	79,410	2,591,720	2,704,860	2,641,110	2.59	2.94	3.01
Mississippi	8,200	9,800	9,490	1,089,350	1,138,210	1,080,420	0.75	0.86	0.88
Missouri	55,730	66,140*	74,530	2,623,020	2,740,170	2,605,910	2.12	2.41	2.86
Montana	4,790*	5,270*	6,250	394,820	444,090	432,380	1.21	1.19	1.45
Nebraska	15,960*	20,110	24,330	879,550	928,120	914,830	1.81	2.17	2.66
Nevada	10,490	13,890	14,780	1,086,110	1,278,230	1,127,160	0.97	1.09	1.31
New Hampshire	12,780	17,560	17,030	607,570	634,570	612,710	2.10	2.77	2.78
New Jersey	109,960	131,090	121,030	3,878,020	3,986,310	3,793,720	2.84	3.29	3.19
New Mexico	11,380*	12,050	13,980	747,050	819,480	773,860	1.52	1.47	1.81
New York	167,790	201,100*	206,960	8,236,200	8,633,580	8,542,280	2.04	2.33	2.42
North Carolina	68,320	87,410	99,940	3,702,170	4,063,420	3,878,800	1.85	2.15	2.58
North Dakota	3,050	4,660*	6,740	314,620	350,360	403,290	0.97	1.33	1.67
Ohio	92,040	116,010	124,070	5,308,270	5,323,130	5,054,250	1.73	2.18	2.45
Oklahoma	21,600*	25,790	22,860	1,416,640	1,557,750	1,529,900	1.52	1.66	1.49
Oregon	31,430	37,010	40,350	1,537,000	1,706,740	1,609,900	2.04	2.17	2.51
Pennsylvania	98,860	118,710	127,390	5,494,430	5,705,170	5,596,480	1.80	2.08	2.28
Rhode Island	9,190*	9,180*	9,770	477,320	478,420	453,020	1.93	1.92	2.16
South Carolina	19,560	28,010	28,940	1,764,170	1,892,690	1,796,550	1.11	1.48	1.61
South Dakota	4,910	5,950	6,120	364,970	395,960	398,680	1.35	1.50	1.54
Tennessee	35,700	38,250	41,480	2,614,830	2,755,800	2,657,280	1.37	1.39	1.56
Texas	197,310	257,960	285,120	9,248,660	10,391,420	10,579,400	2.13	2.48	2.70
Utah	25,930	32,220	33,850	1,043,500	1,230,320	1,200,850	2.48	2.62	2.82
Vermont	5,080	5,460	6,560	291,400	301,130	294,090	1.74	1.81	2.23
Virginia	142,270	172,550	192,490	3,412,070	3,670,980	3,597,100	4.17	4.70	5.35
Washington	79,320	104,850	127,310	2,560,190	2,868,910	2,764,080	3.10	3.65	4.61
West Virginia	6,960	7,360	9,520	680,200	717,740	710,540	1.02	1.03	1.34
Wisconsin	36,530	50,290	58,010	2,687,400	2,776,690	2,673,280	1.36	1.81	2.17
Wyoming	1,680	2,130	2,530	240,730	283,980	278,040	0.70	0.75	0.91
Puerto Rico	7,070	8,750	9,200	962,000	999,010	942,080	0.73	0.88	0.98

* = value may be underreported because one or more codes for computer occupations were suppressed by the state or the Bureau of Labor Statistics and were not reported at the state level; na = not applicable.

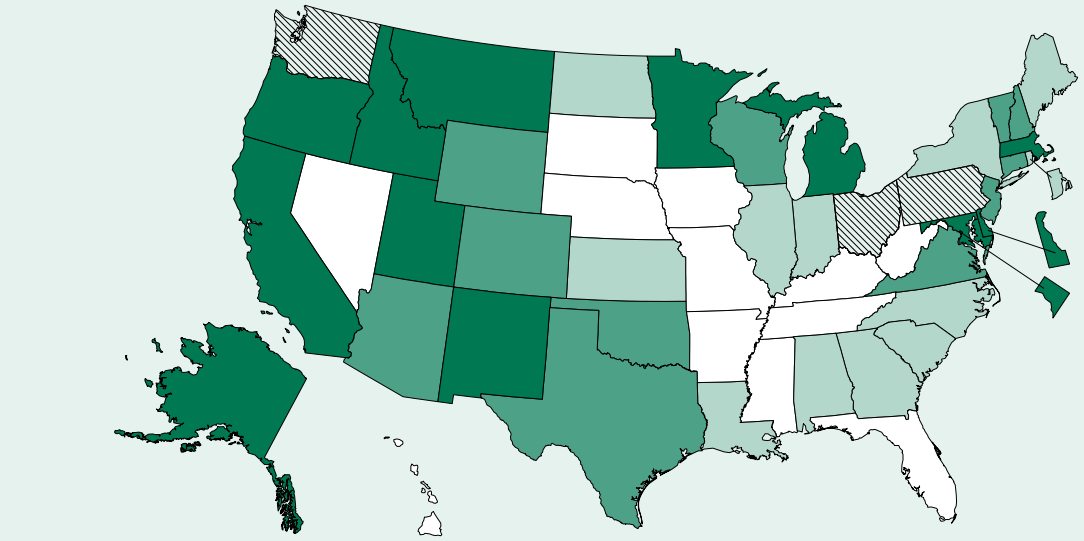
EPSCoR = Experimental Program to Stimulate Competitive Research.

NOTES: United States total includes states with suppressed data. For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Technical Workers as a Percentage of All Occupations

Figure 8-39
Technical workers as a percentage of all occupations: 2012



Findings

- Only 2 states increased in the use of technical workers between 2003 and 2012. The number of technical workers exceeded the number of doctorate holders, engineers, or life and physical scientists in the workforce during this period.
- Nearly 1.89 million individuals (1.45% of the U.S. workforce) were employed as technical workers in 2012, a decrease from the more than 2 million technical workers employed in 2003, which accounted for 1.61% of the workforce.
- Individual states showed large differences in the percentage of technical workers in their workforce, with 0.98% to 2.11% of their workforce employed as technical workers in 2012.
- Experimental Program to Stimulate Competitive Research states tended to have smaller percentages of technical workers in their workforces and accounted in total for 14% of technical workers nationally.

Technical workers include managers in the areas of computer and information science, engineering, or the natural sciences; computer programmers; drafters working in architecture, civil engineering, electronics, or mechanical engineering; and technicians in a wide variety of technical fields. Individuals who work as scientists and engineers are not included in this indicator.

Data on technical occupations and total occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates are developed by the Bureau of Labor Statistics from data provided by state workforce agencies and do not include self-employed persons.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-39
Technical workers as a percentage of all occupations, by state: 2003, 2008, and 2012

State	Technical workers			All occupations			Technical workers in all occupations (%)		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
EPSCoR states	220,020	290,540	264,220	19,688,810	21,058,900	20,239,580	1.12	1.38	1.31
Non-EPSCoR states	1,323,500	1,754,580	1,409,960	106,264,140	112,528,090	108,402,850	1.25	1.56	1.30
Average EPSCoR state value	na	na	na	na	na	na	1.15	1.48	1.40
Average non-EPSCoR state value	na	na	na	na	na	na	1.27	1.58	1.50
United States	1,561,840	2,071,260	1,888,050	127,420,190	135,185,230	130,287,700	1.23	1.53	1.45
Alabama	22,040	25,000	23,770	1,817,240	1,945,300	1,824,400	1.21	1.29	1.30
Alaska	5,140	6,950	6,730	290,740	307,790	318,700	1.77	2.26	2.11
Arizona	30,770	46,960	37,860	2,275,410	2,637,830	2,414,340	1.35	1.78	1.57
Arkansas	10,040	13,470	12,160	1,118,690	1,176,050	1,155,020	0.90	1.15	1.05
California	173,750	248,640	246,680	14,460,860	15,212,610	14,303,630	1.20	1.63	1.72
Colorado	29,940	37,480	33,200	2,097,650	2,302,340	2,226,160	1.43	1.63	1.49
Connecticut	21,800	31,020	26,880	1,631,610	1,697,810	1,620,620	1.34	1.83	1.66
Delaware	5,100	9,170	7,190	403,650	425,210	405,750	1.26	2.16	1.77
District of Columbia	6,840	11,310	11,880	595,220	635,500	653,760	1.15	1.78	1.82
Florida	83,390	94,870	78,110	7,217,400	7,771,740	7,273,850	1.16	1.22	1.07
Georgia	39,760	49,960	48,930	3,770,430	4,068,270	3,815,530	1.05	1.23	1.28
Hawaii	4,580	7,090	6,570	557,400	612,420	588,210	0.82	1.16	1.12
Idaho	7,760	15,520	12,350	563,200	650,240	598,540	1.38	2.39	2.06
Illinois	59,280	78,950	71,670	5,719,150	5,910,630	5,640,740	1.04	1.34	1.27
Indiana	30,740	36,430	35,600	2,851,210	2,927,620	2,811,920	1.08	1.24	1.27
Iowa	13,360	19,560	17,410	1,413,220	1,502,600	1,470,740	0.95	1.30	1.18
Kansas	14,650	20,380	17,460	1,292,170	1,374,560	1,320,920	1.13	1.48	1.32
Kentucky	15,420	18,670	17,330	1,719,620	1,817,860	1,764,750	0.90	1.03	0.98
Louisiana	20,860	25,160	23,430	1,851,870	1,887,370	1,868,210	1.13	1.33	1.25
Maine	6,610	8,450	7,540	591,750	604,150	581,110	1.12	1.40	1.30
Maryland	35,560	47,210	48,880	2,448,580	2,561,530	2,510,680	1.45	1.84	1.95
Massachusetts	43,010	64,150	63,310	3,130,720	3,234,860	3,202,080	1.37	1.98	1.98
Michigan	75,280	72,440	67,450	4,310,420	4,142,750	3,918,120	1.75	1.75	1.72
Minnesota	35,540	47,300	45,380	2,591,720	2,704,860	2,641,110	1.37	1.75	1.72
Mississippi	8,920	14,790	10,630	1,089,350	1,138,210	1,080,420	0.82	1.30	0.98
Missouri	29,980	37,420	30,340	2,623,020	2,740,170	2,605,910	1.14	1.37	1.16
Montana	5,090	6,730	8,050	394,820	444,090	432,380	1.29	1.52	1.86
Nebraska	9,820	10,780	10,290	879,550	928,120	914,830	1.12	1.16	1.12
Nevada	9,420	13,310	11,270	1,086,110	1,278,230	1,127,160	0.87	1.04	1.00
New Hampshire	7,020	10,410	9,280	607,570	634,570	612,710	1.16	1.64	1.51
New Jersey	54,950	68,530	57,440	3,878,020	3,986,310	3,793,720	1.42	1.72	1.51
New Mexico	13,740	16,560	16,120	747,050	819,480	773,860	1.84	2.02	2.08
New York	84,250	126,730	106,730	8,236,200	8,633,580	8,542,280	1.02	1.47	1.25
North Carolina	43,910	62,530	50,890	3,702,170	4,063,420	3,878,800	1.19	1.54	1.31
North Dakota	3,330	4,710	4,870	314,620	350,360	403,290	1.06	1.34	1.21
Ohio	59,130	68,590	NA	5,308,270	5,323,130	5,054,250	1.11	1.29	NA
Oklahoma	15,280	20,040	21,810	1,416,640	1,557,750	1,529,900	1.08	1.29	1.43
Oregon	21,270	31,440	29,410	1,537,000	1,706,740	1,609,900	1.38	1.84	1.83
Pennsylvania	65,160	82,850	NA	5,494,430	5,705,170	5,596,480	1.19	1.45	NA
Rhode Island	5,090	6,600	5,430	477,320	478,420	453,020	1.07	1.38	1.20
South Carolina	21,170	27,370	22,870	1,764,170	1,892,690	1,796,550	1.20	1.45	1.27
South Dakota	3,470	3,990	4,040	364,970	395,960	398,680	0.95	1.01	1.01
Tennessee	27,640	31,230	30,050	2,614,830	2,755,800	2,657,280	1.06	1.13	1.13
Texas	130,250	186,370	163,880	9,248,660	10,391,420	10,579,400	1.41	1.79	1.55
Utah	14,890	23,910	21,620	1,043,500	1,230,320	1,200,850	1.43	1.94	1.80
Vermont	2,570	4,450	4,390	291,400	301,130	294,090	0.88	1.48	1.49
Virginia	50,660	62,770	61,190	3,412,070	3,670,980	3,597,100	1.48	1.71	1.70
Washington	39,510	56,080	NA	2,560,190	2,868,910	2,764,080	1.54	1.95	NA
West Virginia	8,090	8,530	7,910	680,200	717,740	710,540	1.19	1.19	1.11
Wisconsin	29,720	41,160	37,050	2,687,400	2,776,690	2,673,280	1.11	1.48	1.39
Wyoming	2,720	4,210	4,170	240,730	283,980	278,040	1.13	1.48	1.50
Puerto Rico	9,560	10,750	10,640	962,000	999,010	942,080	0.99	1.08	1.13

na = not applicable; NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research.

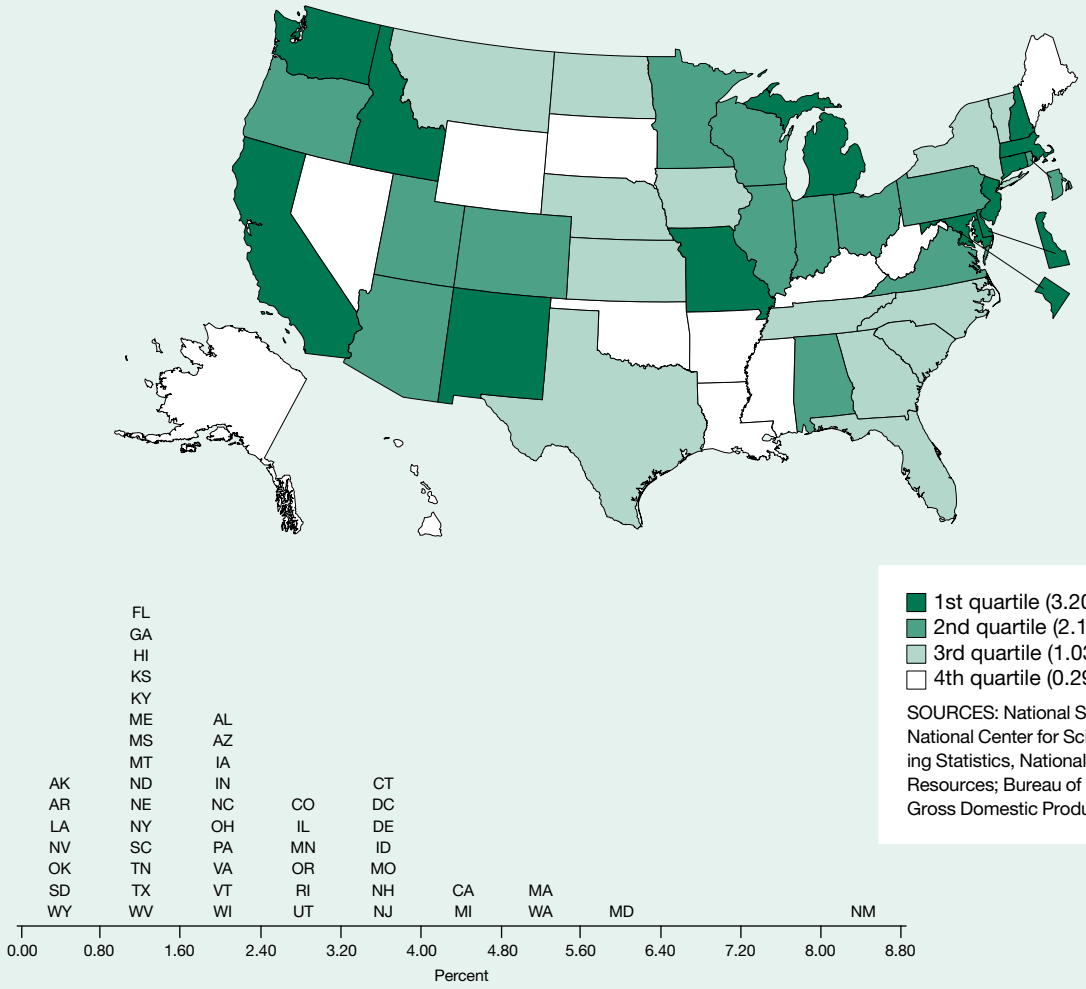
NOTES: United States total includes states with suppressed data. For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCE: Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Science and Engineering Indicators 2014

R&D as a Percentage of Gross Domestic Product

Figure 8-40
R&D as a percentage of gross domestic product: 2010



Findings

- The national value of this indicator rose slightly between 2000 and 2010, from 2.48% to 2.61%.
- In 2010, state values for this indicator ranged from 0.29% to 8.01%, indicating large differences in the geographic concentration of R&D activity.
- New Mexico has a large amount of federal R&D activities and a relatively small GDP, giving it the highest value for this indicator.
- States with high rankings on this indicator also tended to rank high on S&E doctorate holders as a share of the workforce.
- The total R&D performed in states in the Experimental Program to Stimulate Competitive Research (EPSCoR) group was approximately 9% of that performed in states in the non-EPSCoR group in 2010.

This indicator represents the extent to which R&D plays a role in a state's economy. A high value indicates that a state has a high intensity of R&D activity, which may support future growth in knowledge-based industries. Industries that have a high percentage of R&D activity include pharmaceuticals, chemicals, computer equipment and services, electronic components, aerospace, and motor vehicles.

"R&D performed" refers to R&D activities conducted or funded by federal and state agencies, businesses, universities, and nonprofit organizations. In 2010, business performed nearly 69% of the total R&D at the national level. The remaining R&D was performed by colleges and universities, government facilities (including federally funded R&D centers), and nonprofit institutions.

The methodology for assigning industry R&D activity at the state level was modified in 2001, and 1998–2000 data were recalculated using the new methodology.

Table 8-40
R&D as a percentage of gross domestic product, by state: 2000, 2005, and 2010

State	R&D performed ($millions)			State GDP ($millions)			R&D performed/ state GDP (%)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
EPSCoR states	18,292	27,056	31,731	1,309,452	1,725,273	2,017,488	1.40	1.57	1.57
Non-EPSCoR states	223,827	279,001	339,269	8,456,735	10,649,784	12,164,950	2.65	2.62	2.79
Average EPSCoR state value	na	na	na	na	na	na	1.62	1.76	1.75
Average non-EPSCoR state value	na	na	na	na	na	na	2.47	2.65	2.83
United States	244,852	310,197	375,724	9,884,170	12,539,116	14,388,814	2.48	2.47	2.61
Alabama	1,730	2,804	3,738	116,009	150,968	172,842	1.49	1.86	2.16
Alaska	196	266	347	25,911	37,774	47,910	0.76	0.70	0.72
Arizona	3,107	4,139	5,481	161,792	222,569	247,329	1.92	1.86	2.22
Arkansas	454	528	590	68,335	88,501	103,170	0.66	0.60	0.57
California	55,093	63,874	81,005	1,319,472	1,688,949	1,845,249	4.18	3.78	4.39
Colorado	4,230	5,807	6,164	172,037	217,329	254,551	2.46	2.67	2.42
Connecticut	4,888	8,987	7,435	163,455	196,307	221,767	2.99	4.58	3.35
Delaware	1,532	1,635	2,327	40,614	54,422	62,832	3.77	3.00	3.70
District of Columbia	2,296	3,342	3,568	58,267	82,488	103,745	3.94	4.05	3.44
Florida	4,663	6,224	7,952	481,239	681,225	727,972	0.97	0.91	1.09
Georgia	2,796	3,867	5,451	293,966	363,177	402,006	0.95	1.06	1.36
Hawaii	291	513	688	41,450	56,901	67,274	0.70	0.90	1.02
Idaho	1,434	1,030	1,779	36,147	48,683	55,639	3.97	2.12	3.20
Illinois	12,767	12,519	15,820	474,520	568,114	642,769	2.69	2.20	2.46
Indiana	3,252	5,455	6,339	198,238	239,321	270,739	1.64	2.28	2.34
Iowa	1,017	1,669	2,765	93,312	119,998	138,378	1.09	1.39	2.00
Kansas	1,420	2,366	2,002	85,722	104,869	126,640	1.66	2.26	1.58
Kentucky	866	1,136	1,498	113,233	138,772	161,064	0.76	0.82	0.93
Louisiana	627	966	1,200	131,289	196,917	227,373	0.48	0.49	0.53
Maine	319	524	488	36,438	45,520	51,343	0.88	1.15	0.95
Maryland	8,634	14,136	18,429	182,923	247,241	295,981	4.72	5.72	6.23
Massachusetts	13,004	17,757	20,195	273,006	323,314	376,908	4.76	5.49	5.36
Michigan	18,892	18,372	14,702	337,459	375,753	367,107	5.60	4.89	4.00
Minnesota	4,299	7,137	7,393	188,818	237,813	268,578	2.28	3.00	2.75
Mississippi	513	777	852	65,625	81,360	95,763	0.78	0.96	0.89
Missouri	2,583	3,627	9,253	180,967	216,336	243,876	1.43	1.68	3.79
Montana	170	318	390	21,633	30,054	36,521	0.79	1.06	1.07
Nebraska	439	800	935	57,333	72,505	90,910	0.77	1.10	1.03
Nevada	377	614	939	75,895	114,478	124,838	0.50	0.54	0.75
New Hampshire	775	1,776	2,159	44,161	53,693	61,147	1.75	3.31	3.53
New Jersey	13,133	14,900	17,876	350,110	430,246	483,007	3.75	3.46	3.70
New Mexico	3,085	5,265	6,225	50,294	67,763	77,686	6.13	7.77	8.01
New York	13,556	14,103	17,141	769,291	959,867	1,136,417	1.76	1.47	1.51
North Carolina	5,045	7,329	8,746	281,542	354,664	426,875	1.79	2.07	2.05
North Dakota	146	285	468	18,266	24,670	35,357	0.80	1.16	1.32
Ohio	7,662	8,267	10,048	380,895	444,083	465,679	2.01	1.86	2.16
Oklahoma	660	814	1,029	91,273	120,529	147,649	0.72	0.68	0.70
Oregon	2,116	3,920	5,250	113,180	143,429	181,523	1.87	2.73	2.89
Pennsylvania	9,842	11,916	13,074	395,602	482,200	558,818	2.49	2.47	2.34
Rhode Island	1,501	1,990	1,439	33,584	44,189	48,572	4.47	4.50	2.96
South Carolina	1,126	2,108	2,384	115,443	141,877	162,292	0.98	1.49	1.47
South Dakota	85	157	270	24,038	31,549	38,297	0.35	0.50	0.71
Tennessee	2,057	3,009	3,955	177,540	224,288	253,602	1.16	1.34	1.56
Texas	11,552	15,867	19,504	731,064	968,553	1,226,714	1.58	1.64	1.59
Utah	1,361	1,886	3,197	69,489	90,616	118,225	1.96	2.08	2.70
Vermont	465	493	452	18,039	22,743	25,809	2.58	2.17	1.75
Virginia	5,069	8,568	10,063	261,759	356,370	422,763	1.94	2.40	2.38
Washington	10,516	11,864	16,685	227,704	279,333	342,702	4.62	4.25	4.87
West Virginia	457	567	584	41,386	51,857	62,732	1.10	1.09	0.93
Wisconsin	2,693	3,802	5,346	177,355	218,689	245,415	1.52	1.74	2.18
Wyoming	61	122	104	17,050	26,250	36,459	0.36	0.46	0.29
Puerto Rico	NA	NA	NA	69,208	86,158	NA	NA	NA	NA

na = not applicable; NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product.

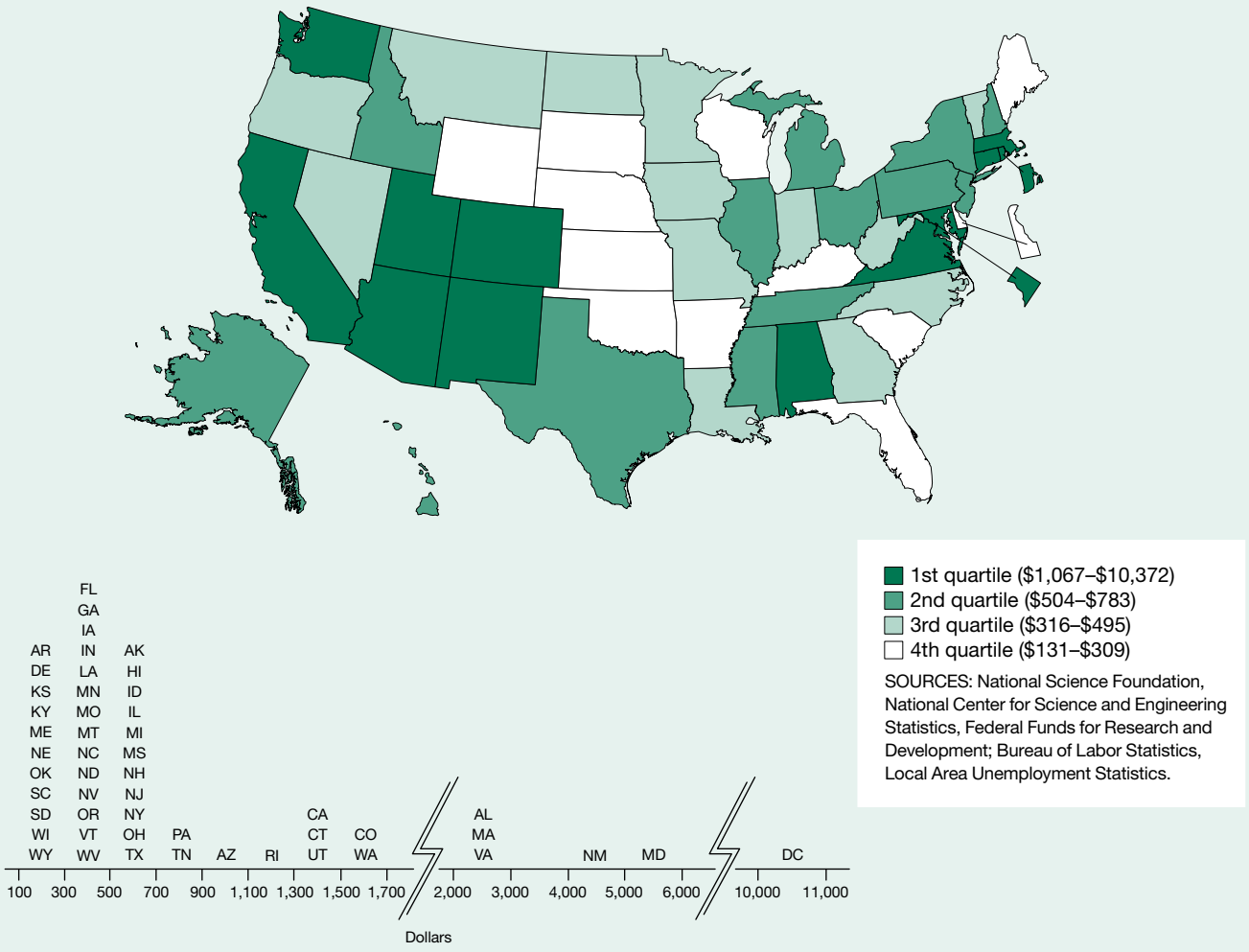
NOTES: R&D includes R&D performed by federal agencies, businesses, universities, other nonprofit organizations, and state agencies. For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

Science and Engineering Indicators 2014

Federal R&D Obligations per Employed Worker

Figure 8-41
Federal R&D obligations per employed worker: 2011



Findings

- Federal R&D obligations have increased from about $82 billion in 2001 to about $132 billion in 2011, an increase of 60%.
- In 2011, federal R&D obligations per civilian worker were concentrated in a few states; only 12 states and the District of Columbia exceeded the national average of $940 per worker.
- Federal R&D obligations in 2011 varied greatly among the states, ranging from $131 to $5,633 per civilian worker. Higher values were found in the states surrounding the District of Columbia and in sparsely populated states with national laboratories or federal facilities.

This indicator represents how federal R&D obligations are disbursed geographically relative to the size of a state's employed civilian workforce. Federal R&D dollars are attributed to the states in which the recipients are located.

Data on federal obligations for R&D come from the National Center for Science and Engineering Statistics, which aggregates reports from 11 federal agencies. The Department of Defense (DoD) disburses the most federal R&D funding, approximately 50% of the total. The geographic distribution of DoD R&D funding for development to industry reflects the location of prime contractors only, not the subcontractors who perform much of the R&D. A high value may indicate the existence of a number of large prime contractors or major federally funded R&D facilities in a state.

The estimate of a state's workforce is provided by the Bureau of Labor Statistics (BLS). It represents the employed component of the civilian labor force and is not seasonally adjusted. BLS assigns workers to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-41
Federal R&D obligations per employed worker, by state: 2001, 2006, and 2011

State	Federal R&D obligations ($thousands)			Employed workers			Federal R&D obligations/ employed worker ($)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	82,445,122	107,446,145	132,214,369	137,107,779	143,729,350	140,695,662	601	748	940
Alabama	2,456,769	2,161,708	5,295,260	2,034,909	2,098,462	1,992,522	1,207	1,030	2,658
Alaska	254,444	209,038	202,715	301,694	326,109	337,796	843	641	600
Arizona	1,881,000	2,056,284	2,947,365	2,453,453	2,836,638	2,761,984	767	725	1,067
Arkansas	183,867	156,164	185,011	1,194,024	1,286,887	1,251,877	154	121	148
California	13,001,687	21,156,522	23,766,358	16,220,033	16,821,266	16,237,286	802	1,258	1,464
Colorado	1,450,603	2,029,641	3,956,160	2,303,494	2,541,828	2,490,004	630	798	1,589
Connecticut	1,377,388	1,591,960	2,519,649	1,700,046	1,745,993	1,732,807	810	912	1,454
Delaware	83,546	108,657	115,097	404,135	424,618	407,772	207	256	282
District of Columbia	2,775,973	4,091,852	3,244,864	286,649	303,791	312,859	9,684	13,469	10,372
Florida	2,774,006	2,319,079	2,572,256	7,624,718	8,584,095	8,322,237	364	270	309
Georgia	3,438,270	1,251,445	1,467,224	4,112,868	4,500,150	4,295,113	836	278	342
Hawaii	435,685	340,094	426,895	589,216	617,807	614,824	739	550	694
Idaho	209,344	297,094	461,143	644,816	718,077	702,920	325	414	656
Illinois	1,825,057	1,975,552	2,993,498	6,113,536	6,225,095	5,942,809	299	317	504
Indiana	568,761	559,860	909,639	3,020,985	3,080,047	2,874,722	188	182	316
Iowa	361,455	497,173	702,407	1,568,638	1,595,136	1,562,156	230	312	450
Kansas	306,656	212,152	372,210	1,347,715	1,403,938	1,401,055	228	151	266
Kentucky	370,384	239,141	246,577	1,852,056	1,904,467	1,875,447	200	126	131
Louisiana	275,788	321,096	612,183	1,922,110	1,900,240	1,919,021	143	169	319
Maine	450,735	226,468	181,441	650,699	665,856	649,312	693	340	279
Maryland	9,473,728	12,499,496	16,155,528	2,712,268	2,892,733	2,868,191	3,493	4,321	5,633
Massachusetts	4,499,835	6,104,611	7,789,148	3,275,343	3,255,504	3,216,160	1,374	1,875	2,422
Michigan	1,196,424	1,680,908	2,156,949	4,876,338	4,722,716	4,189,792	245	356	515
Minnesota	900,936	1,237,266	973,293	2,755,808	2,774,524	2,777,285	327	446	350
Mississippi	415,671	544,029	610,041	1,229,884	1,199,871	1,197,641	338	453	509
Missouri	927,045	1,225,269	1,197,459	2,867,853	2,889,461	2,767,043	323	424	433
Montana	136,825	149,876	182,103	447,827	476,412	466,372	306	315	390
Nebraska	145,189	159,986	262,929	925,783	943,176	961,786	157	170	273
Nevada	360,215	422,449	482,238	1,042,182	1,222,277	1,207,799	346	346	399
New Hampshire	474,423	371,808	407,597	680,706	708,748	697,383	697	525	584
New Jersey	1,673,959	2,110,673	2,622,723	4,117,543	4,257,899	4,120,017	407	496	637
New Mexico	2,890,565	3,100,110	3,553,015	821,003	886,708	862,043	3,521	3,496	4,122
New York	3,528,344	5,225,241	5,252,630	8,743,924	9,062,464	8,740,642	404	577	601
North Carolina	1,400,937	1,765,859	2,069,117	3,929,977	4,261,325	4,183,052	356	414	495
North Dakota	77,903	112,067	118,061	336,228	349,368	368,677	232	321	320
Ohio	3,051,142	2,420,136	3,609,891	5,566,735	5,602,764	5,303,655	548	432	681
Oklahoma	324,002	262,336	475,596	1,614,627	1,650,070	1,678,953	201	159	283
Oregon	522,640	505,321	729,170	1,711,041	1,792,039	1,785,400	305	282	408
Pennsylvania	2,772,116	3,227,533	4,528,148	5,874,153	6,021,084	5,892,519	472	536	768
Rhode Island	437,455	615,902	612,766	520,677	543,973	499,481	840	1,132	1,227
South Carolina	314,287	370,562	515,713	1,834,871	1,970,912	1,941,654	171	188	266
South Dakota	54,941	75,926	61,931	400,352	421,799	422,696	137	180	147
Tennessee	1,039,488	1,455,622	2,213,857	2,728,523	2,852,509	2,828,617	381	510	783
Texas	3,189,399	5,263,822	5,904,027	9,991,920	10,757,510	11,493,519	319	489	514
Utah	421,569	737,850	1,757,902	1,108,547	1,285,389	1,254,151	380	574	1,402
Vermont	112,704	105,544	125,857	330,099	343,149	338,632	341	308	372
Virginia	4,995,665	8,882,441	8,637,382	3,537,719	3,862,508	3,928,267	1,412	2,300	2,199
Washington	1,725,258	4,039,292	4,980,150	2,863,705	3,155,384	3,161,818	602	1,280	1,575
West Virginia	376,105	301,416	261,253	758,904	777,210	740,175	496	388	353
Wisconsin	487,948	635,645	752,236	2,897,937	2,932,482	2,832,826	168	217	266
Wyoming	36,986	36,169	37,709	259,508	276,882	284,893	143	131	132
Puerto Rico	90,790	98,790	98,891	1,133,988	1,260,703	1,032,765	80	78	96

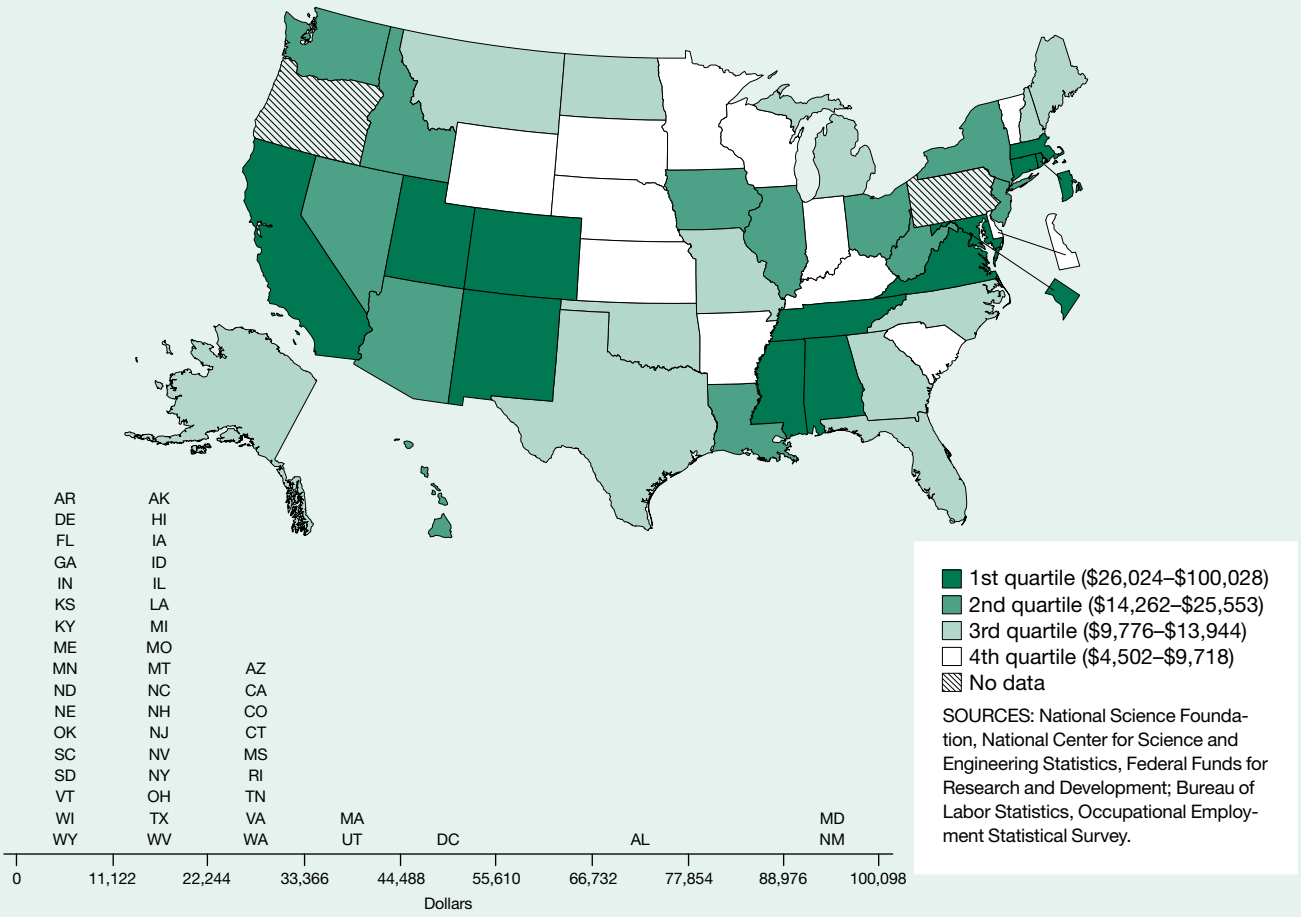
NOTES: Only 11 agencies are required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. Civilian workers represent the employed component of the civilian labor force and are reported as annual data not seasonally adjusted. Federal R&D obligations are reported in current dollars.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics (various years).

Science and Engineering Indicators 2014

Federal R&D Obligations per Individual in Science and Engineering Occupation

Figure 8-42
Federal R&D obligations per individual in science and engineering occupation: 2011



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development; Bureau of Labor Statistics, Occupational Employment Statistical Survey.

Findings

- The federal government obligated approximately $132 billion for R&D in 2011—nearly $23,000 for each person employed in an S&E occupation.
- Federal R&D obligations per person employed in an S&E occupation ranged across the states from $4,502 to $100,028 in 2011.
- The distribution for this indicator was highly skewed in 2011, with only 14 states and the District of Columbia above the national average. High values were reported in the District of Columbia and adjoining states and also in states where federal facilities or major defense contractors are located.
- The majority of states in the lowest quartile for this indicator in 2011 were Experimental Program to Stimulate Competitive Research states.

This indicator represents the relationship between federal R&D spending in a state and the number of employees in the state who work in S&E occupations. Federal R&D dollars are attributed to the states in which the recipients of federal obligations are located.

Data on federal obligations for R&D come from the National Center for Science and Engineering Statistics, which aggregates reports from 11 federal agencies. The Department of Defense (DoD) disburses the most funding, approximately 50% of the total. The geographic distribution of DoD R&D funding to industry, mostly for development, reflects the location of prime contractors only, not the numerous subcontractors who perform much of the R&D.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies. Data on people in S&E occupations are sample based.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-42
Federal R&D obligations per individual in science and engineering occupation, by state: 2003, 2007, and 2011

State	Federal R&D obligations ($millions)			Individuals in S&E occupations			Federal R&D obligations/individual in S&E occupation ($)		
	2003	2007	2011	2003	2007	2011	2003	2007	2011
United States	100,982	124,684	132,213	4,961,550	5,591,990	5,794,980	20,353	22,297	22,815
Alabama	3,212	2,248	5,295	56,380	69,650	70,290	56,971	32,276	75,331
Alaska	399	264	203	10,600	11,990	15,680	37,642	22,018	12,946
Arizona	2,385	2,422	2,947	92,120	102,380	115,330	25,890	23,657	25,553
Arkansas	145	178	185	21,340	28,460	29,350	6,795	6,254	6,303
California	20,170	26,987	23,766	676,180	753,570	800,430	29,829	35,812	29,692
Colorado	1,735	2,798	3,956	124,140	138,990	144,750	13,976	20,131	27,330
Connecticut	2,068	2,117	2,520	81,380	80,280	76,550	25,412	26,370	32,920
Delaware	95	131	115	17,370	22,140	22,430	5,469	5,917	5,127
District of Columbia	2,986	4,278	3,245	54,890	63,150	62,660	54,400	67,743	51,787
Florida	2,854	4,078	2,572	221,070	244,140	244,970	12,910	16,704	10,499
Georgia	2,133	1,686	1,467	144,170	136,880	147,820	14,795	12,317	9,924
Hawaii	414	379	427	16,090	18,740	20,100	25,730	20,224	21,244
Idaho	218	288	461	22,150	24,330	25,950	9,842	11,837	17,765
Illinois	1,935	2,145	2,993	211,230	225,180	204,420	9,161	9,526	14,641
Indiana	574	597	910	78,410	83,080	93,640	7,320	7,186	9,718
Iowa	500	662	702	37,320	45,430	48,930	13,398	14,572	14,347
Kansas	269	318	372	51,970	50,040	51,530	5,176	6,355	7,219
Kentucky	247	222	247	45,230	49,030	51,990	5,461	4,528	4,751
Louisiana	453	419	612	41,900	38,450	42,760	10,811	10,897	14,312
Maine	167	379	181	15,020	15,960	17,490	11,119	23,747	10,349
Maryland	8,027	11,906	16,156	149,250	162,540	173,020	53,782	73,250	93,376
Massachusetts	5,492	7,529	7,789	184,690	205,610	220,670	29,736	36,618	35,297
Michigan	1,693	1,726	2,157	182,940	212,040	188,380	9,254	8,140	11,450
Minnesota	866	1,387	973	117,120	129,840	130,340	7,394	10,682	7,465
Mississippi	1,181	434	610	22,190	25,520	23,440	53,222	17,006	26,024
Missouri	1,350	1,221	1,197	84,150	102,170	106,930	16,043	11,951	11,194
Montana	131	654	182	11,450	13,240	14,960	11,441	49,396	12,166
Nebraska	168	230	263	30,710	31,420	33,800	5,471	7,320	7,781
Nevada	419	321	482	22,330	26,920	28,370	18,764	11,924	16,990
New Hampshire	512	340	408	23,430	28,450	29,260	21,852	11,951	13,944
New Jersey	2,088	2,192	2,623	161,420	186,120	182,210	12,935	11,777	14,395
New Mexico	3,090	3,478	3,553	33,600	33,440	35,520	91,964	104,007	100,028
New York	4,383	5,368	5,253	272,440	322,520	310,510	16,088	16,644	16,917
North Carolina	1,617	1,828	2,069	132,440	142,970	161,880	12,209	12,786	12,781
North Dakota	107	116	118	8,430	9,660	12,070	12,693	12,008	9,776
Ohio	2,967	3,661	3,610	177,100	196,390	208,140	16,753	18,641	17,344
Oklahoma	570	253	476	44,360	51,430	47,090	12,849	4,919	10,108
Oregon	514	506	729	61,230	67,890	NA	8,395	7,453	NA
Pennsylvania	3,989	3,360	4,528	185,560	218,890	NA	21,497	15,350	NA
Rhode Island	566	628	613	18,740	18,400	19,450	30,203	34,130	31,517
South Carolina	454	422	516	48,740	54,120	61,020	9,315	7,797	8,456
South Dakota	55	62	62	9,150	11,550	11,790	6,011	5,368	5,259
Tennessee	1,131	1,908	2,214	63,680	70,820	77,630	17,761	26,942	28,520
Texas	5,414	6,693	5,904	365,270	441,410	469,080	14,822	15,163	12,586
Utah	803	991	1,758	45,570	51,340	51,350	17,621	19,303	34,236
Vermont	201	108	126	11,420	12,760	13,100	17,601	8,464	9,618
Virginia	6,709	9,088	8,637	209,280	254,710	267,620	32,058	35,680	32,273
Washington	2,442	4,751	4,980	150,230	183,900	196,760	16,255	25,835	25,310
West Virginia	383	219	261	16,220	16,560	18,300	23,613	13,225	14,262
Wisconsin	658	671	752	93,320	99,380	102,320	7,051	6,752	7,349
Wyoming	43	37	38	6,130	8,110	8,440	7,015	4,562	4,502
Puerto Rico	112	86	99	19,940	23,630	20,990	5,617	3,639	4,717

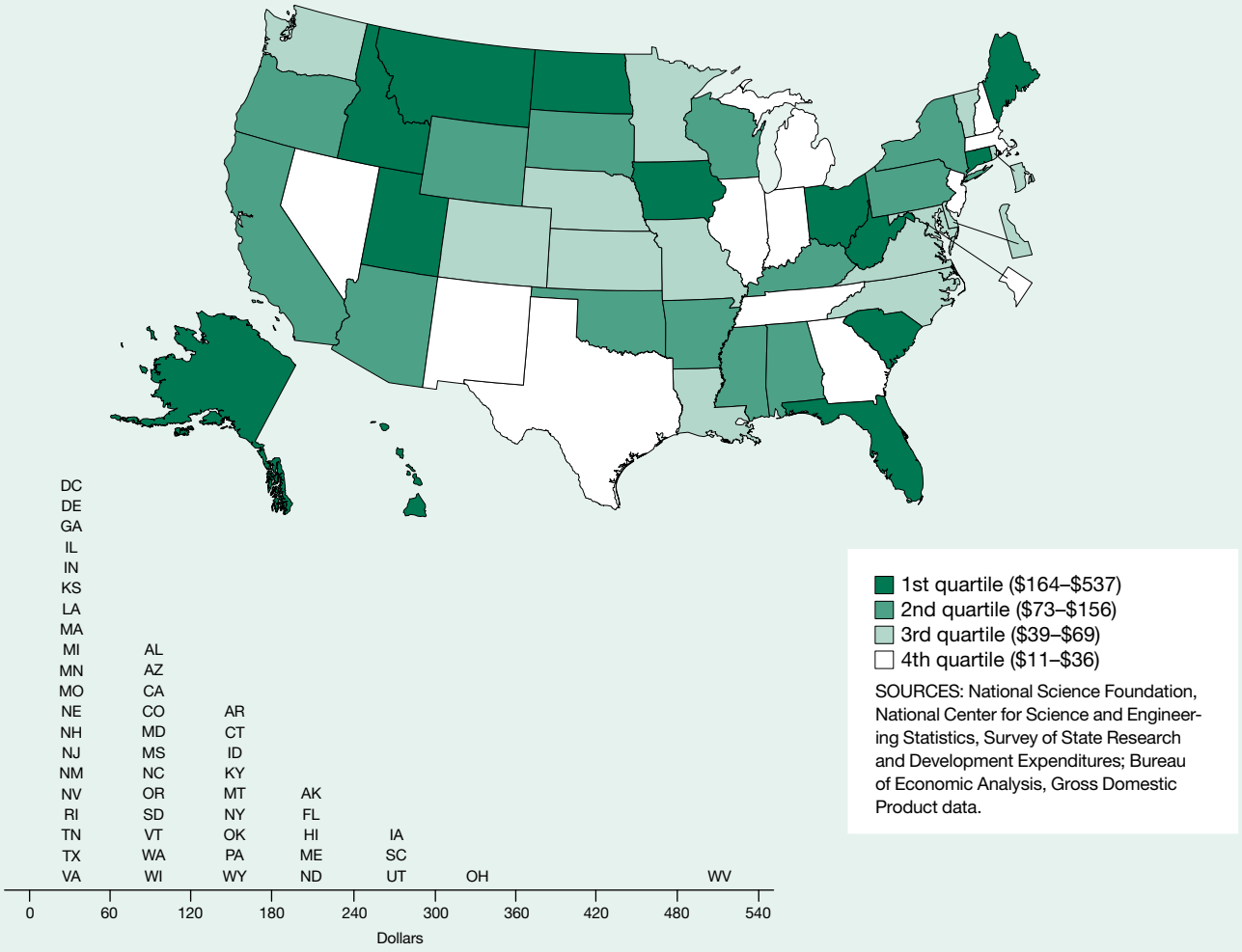
NA = not available.

NOTES: Only 11 agencies are required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. Federal R&D obligations are reported in current dollars. Occupational Employment Statistics estimates for 2003 are based on November data; estimates for the remaining years are based on May data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development (various years); Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

State Agency R&D Expenditures per $1 Million of Gross Domestic Product

Figure 8-43
State agency R&D expenditures per $1 million of gross domestic product: 2011



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures; Bureau of Economic Analysis, Gross Domestic Product data.

Findings

- Nationally, state government agencies spent a total of $1.4 billion on R&D in 2011. This represented $94 for each $1 million of a state's gross domestic product (GDP).
- National, state agency R&D expenditures accounted for less than one-half of 1% of total R&D expenditures in 2001, 2006, and 2011; most R&D was funded by nonstate sources.
- In 2011, the state values for this indicator ranged from $13 to $537 per $1 million of state GDP.
- Five Experimental Program to Stimulate Competitive Research (EPSCoR) states are among those with the highest values for this indicator, suggesting that there is a state-level effort to improve R&D infrastructure in these states, not just a federal effort. The average value of this indicator for EPSCoR states exceeded that of non-EPSCoR states from 2006 to 2011.

This indicator represents the ratio of state agency R&D funding to the size of a state's economy. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D funding cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

Because of differences in the survey populations, definition of covered R&D activities, and collection methods, the results of National Science Foundation surveys on state government R&D prior to 2006 are not comparable.

Table 8-43
State agency R&D expenditures per $1 million of gross domestic product, by state: 2006, 2009, and 2011

State	State agency R&D expenditures ($)			State GDP ($millions)			State agency R&D ($)/ $1 million GDP		
	2006	2009	2011	2006	2009	2011	2006	2009	2011
EPSCoR states	162,703,455	170,308,360	243,823,609	1,827,039	1,928,030	2,102,177	89	88	116
Non-EPSCoR states	824,010,424	1,012,336,215	1,137,595,278	11,288,411	11,746,303	12,640,405	73	86	90
Average EPSCoR state value	na	na	na	na	na	na	107	94	123
Average non-EPSCoR state value	na	na	na	na	na	na	73	93	95
United States	1,021,016,894	1,213,524,157	1,403,816,235	13,289,242	13,869,679	14,959,781	77	87	94
Alabama	7,269,319	12,929,167	19,684,063	159,059	166,315	178,533	46	78	110
Alaska	10,019,060	7,741,467	11,349,400	41,782	45,149	51,237	240	171	222
Arizona	37,151,471	9,363,943	18,626,577	246,099	245,216	255,989	151	38	73
Arkansas	4,869,648	11,465,214	14,705,327	93,792	99,530	106,557	52	115	138
California	107,793,045	146,793,247	149,810,643	1,798,197	1,818,627	1,908,985	60	81	78
Colorado	8,997,236	15,563,581	18,141,931	230,236	245,362	264,733	39	63	69
Connecticut	19,209,064	28,559,052	39,192,091	209,487	217,103	225,409	92	132	174
Delaware	2,812,102	1,683,562	2,609,902	56,262	60,201	64,377	50	28	41
District of Columbia	1,173,076	487,411	1,221,108	86,736	98,355	107,201	14	5	11
Florida	42,329,624	66,513,756	150,764,438	731,467	721,175	746,439	58	92	202
Georgia	10,620,188	6,662,887	11,690,663	380,530	393,964	417,438	28	17	28
Hawaii	12,067,849	13,976,364	13,103,983	60,993	64,787	70,006	198	216	187
Idaho	2,280,873	8,552,058	9,366,052	50,509	54,285	57,096	45	158	164
Illinois	37,184,281	9,570,893	17,207,125	600,668	625,423	670,247	62	15	26
Indiana	6,220,575	47,549,928	6,983,364	248,630	252,488	284,344	25	188	25
Iowa	13,564,062	37,976,643	36,992,222	124,057	134,659	146,057	109	282	253
Kansas	14,348,384	12,305,385	6,635,626	111,658	121,967	134,767	129	101	49
Kentucky	17,558,997	13,938,134	20,498,849	146,409	152,040	168,019	120	92	122
Louisiana	11,216,568	8,285,478	9,203,635	204,437	204,370	237,389	55	41	39
Maine	17,509,051	6,400,019	9,918,765	47,594	50,048	52,489	368	128	189
Maryland	24,945,119	21,093,331	20,084,540	259,792	284,724	305,175	96	74	66
Massachusetts	10,729,419	3,290,198	4,878,927	337,483	360,675	388,575	32	9	13
Michigan	75,016,589	8,630,209	9,802,873	376,208	349,195	385,123	199	25	25
Minnesota	6,219,201	16,655,913	11,653,327	245,026	257,596	279,987	25	65	42
Mississippi	2,744,882	3,623,953	7,420,851	85,854	92,614	97,533	32	39	76
Missouri	18,465,303	15,797,247	13,658,961	223,721	237,774	249,546	83	66	55
Montana	8,606,319	7,200,442	6,474,190	32,232	35,027	38,933	267	206	166
Nebraska	5,602,163	4,415,644	4,061,651	76,549	86,323	96,230	73	51	42
Nevada	1,397,463	1,510,607	1,868,869	123,754	123,115	129,421	11	12	14
New Hampshire	2,040,544	1,860,269	1,921,421	56,103	58,951	63,333	36	32	30
New Jersey	25,900,482	15,146,838	17,068,781	454,701	471,957	493,175	57	32	35
New Mexico	3,105,000	1,655,529	1,821,583	71,426	75,308	79,555	43	22	23
New York	103,597,135	151,467,015	182,736,305	1,030,373	1,080,441	1,169,436	101	140	156
North Carolina	14,344,310	40,404,202	29,611,785	378,241	412,912	436,144	38	98	68
North Dakota	21,062,090	16,415,807	8,072,257	26,063	32,204	39,992	808	510	202
Ohio	55,068,629	121,394,963	159,322,228	452,884	451,574	490,265	122	269	325
Oklahoma	8,922,036	15,930,878	20,304,740	132,176	142,078	156,058	68	112	130
Oregon	7,382,722	11,120,140	20,001,272	159,899	171,535	188,981	46	65	106
Pennsylvania	117,320,158	102,958,404	71,098,139	506,362	540,231	581,256	232	191	122
Rhode Island	150,000	1,877,724	1,947,727	46,450	47,443	49,423	3	40	39
South Carolina	22,427,746	28,599,885	47,795,394	149,104	157,825	168,716	150	181	283
South Dakota	5,791,586	4,430,602	3,629,155	32,304	37,040	41,667	179	120	87
Tennessee	5,355,000	3,752,587	3,606,726	236,313	246,617	263,626	23	15	14
Texas	28,019,645	49,381,346	47,372,367	1,054,414	1,140,218	1,321,005	27	43	36
Utah	3,214,170	26,442,711	34,418,764	100,221	112,995	124,454	32	234	277
Vermont	1,680,533	738,707	1,711,673	23,613	24,394	26,545	71	30	64
Virginia	11,579,623	17,412,519	17,241,804	374,566	404,005	433,611	31	43	40
Washington	22,834,218	13,892,247	24,500,489	300,145	332,600	357,056	76	42	69
West Virginia	6,024,577	10,357,006	35,475,338	55,205	59,575	66,109	109	174	537
Wisconsin	10,949,155	24,942,415	21,128,936	228,691	237,237	253,349	48	105	83
Wyoming	6,326,604	4,806,630	5,419,398	30,767	34,432	38,190	206	140	142
Puerto Rico	1,458,790	NA	537,869	88,902	NA	NA	16	NA	NA

na = not applicable; NA = not available.

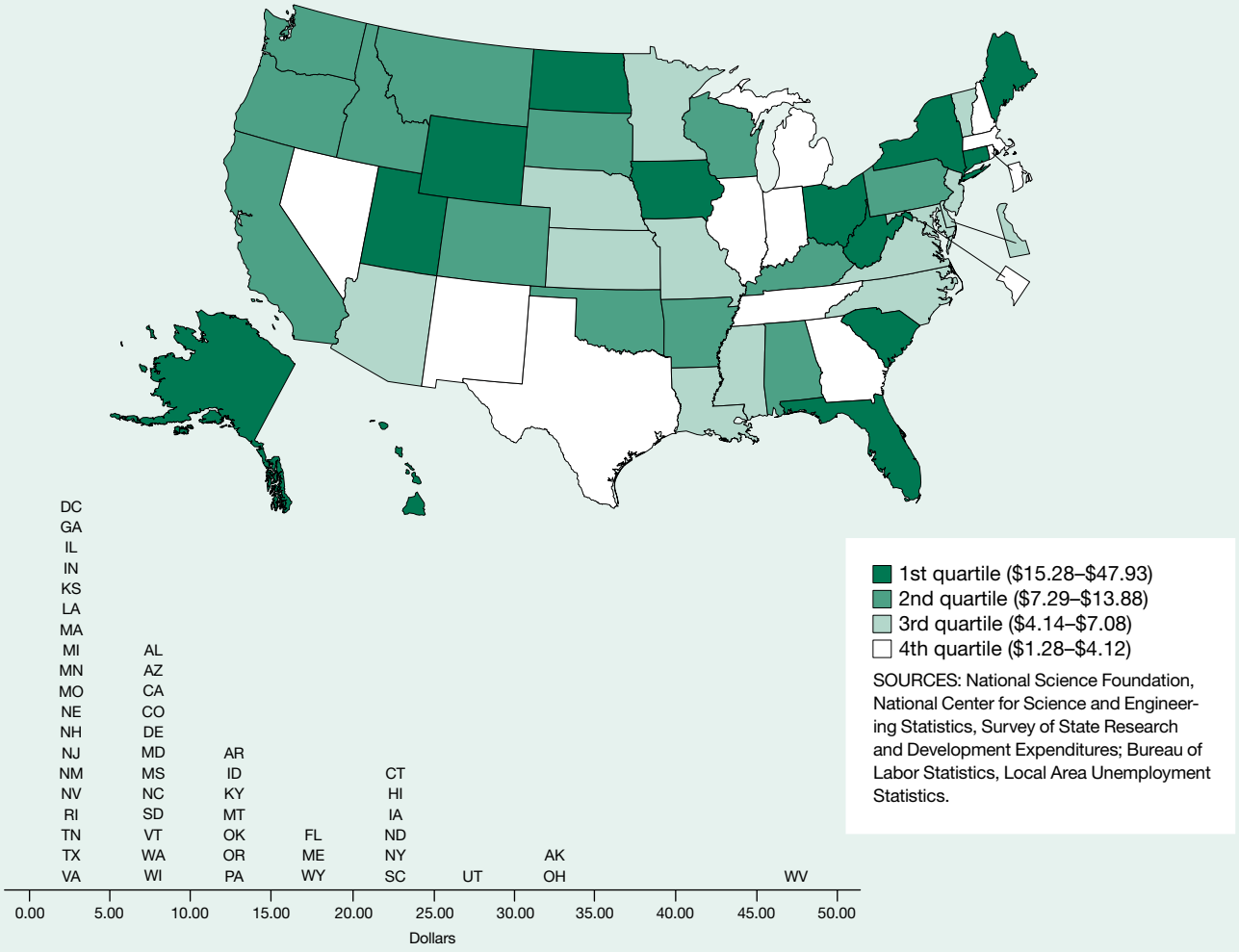
EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product.

NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

State Agency R&D Expenditures per Employed Worker

Figure 8-44
State agency R&D expenditures per employed worker: 2011



Findings

- In 2011, state government agency R&D expenditures averaged $9.98 per employed civilian worker nationwide.
- State agency R&D funding per civilian worker across the United States was approximately 1% of the $940 in federal R&D obligations per worker in 2011.
- State agency R&D spending per civilian worker varied greatly among the states in 2011, ranging from a low of $1.28 to a high of $47.93.
- Seven Experimental Program to Stimulate Competitive Research states are among those with the highest values for this indicator.

This indicator represents the extent of R&D activity funded by state government agencies relative to the size of the state's employed civilian workforce. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

Estimates of the size of a state's workforce are provided by the Bureau of Labor Statistics and represent the employed component of the civilian labor force. The data are not seasonally adjusted and workers are assigned to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-44
State agency R&D expenditures per employed worker, by state: 2006, 2009, and 2011

State	State agency R&D expenditures ($)			Employed workers			State agency R&D expenditures/ employed worker ($)		
	2006	2009	2011	2006	2009	2011	2006	2009	2011
United States	1,021,016,894	1,213,524,157	1,403,816,235	143,729,350	139,594,700	140,695,662	7.10	8.69	9.98
Alabama	7,269,319	12,929,167	19,684,063	2,098,462	1,930,230	1,992,522	3.46	6.70	9.88
Alaska	10,019,060	7,741,467	11,349,400	326,109	331,099	337,796	30.72	23.38	33.60
Arizona	37,151,471	9,363,943	18,626,577	2,836,638	2,820,086	2,761,984	13.10	3.32	6.74
Arkansas	4,869,648	11,465,214	14,705,327	1,286,887	1,250,526	1,251,877	3.78	9.17	11.75
California	107,793,045	146,793,247	149,810,643	16,821,266	16,151,063	16,237,286	6.41	9.09	9.23
Colorado	8,997,236	15,563,581	18,141,931	2,541,828	2,511,189	2,490,004	3.54	6.20	7.29
Connecticut	19,209,064	28,559,052	39,192,091	1,745,993	1,740,974	1,732,807	11.00	16.40	22.62
Delaware	2,812,102	1,683,562	2,609,902	424,618	405,553	407,772	6.62	4.15	6.40
District of Columbia	1,173,076	487,411	1,221,108	303,791	302,687	312,859	3.86	1.61	3.90
Florida	42,329,624	66,513,756	150,764,438	8,584,095	8,152,332	8,322,237	4.93	8.16	18.12
Georgia	10,620,188	6,662,887	11,690,663	4,500,150	4,289,819	4,295,113	2.36	1.55	2.72
Hawaii	12,067,849	13,976,364	13,103,983	617,807	593,514	614,824	19.53	23.55	21.31
Idaho	2,280,873	8,552,058	9,366,052	718,077	695,476	702,920	3.18	12.30	13.32
Illinois	37,184,281	9,570,893	17,207,125	6,225,095	5,937,296	5,942,809	5.97	1.61	2.90
Indiana	6,220,575	47,549,928	6,983,364	3,080,047	2,869,556	2,874,722	2.02	16.57	2.43
Iowa	13,564,062	37,976,643	36,992,222	1,595,136	1,573,085	1,562,156	8.50	24.14	23.68
Kansas	14,348,384	12,305,385	6,635,626	1,403,938	1,400,319	1,401,055	10.22	8.79	4.74
Kentucky	17,558,997	13,938,134	20,498,849	1,904,467	1,848,505	1,875,447	9.22	7.54	10.93
Louisiana	11,216,568	8,285,478	9,203,635	1,900,240	1,916,952	1,919,021	5.90	4.32	4.80
Maine	17,509,051	6,400,019	9,918,765	665,856	642,434	649,312	26.30	9.96	15.28
Maryland	24,945,119	21,093,331	20,084,540	2,892,733	2,814,180	2,868,191	8.62	7.50	7.00
Massachusetts	10,729,419	3,290,198	4,878,927	3,255,504	3,187,538	3,216,160	3.30	1.03	1.52
Michigan	75,016,589	8,630,209	9,802,873	4,722,716	4,201,763	4,189,792	15.88	2.05	2.34
Minnesota	6,219,201	16,655,913	11,653,327	2,774,524	2,713,601	2,777,285	2.24	6.14	4.20
Mississippi	2,744,882	3,623,953	7,420,851	1,199,871	1,168,581	1,197,641	2.29	3.10	6.20
Missouri	18,465,303	15,797,247	13,658,961	2,889,461	2,778,671	2,767,043	6.39	5.69	4.94
Montana	8,606,319	7,200,442	6,474,190	476,412	465,005	466,372	18.06	15.48	13.88
Nebraska	5,602,163	4,415,644	4,061,651	943,176	939,290	961,786	5.94	4.70	4.22
Nevada	1,397,463	1,510,607	1,868,869	1,222,277	1,209,252	1,207,799	1.14	1.25	1.55
New Hampshire	2,040,544	1,860,269	1,921,421	708,748	696,145	697,383	2.88	2.67	2.76
New Jersey	25,900,482	15,146,838	17,068,781	4,257,899	4,135,921	4,120,017	6.08	3.66	4.14
New Mexico	3,105,000	1,655,529	1,821,583	886,708	873,960	862,043	3.50	1.89	2.11
New York	103,597,135	151,467,015	182,736,305	9,062,464	8,832,592	8,740,642	11.43	17.15	20.91
North Carolina	14,344,310	40,404,202	29,611,785	4,261,325	4,104,049	4,183,052	3.37	9.84	7.08
North Dakota	21,062,090	16,415,807	8,072,257	349,368	355,641	368,677	60.29	46.16	21.90
Ohio	55,068,629	121,394,963	159,322,228	5,602,764	5,320,715	5,303,655	9.83	22.82	30.04
Oklahoma	8,922,036	15,930,878	20,304,740	1,650,070	1,648,556	1,678,953	5.41	9.66	12.09
Oregon	7,382,722	11,120,140	20,001,272	1,792,039	1,753,853	1,785,400	4.12	6.34	11.20
Pennsylvania	117,320,158	102,958,404	71,098,139	6,021,084	5,898,301	5,892,519	19.48	17.46	12.07
Rhode Island	150,000	1,877,724	1,947,727	543,973	504,616	499,481	0.28	3.72	3.90
South Carolina	22,427,746	28,599,885	47,795,394	1,970,912	1,908,839	1,941,654	11.38	14.98	24.62
South Dakota	5,791,586	4,430,602	3,629,155	421,799	420,278	422,696	13.73	10.54	8.59
Tennessee	5,355,000	3,752,587	3,606,726	2,852,509	2,713,058	2,828,617	1.88	1.38	1.28
Texas	28,019,645	49,381,346	47,372,367	10,757,510	11,070,143	11,493,519	2.60	4.46	4.12
Utah	3,214,170	26,442,711	34,418,764	1,285,389	1,275,514	1,254,151	2.50	20.73	27.44
Vermont	1,680,533	738,707	1,711,673	343,149	335,132	338,632	4.90	2.20	5.05
Virginia	11,579,623	17,412,519	17,241,804	3,862,508	3,842,447	3,928,267	3.00	4.53	4.39
Washington	22,834,218	13,892,247	24,500,489	3,155,384	3,194,251	3,161,818	7.24	4.35	7.75
West Virginia	6,024,577	10,357,006	35,475,338	777,210	745,150	740,175	7.75	13.90	47.93
Wisconsin	10,949,155	24,942,415	21,128,936	2,932,482	2,843,857	2,832,826	3.73	8.77	7.46
Wyoming	6,326,604	4,806,630	5,419,398	276,882	281,106	284,893	22.85	17.10	19.02
Puerto Rico	1,458,790	NA	537,869	1,260,703	1,101,862	1,032,765	1.16	NA	0.52

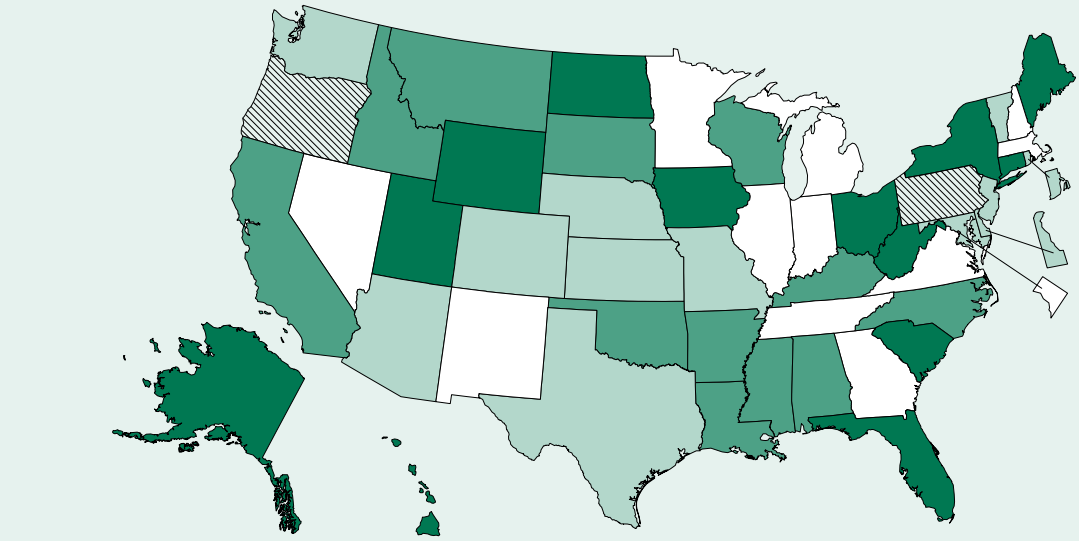
NA = not available.

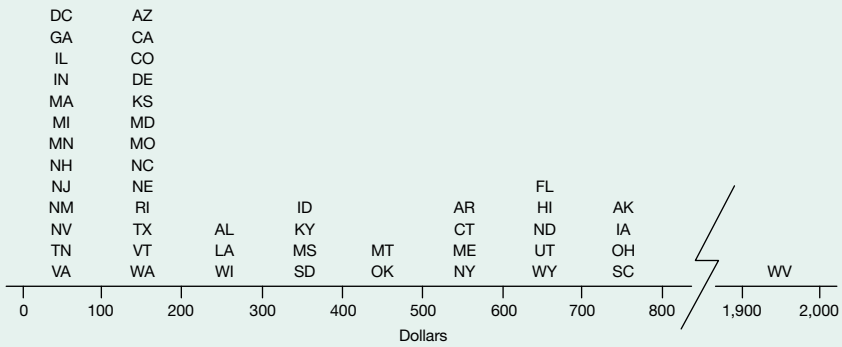
NOTE: Civilian workers represent the employed component of the civilian labor force and are reported as annual data not seasonally adjusted.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics (various years).

State Agency R&D Expenditures per Individual in Science and Engineering Occupation

Figure 8-45
State agency R&D expenditures per individual in science and engineering occupation: 2011





SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures; Bureau of Labor Statistics, Occupational Employment Statistics Survey.

Findings

- Nationally, state government agencies spent about $1.4 billion for R&D in 2011. By comparison, the federal government obligated more than $132 billion for R&D in 2011.
- In 2011, the average state agency R&D expenditure per person employed in an S&E occupation was $242, compared to about $23,000 the federal government averaged for each person employed in an S&E occupation.
- State agency R&D funding per person employed in an S&E occupation ranged from $22 to $1,939 per state in 2011.
- Several Experimental Program to Stimulate Competitive Research states had the highest state agency R&D spending per S&E worker.

This indicator represents the ratio of state agency R&D funding to the number of individuals who work in S&E occupations in the state.

Data on state agency R&D cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies. Because of the way data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Data on people in S&E occupations are sample based.

Table 8-45
State agency R&D expenditures per individual in science and engineering occupation, by state: 2006, 2009, and 2011

State	State agency R&D expenditures ($)			Individuals in S&E occupations			State agency R&D expenditures/ individual in S&E occupation ($)		
	2006	2009	2011	2006	2009	2011	2006	2009	2011
United States	1,021,016,894	1,213,524,157	1,403,816,235	5,407,710	5,785,710	5,794,980	189	210	242
Alabama	7,269,319	12,929,167	19,684,063	66,100	68,670	70,290	110	188	280
Alaska	10,019,060	7,741,467	11,349,400	10,720	14,780	15,680	935	524	724
Arizona	37,151,471	9,363,943	18,626,577	98,110	102,820	115,330	379	91	162
Arkansas	4,869,648	11,465,214	14,705,327	24,860	31,420	29,350	196	365	501
California	107,793,045	146,793,247	149,810,643	730,010	795,240	800,430	148	185	187
Colorado	8,997,236	15,563,581	18,141,931	133,730	148,090	144,750	67	105	125
Connecticut	19,209,064	28,559,052	39,192,091	79,380	79,160	76,550	242	361	512
Delaware	2,812,102	1,683,562	2,609,902	21,550	22,200	22,430	130	76	116
District of Columbia	1,173,076	487,411	1,221,108	64,120	61,430	62,660	18	8	19
Florida	42,329,624	66,513,756	150,764,438	246,190	247,070	244,970	172	269	615
Georgia	10,620,188	6,662,887	11,690,663	136,470	NA	147,820	78	NA	79
Hawaii	12,067,849	13,976,364	13,103,983	18,940	19,020	20,100	637	735	652
Idaho	2,280,873	8,552,058	9,366,052	NA	23,520	25,950	NA	364	361
Illinois	37,184,281	9,570,893	17,207,125	222,470	221,170	204,420	167	43	84
Indiana	6,220,575	47,549,928	6,983,364	80,110	90,750	93,640	78	524	75
Iowa	13,564,062	37,976,643	36,992,222	43,670	47,080	48,930	311	807	756
Kansas	14,348,384	12,305,385	6,635,626	48,620	56,200	51,530	295	219	129
Kentucky	17,558,997	13,938,134	20,498,849	44,680	51,200	51,990	393	272	394
Louisiana	11,216,568	8,285,478	9,203,635	40,180	43,630	42,760	279	190	215
Maine	17,509,051	6,400,019	9,918,765	15,950	17,910	17,490	1,098	357	567
Maryland	24,945,119	21,093,331	20,084,540	159,470	169,540	173,020	156	124	116
Massachusetts	10,729,419	3,290,198	4,878,927	198,670	217,690	220,670	54	15	22
Michigan	75,016,589	8,630,209	9,802,873	208,520	187,760	188,380	360	46	52
Minnesota	6,219,201	16,655,913	11,653,327	125,930	134,060	130,340	49	124	89
Mississippi	2,744,882	3,623,953	7,420,851	24,910	25,940	23,440	110	140	317
Missouri	18,465,303	15,797,247	13,658,961	96,420	104,310	106,930	192	151	128
Montana	8,606,319	7,200,442	6,474,190	13,010	14,210	14,960	662	507	433
Nebraska	5,602,163	4,415,644	4,061,651	32,500	31,790	33,800	172	139	120
Nevada	1,397,463	1,510,607	1,868,869	26,930	27,560	28,370	52	55	66
New Hampshire	2,040,544	1,860,269	1,921,421	27,680	30,550	29,260	74	61	66
New Jersey	25,900,482	15,146,838	17,068,781	176,460	195,690	182,210	147	77	94
New Mexico	3,105,000	1,655,529	1,821,583	30,800	36,950	35,520	101	45	51
New York	103,597,135	151,467,015	182,736,305	306,810	315,480	310,510	338	480	589
North Carolina	14,344,310	40,404,202	29,611,785	138,790	158,920	161,880	103	254	183
North Dakota	21,062,090	16,415,807	8,072,257	9,360	9,930	12,070	2,250	1,653	669
Ohio	55,068,629	121,394,963	159,322,228	185,190	207,930	208,140	297	584	765
Oklahoma	8,922,036	15,930,878	20,304,740	50,770	45,730	47,090	176	348	431
Oregon	7,382,722	11,120,140	20,001,272	64,520	69,630	NA	114	160	NA
Pennsylvania	117,320,158	102,958,404	71,098,139	214,910	NA	NA	546	NA	NA
Rhode Island	150,000	1,877,724	1,947,727	18,060	18,120	19,450	8	104	100
South Carolina	22,427,746	28,599,885	47,795,394	53,230	57,370	61,020	421	499	783
South Dakota	5,791,586	4,430,602	3,629,155	10,120	11,570	11,790	572	383	308
Tennessee	5,355,000	3,752,587	3,606,726	67,040	68,970	77,630	80	54	46
Texas	28,019,645	49,381,346	47,372,367	408,710	470,010	469,080	69	105	101
Utah	3,214,170	26,442,711	34,418,764	49,690	51,270	51,350	65	516	670
Vermont	1,680,533	738,707	1,711,673	12,780	12,780	13,100	131	58	131
Virginia	11,579,623	17,412,519	17,241,804	251,720	264,090	267,620	46	66	64
Washington	22,834,218	13,892,247	24,500,489	171,780	196,850	196,760	133	71	125
West Virginia	6,024,577	10,357,006	35,475,338	17,150	16,350	18,300	351	633	1,939
Wisconsin	10,949,155	24,942,415	21,128,936	96,860	100,850	102,320	113	247	206
Wyoming	6,326,604	4,806,630	5,419,398	7,640	8,920	8,440	828	539	642
Puerto Rico	1,458,790	NA	537,869	23,850	22,760	20,990	61	NA	26

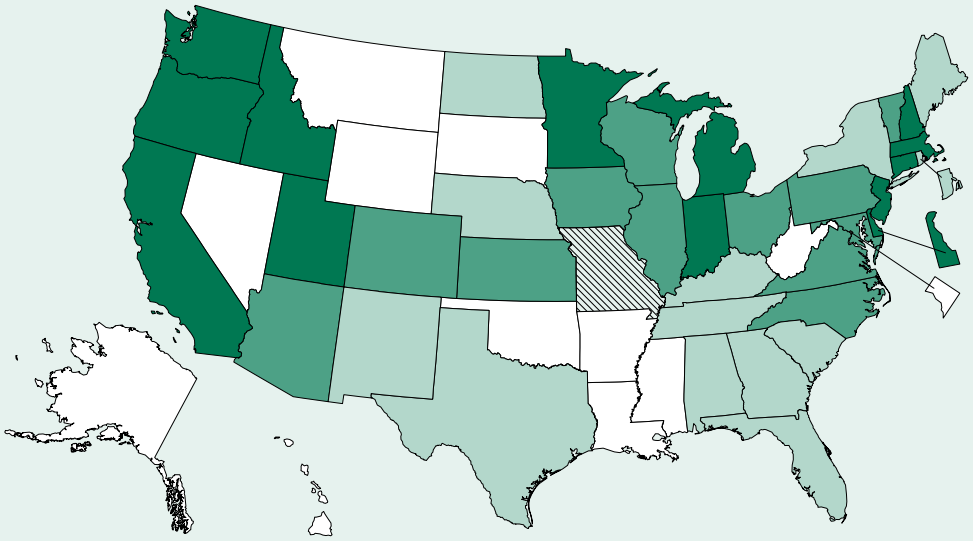
NA = not available.

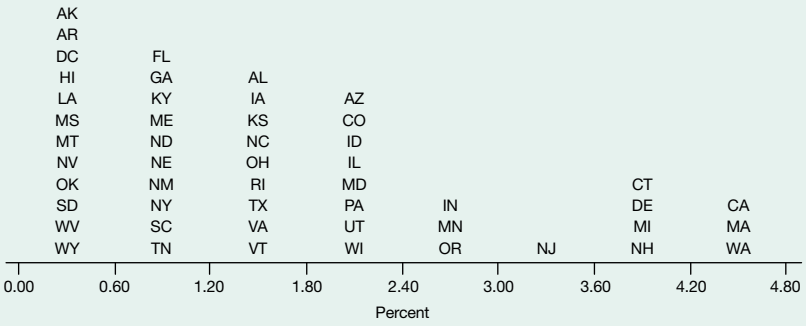
NOTES: The national total for S&E occupations includes states with suppressed data. Occupational Employment Statistics estimates for S&E occupations are based on May data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (various years); Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Business-Performed R&D as a Percentage of Private-Industry Output

Figure 8-46
Business-performed domestic R&D as a percentage of private-industry output: 2011





1st quartile (2.25%–4.78%)
2nd quartile (1.32%–2.22%)
3rd quartile (0.62%–1.30%)
4th quartile (0.14%–0.59%)
No data

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Industrial Research and Development (various years) and Business R&D and Innovation Survey; Bureau of Economic Analysis, Gross Domestic Product data.

Findings

- The amount of R&D performed by business rose from more than $202 billion in 2001 to about $294 billion in 2011, an increase of 46%.
- The value of this indicator for the United States remained virtually unchanged between 2001 and 2011.
- Business-performed R&D as a share of private industry output varied greatly among states in 2011, ranging from 0.14 to 4.78.
- Business R&D was concentrated in a few states—only 12 states had indicator values that exceeded the national average in 2011.

This indicator represents the role of R&D in a state's business activity. The business sector is the largest performer of U.S. R&D. It accounts for more than half of all U.S. applied research funding and a significant portion, over 80%, of all development funding. A high value for this indicator means that the businesses within a state are making a large investment in their R&D activities.

The methodology for data collection, assignment to individual states, and developing estimates of R&D spending has changed during the last decade as the transition was made from the Survey of Industrial R&D to the Business R&D and Innovation Survey. Estimates from the two surveys are consistent. Estimates for states with smaller economies are generally less precise than those for states with larger economies.

Private-industry output is the portion of state gross domestic product contributed by state businesses.

Table 8-46
Business-performed domestic R&D as a percentage of private-industry output, by state: 2001, 2006, and 2011

State	Business-performed domestic R&D ($millions)			Private-industry output ($millions)			Business-performed domestic R&D/ private-industry output (%)		
	2001	2006	2011	2001	2006	2011	2001	2006	2011
United States	202,017	247,669	294,093	9,010,778	11,709,405	13,081,829	2.24	2.12	2.25
Alabama	905	1,835	1,879	101,748	134,131	148,510	0.89	1.37	1.27
Alaska	68	49e	84e	22,208	34,059	41,756	0.31	0.14	0.20
Arizona	2,707	3,590	4,931	148,971	215,927	222,442	1.82	1.66	2.22
Arkansas	254e	285	344	62,027	80,964	91,227	0.41	0.35	0.38
California	44,628	58,424	75,035	1,190,581	1,603,109	1,687,543	3.75	3.64	4.45
Colorado	3,082	4,657	4,310	160,347	202,993	230,650	1.92	2.29	1.87
Connecticut	4,686	8,273	7,504	152,898	190,578	204,211	3.06	4.34	3.67
Delaware	1,232	1,446	2,097	40,005	51,333	58,313	3.08	2.82	3.60
District of Columbia	242	276	415	41,378	57,397	69,787	0.58	0.48	0.59
Florida	3,755	4,139	5,988	445,856	654,411	650,652	0.84	0.63	0.92
Georgia	1,912	2,786	3,839	267,990	330,692	358,180	0.71	0.84	1.07
Hawaii	93	155	252	33,397	47,688	52,975	0.28	0.33	0.48
Idaho	884	625	1,171	31,084	43,450	49,304	2.84	1.44	2.38
Illinois	8,232	10,765	12,038	440,581	544,055	601,979	1.87	1.98	2.00
Indiana	3,583	4,858	6,158	180,282	220,584	256,124	1.99	2.20	2.40
Iowa	817	1,055	2,314	83,002	109,971	129,407	0.98	0.96	1.79
Kansas	1,299 i	2,064 i	1,509	77,240	95,821	114,751	1.68	2.15	1.32
Kentucky	636	839	1,278	100,203	124,402	140,036	0.63	0.67	0.91
Louisiana	316e	367	459	120,435	182,648	211,357	0.26	0.20	0.22
Maine	249	253	295	32,916	41,042	45,163	0.76	0.62	0.65
Maryland	3,682	3,421	5,101	162,500	215,095	248,615	2.27	1.59	2.05
Massachusetts	11,756	15,562	15,722	257,702	307,528	352,398	4.56	5.06	4.46
Michigan	14,283	16,477	13,660	301,664	333,606	339,886	4.73	4.94	4.02
Minnesota	4,355	6,296	6,174	173,971	219,748	251,930	2.50	2.87	2.45
Mississippi	219e	231	235	56,068	71,207	79,490	0.39	0.32	0.30
Missouri	1,792	2,675	NA	163,803	196,615	217,573	1.09	1.36	NA
Montana	70e	103 i	136	19,184	27,064	32,709	0.36	0.38	0.42
Nebraska	306	447	636	51,532	66,099	83,460	0.59	0.68	0.76
Nevada	290	535	638	71,072	112,123	115,577	0.41	0.48	0.55
New Hampshire	1,339	1,774 i	2,069	40,680	50,826	56,693	3.29	3.49	3.65
New Jersey	10,164	14,606	13,930	329,143	408,330	439,353	3.09	3.58	3.17
New Mexico	231	676	472	41,609	57,760	64,097	0.56	1.17	0.74
New York	10,884	9,518	12,072	726,643	923,574	1,045,302	1.50	1.03	1.15
North Carolina	4,437	5,486	6,193	256,039	328,722	371,955	1.73	1.67	1.66
North Dakota	347	120	261	16,005	21,956	34,991	2.17	0.55	0.75
Ohio	6,694	6,852	6,993	341,402	403,379	434,407	1.96	1.70	1.61
Oklahoma	543e	474	604	80,579	109,859	129,709	0.67	0.43	0.47
Oregon	2,677	3,419	4,631	97,526	141,073	166,817	2.74	2.42	2.78
Pennsylvania	8,967	9,819	9,718	367,480	457,197	524,349	2.44	2.15	1.85
Rhode Island	1,134 i	1,330 i	542	31,263	40,777	42,800	3.63	3.26	1.27
South Carolina	921	1,396	1,399	101,790	124,815	139,836	0.90	1.12	1.00
South Dakota	87e	95	136	21,906	28,132	36,560	0.40	0.34	0.37
Tennessee	1,503	1,428	1,434	163,834	208,571	232,226	0.92	0.68	0.62
Texas	9,839	13,334	15,309	677,945	940,631	1,174,548	1.45	1.42	1.30
Utah	1,173	1,274	2,438	62,231	86,675	108,306	1.88	1.47	2.25
Vermont	339	360	374 i	16,466	20,432	22,821	2.06	1.76	1.64
Virginia	2,957	4,816	5,562	232,954	308,886	353,751	1.27	1.56	1.57
Washington	8,933 i	11,320	14,558	199,011	257,173	304,420	4.49	4.40	4.78
West Virginia	211	221	247	35,755	44,991	54,212	0.59	0.49	0.46
Wisconsin	2,469 i	3,020	4,053	163,999	204,541	225,709	1.51	1.48	1.80
Wyoming	28e	27e	46e	15,873	26,765	32,962	0.18	0.10	0.14
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

e = estimated; more than 50% of value is imputed due to raking of state data. i = more than 50% of value is imputed. NA = not available.

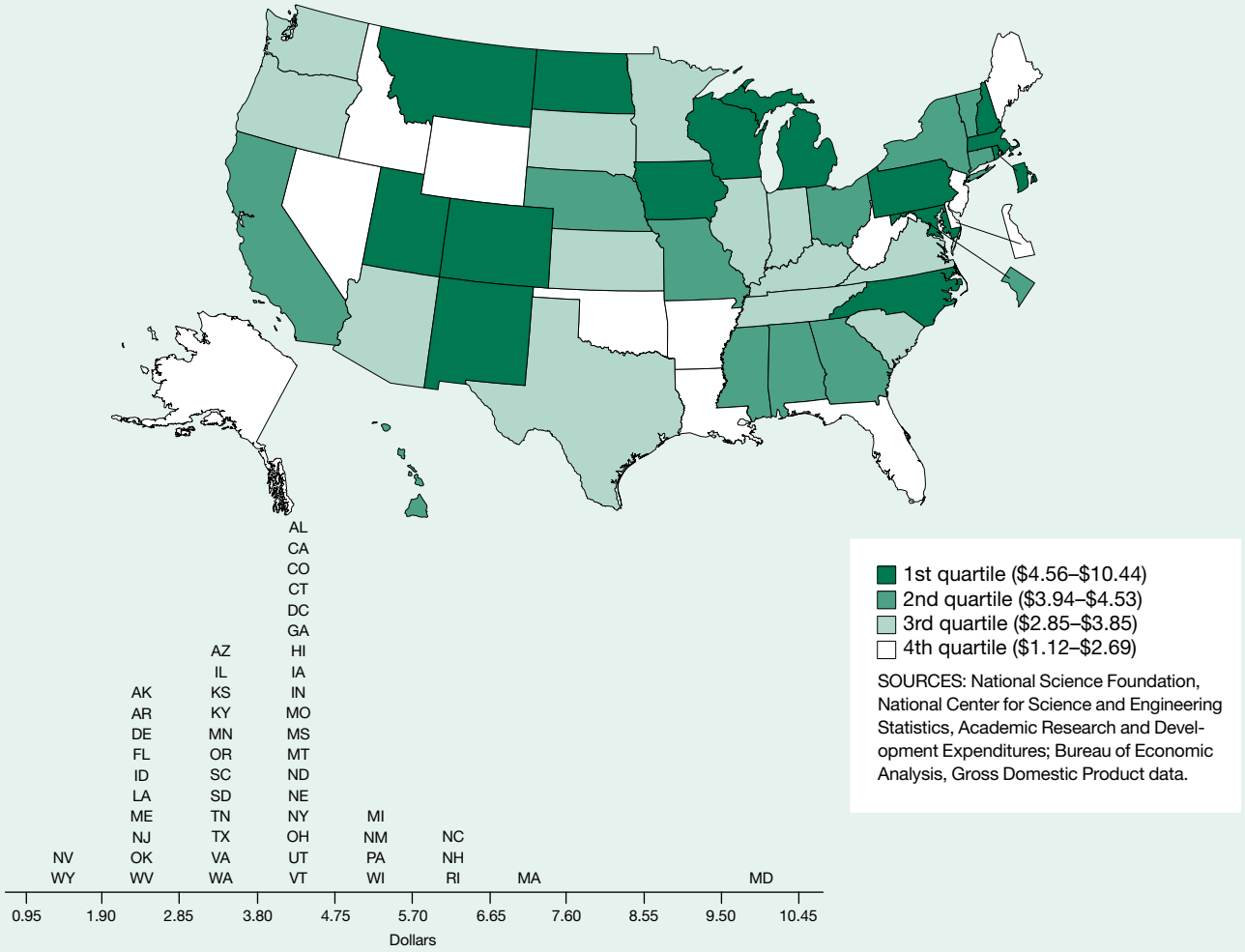
NOTE: The national totals for business-performed R&D in the United States, from the National Science Foundation/National Center for Science and Engineering Statistics, and Census Bureau Business R&D and Innovation Survey, include undistributed business performed R&D and states with suppressed data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Industrial Research and Development (various years) and Business R&D and Innovation Survey; Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

Science and Engineering Indicators 2014

Academic Science and Engineering R&D per $1,000 of Gross Domestic Product

Figure 8-47
Academic science and engineering R&D per $1,000 of gross domestic product: 2012



Findings

- Expenditures for research performed in academic institutions have increased by 71% between 2002 and 2012, rising from $36.3 billion to $62.1 billion.
- In the United States, growth in academic research increased more rapidly than gross domestic product (GDP), causing the value of this indicator to increase by 16% between 2002 and 2012.
- In 2012, the value of this indicator ranged from $1.12 to $10.44 across states.
- The amount of spending for academic S&E R&D declined as a share of GDP in 15 states between 2002 and 2012. Ten of these states were Experimental Program to Stimulate Competitive Research (EPSCoR) states.
- Although non-EPSCoR states had 7.6 times the amount of spending for academic S&E R&D as EPSCoR states in 2012, the average indicator value for both groups increased between 2002 and 2012.

This indicator represents the ratio of S&E R&D expenditures at a state's colleges and universities to the size of the state's economy. Academic R&D performers account for slightly more than half of U.S. basic research, about one-third of total research (basic plus applied), and roughly 10% of all R&D conducted in the United States. Academic R&D can be a valuable basis for future economic development.

Data on academic R&D are provided by the National Center for Science and Engineering Statistics and represent S&E R&D at U.S. colleges and universities with more than $150,000 in R&D expenditures.

Table 8-47
Academic science and engineering R&D per $1,000 of gross domestic product, by state: 2002, 2007, and 2012

State	Academic S&E R&D ($thousands)			State GDP ($millions)			Academic S&E R&D ($)/ $1,000 GDP		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
EPSCoR states	4,575,040	6,292,689	7,120,907	1,412,084	1,918,622	2,164,567	3.24	3.28	3.29
Non-EPSCoR states	31,201,781	42,290,351	53,976,573	9,027,189	11,833,059	13,173,276	3.46	3.57	4.10
Average EPSCoR state value	na	na	na	na	na	na	3.29	3.41	3.42
Average non-EPSCoR state value	na	na	na	na	na	na	3.65	3.76	4.31
United States	36,316,382	49,363,499	62,094,377	10,572,388	13,936,196	15,566,076	3.44	3.54	3.99
Alabama	503,470	655,245	808,194	125,168	165,665	183,547	4.02	3.96	4.40
Alaska	128,875	130,637	135,751	28,894	44,540	51,859	4.46	2.93	2.62
Arizona	531,106	782,671	987,123	177,068	259,157	266,891	3.00	3.02	3.70
Arkansas	140,813	240,321	275,503	74,167	97,470	109,557	1.90	2.47	2.51
California	4,887,918	6,733,546	8,092,820	1,387,213	1,870,916	2,003,479	3.52	3.60	4.04
Colorado	645,291	872,576	1,249,413	186,529	242,633	274,048	3.46	3.60	4.56
Connecticut	538,488	691,408	925,024	168,865	221,133	229,317	3.19	3.13	4.03
Delaware	88,319	125,663	176,743	43,672	59,592	65,984	2.02	2.11	2.68
District of Columbia	260,819	336,618	455,063	67,924	91,896	109,793	3.84	3.66	4.14
Florida	1,085,764	1,557,504	1,934,951	536,061	760,936	777,164	2.03	2.05	2.49
Georgia	1,076,706	1,388,976	1,708,803	313,952	399,579	433,569	3.43	3.48	3.94
Hawaii	172,664	274,373	328,168	44,752	64,070	72,424	3.86	4.28	4.53
Idaho	93,323	114,224	142,976	37,729	54,273	58,243	2.47	2.10	2.45
Illinois	1,441,156	1,867,003	2,270,759	497,802	626,611	695,238	2.90	2.98	3.27
Indiana	650,718	893,808	1,150,327	208,674	261,755	298,625	3.12	3.41	3.85
Iowa	485,756	586,786	695,465	98,584	134,053	152,436	4.93	4.38	4.56
Kansas	299,806	375,960	479,721	91,671	120,599	138,953	3.27	3.12	3.45
Kentucky	334,208	503,293	547,025	121,436	150,487	173,466	2.75	3.34	3.15
Louisiana	476,785	604,007	653,885	139,202	207,312	243,264	3.43	2.91	2.69
Maine	75,063	137,425	118,589	39,989	49,065	53,656	1.88	2.80	2.21
Maryland	1,895,382	2,542,336	3,316,156	206,624	271,985	317,678	9.17	9.35	10.44
Massachusetts	1,697,182	2,171,596	3,009,019	288,352	352,378	403,823	5.89	6.16	7.45
Michigan	1,233,887	1,509,953	2,091,921	351,832	386,591	400,504	3.51	3.91	5.22
Minnesota	504,398	636,920	840,731	201,559	253,374	294,729	2.50	2.51	2.85
Mississippi	289,412	410,637	437,775	69,527	92,107	101,490	4.16	4.46	4.31
Missouri	705,593	941,445	1,057,351	192,189	232,959	258,832	3.67	4.04	4.09
Montana	122,375	179,137	184,754	23,781	35,085	40,422	5.15	5.11	4.57
Nebraska	266,930	364,842	419,163	61,384	82,135	99,557	4.35	4.44	4.21
Nevada	126,713	192,081	149,323	82,764	133,185	133,584	1.53	1.44	1.12
New Hampshire	220,061	307,074	397,916	46,730	57,868	64,697	4.71	5.31	6.15
New Jersey	690,642	864,737	1,061,201	376,922	471,372	508,003	1.83	1.83	2.09
New Mexico	292,691	410,375	390,548	53,662	74,356	80,600	5.45	5.52	4.85
New York	2,765,484	3,971,652	5,166,092	822,408	1,076,255	1,205,930	3.36	3.69	4.28
North Carolina	1,279,377	1,884,244	2,619,095	302,201	396,740	455,973	4.23	4.75	5.74
North Dakota	106,078	169,468	213,666	20,439	28,549	46,016	5.19	5.94	4.64
Ohio	1,116,116	1,767,903	2,017,681	397,966	467,138	509,393	2.80	3.78	3.96
Oklahoma	282,062	298,663	412,978	98,778	140,378	160,953	2.86	2.13	2.57
Oregon	386,666	574,521	680,956	119,571	167,088	198,702	3.23	3.44	3.43
Pennsylvania	1,913,687	2,438,312	3,120,745	424,103	531,098	600,897	4.51	4.59	5.19
Rhode Island	163,052	230,281	335,957	38,135	47,293	50,956	4.28	4.87	6.59
South Carolina	399,982	569,347	563,599	124,391	157,712	176,217	3.22	3.61	3.20
South Dakota	38,449	81,544	123,383	27,610	34,885	42,464	1.39	2.34	2.91
Tennessee	491,274	761,388	968,317	193,069	242,220	277,036	2.54	3.14	3.50
Texas	2,535,237	3,417,082	4,413,601	782,780	1,147,404	1,397,369	3.24	2.98	3.16
Utah	359,556	414,690	608,199	74,603	108,474	130,486	4.82	3.82	4.66
Vermont	90,189	115,025	119,802	19,599	24,043	27,296	4.60	4.78	4.39
Virginia	693,668	971,377	1,283,852	290,904	389,570	445,876	2.38	2.49	2.88
Washington	784,186	981,229	1,376,467	237,117	325,118	375,730	3.31	3.02	3.66
West Virginia	100,830	167,208	183,510	44,533	56,864	69,380	2.26	2.94	2.64
Wisconsin	806,543	1,066,688	1,330,504	190,241	236,522	261,548	4.24	4.51	5.09
Wyoming	41,632	79,700	63,812	19,262	33,708	38,422	2.16	2.36	1.66
Puerto Rico	NA	NA	NA	74,827	93,263	NA	NA	NA	NA

na = not applicable; NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product.

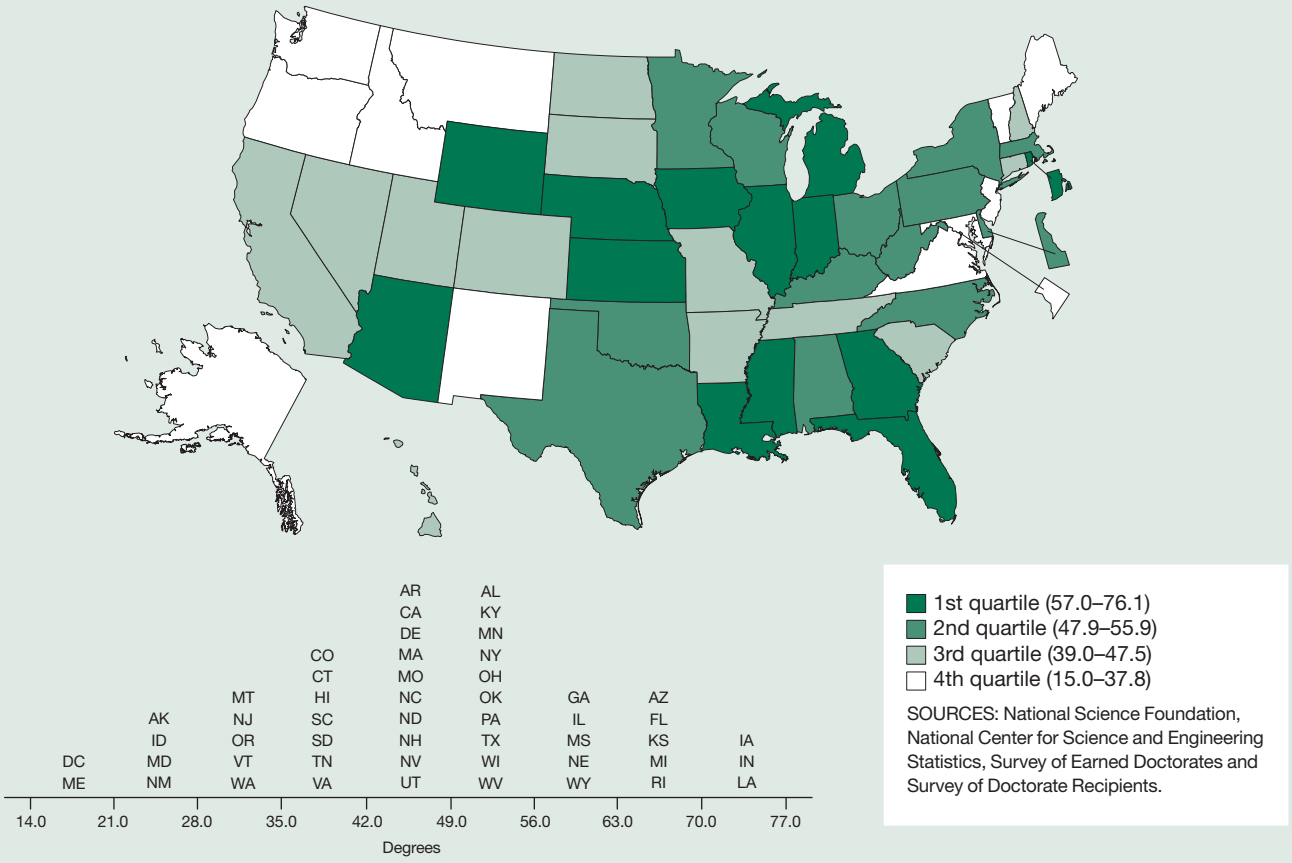
NOTES: Academic R&D is reported for institutions with R&D over $150,000. For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Academic Research and Development Expenditures (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

Science and Engineering Indicators 2014

Science and Engineering Doctorates Conferred per 1,000 Employed S&E Doctorate Holders

Figure 8-48
Science and engineering doctorates conferred per 1,000 employed S&E doctorate holders: 2010



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates and Survey of Doctorate Recipients.

Findings

- In 2010, nearly 33,000 S&E doctorates were awarded by U.S. academic institutions, approximately 28% more than in 2001.
- The national value for this indicator rose from 44.3 S&E doctorates conferred per 1,000 employed S&E doctorate holders in 2001 to 47.2 in 2010.
- State values for S&E doctorates conferred per 1,000 S&E doctorate holders employed ranged from 15.0 to 76.1 in 2010.
- Low state values on this indicator may indicate either a small S&E graduate-level educational program or a concentration of S&E doctorate-level employment opportunities that attract significant numbers of S&E doctorate holders who were educated elsewhere. Low-ranking Experimental Program to Stimulate Competitive Research states tend to fall into the former category.

This indicator represents the rate at which the states are training new S&E doctorate recipients for entry into the workforce. High values indicate relatively large production of new doctorate holders compared with the existing stock of employed doctorate holders. States with relatively low values may need to attract S&E doctorate holders from elsewhere to meet the needs of local employers.

Data on doctorates conferred and on employed doctorate holders include those with doctoral degrees in computer and mathematical sciences; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. Both sets of data exclude individuals with doctorates from foreign institutions. The employed doctorate data also exclude those older than the age of 75. Data for doctorates conferred are presented by the location where the doctorate was earned; employment data for S&E doctorate holders are presented by employment location regardless of residence. Estimates for states with smaller populations of employed doctorate holders are generally less precise than estimates for states with larger populations.

The indicator does not take into account any postgraduation mobility of recent S&E doctorate recipients to their place of employment. Doctorate recipients with temporary visas may decide to return home after graduation to begin their careers. The indicator also does not cover individuals with non-U.S. S&E doctorates who are working in the United States.

Table 8-48
Science and engineering doctorates conferred per 1,000 employed S&E doctorate holders, by state: 2001, 2006, and 2010

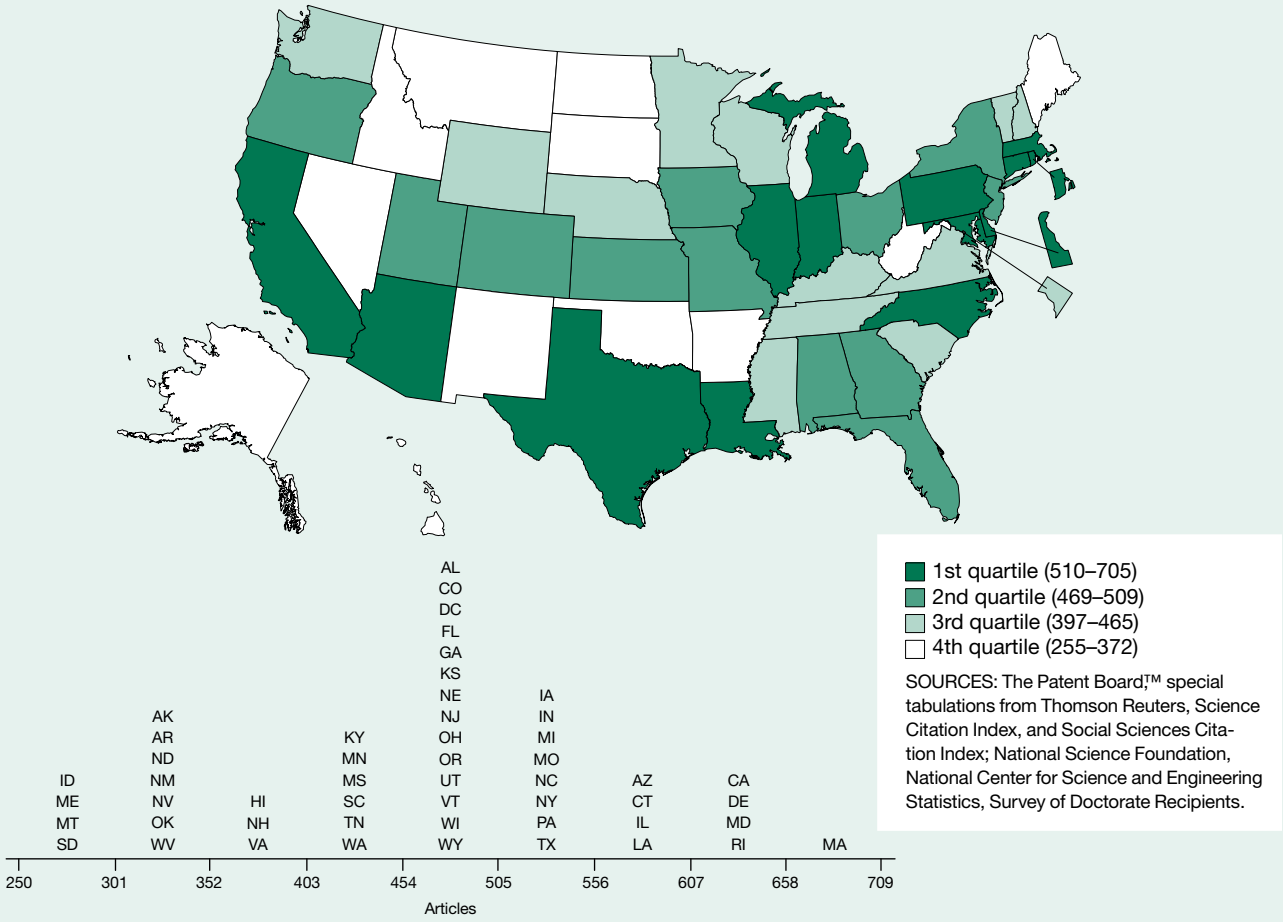
State	S&E doctorates conferred			Employed S&E doctorate holders			S&E doctorates conferred/1,000 employed S&E doctorate holders		
	2001	2006	2010	2001	2006	2010	2001	2006	2010
United States	25,352	30,291	32,509	572,800	618,400	688,300	44.3	49.0	47.2
Alabama	268	309	357	5,300	5,900	6,600	50.6	52.4	54.1
Alaska	22	18	38	1,200	1,100	1,400	18.3	16.4	27.1
Arizona	392	514	567	7,100	8,400	9,000	55.2	61.2	63.0
Arkansas	61	106	126	2,600	2,800	2,900	23.5	37.9	43.4
California	3,664	4,365	4,589	80,900	87,400	102,300	45.3	49.9	44.9
Colorado	511	546	611	11,800	13,100	14,800	43.3	41.7	41.3
Connecticut	370	453	470	9,500	10,300	11,300	38.9	44.0	41.6
Delaware	108	135	145	3,500	3,100	3,000	30.9	43.5	48.3
District of Columbia	306	363	263	14,200	13,300	14,900	21.5	27.3	17.7
Florida	838	1,211	1,389	15,700	17,600	20,600	53.4	68.8	67.4
Georgia	607	819	867	12,000	13,000	15,200	50.6	63.0	57.0
Hawaii	141	110	122	2,600	2,800	3,000	54.2	39.3	40.7
Idaho	50	72	63	2,200	2,800	2,800	22.7	25.7	22.5
Illinois	1,528	1,603	1,518	22,100	24,100	25,300	69.1	66.5	60.0
Indiana	621	700	818	9,600	9,900	10,900	64.7	70.7	75.0
Iowa	322	373	426	4,400	4,900	5,600	73.2	76.1	76.1
Kansas	236	247	259	4,000	4,300	4,000	59.0	57.4	64.8
Kentucky	174	254	263	4,600	5,000	5,100	37.8	50.8	51.6
Louisiana	317	289	377	5,300	5,500	5,300	59.8	52.5	71.1
Maine	30	27	36	2,000	2,400	2,400	15.0	11.3	15.0
Maryland	604	791	817	22,700	26,200	29,800	26.6	30.2	27.4
Massachusetts	1,436	1,689	1,788	29,100	32,400	36,900	49.3	52.1	48.5
Michigan	868	1,060	1,153	17,400	17,900	18,000	49.9	59.2	64.1
Minnesota	531	705	713	11,400	11,800	13,700	46.6	59.7	52.0
Mississippi	115	142	200	3,200	3,300	3,300	35.9	43.0	60.6
Missouri	412	512	495	9,300	9,300	10,700	44.3	55.1	46.3
Montana	39	66	70	1,400	2,000	2,400	27.9	33.0	29.2
Nebraska	131	136	191	2,900	3,000	3,100	45.2	45.3	61.6
Nevada	50	93	126	2,000	2,600	3,000	25.0	35.8	42.0
New Hampshire	111	129	133	2,500	2,500	3,000	44.4	51.6	44.3
New Jersey	652	708	775	22,700	20,800	23,000	28.7	34.0	33.7
New Mexico	134	181	168	7,700	8,300	8,000	17.4	21.8	21.0
New York	2,157	2,495	2,576	44,000	45,900	50,900	49.0	54.4	50.6
North Carolina	665	805	987	16,800	18,900	20,600	39.6	42.6	47.9
North Dakota	43	45	69	1,100	1,400	1,500	39.1	32.1	46.0
Ohio	1,023	1,138	1,175	20,100	20,500	21,700	50.9	55.5	54.1
Oklahoma	198	195	271	4,400	4,400	4,900	45.0	44.3	55.3
Oregon	298	320	295	7,000	8,300	9,100	42.6	38.6	32.4
Pennsylvania	1,143	1,551	1,571	26,100	29,100	31,300	43.8	53.3	50.2
Rhode Island	168	223	209	2,600	3,000	3,000	64.6	74.3	69.7
South Carolina	205	231	264	5,100	5,900	6,400	40.2	39.2	41.3
South Dakota	31	38	51	1,000	1,000	1,300	31.0	38.0	39.2
Tennessee	351	395	448	9,000	10,000	11,500	39.0	39.5	39.0
Texas	1,500	1,845	2,192	32,500	36,000	42,400	46.2	51.3	51.7
Utah	197	225	280	4,800	5,500	5,900	41.0	40.9	47.5
Vermont	52	49	58	1,800	1,700	1,800	28.9	28.8	32.2
Virginia	667	787	832	17,500	19,800	22,000	38.1	39.7	37.8
Washington	422	525	540	14,800	16,900	18,900	28.5	31.1	28.6
West Virginia	56	102	115	1,900	2,000	2,200	29.5	51.0	52.3
Wisconsin	494	559	593	8,700	9,500	10,600	56.8	58.8	55.9
Wyoming	33	37	50	800	700	800	41.3	52.9	62.5
Puerto Rico	101	161	140	1,400	1,700	2,300	72.1	94.7	60.9

NOTE: Data on U.S. S&E doctorate holders are classified by employment location.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates, and Survey of Doctorate Recipients (various years).

Academic Science and Engineering Article Output per 1,000 S&E Doctorate Holders in Academia

Figure 8-49
Academic science and engineering article output per 1,000 S&E doctorate holders in academia: 2010



Findings

- Between 2001 and 2010, the number of scientific and engineering articles published by academia increased from 141,000 to 154,000 and the number of S&E doctorate holders in academia increased from 251,000 to 300,000.
- In 2010, the value of this indicator across the states ranged from 255 to 705 S&E articles per 1,000 S&E doctorate holders in academia.
- The publication rate for academic S&E doctorate holders in states in the top quartile of this indicator was nearly twice as high as for states in the bottom quartile. The average indicator value for Experimental Program to Stimulate Competitive Research (EPSCoR) states was considerably lower than the average indicator value for non-EPSCoR states.

The volume of peer-reviewed articles per 1,000 academic S&E doctorate holders is an approximate measure of their contribution to scientific knowledge. Publications are only one measure of academic productivity, which includes trained personnel, patents, trademarks, copyrights, and other outputs. A high value on this indicator shows that the S&E faculty in a state's academic institutions are generating a high volume of publications relative to other states. Academic institutions include 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Reuters in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at *N* institutions, each institution would be credited with 1/*N* of the article.

S&E doctorates include those in the biological, agricultural, or environmental life sciences; computer, physical, and social sciences; mathematics; psychology; engineering; and health fields. S&E doctorate data are estimates and exclude those with doctorates from foreign institutions and those older than the age of 75. Estimates for states with smaller populations of S&E doctorate holders are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders in academia are presented by employment location.

Table 8-49
Academic science and engineering article output per 1,000 S&E doctorate holders in academia, by state: 2001, 2006, and 2010

State	Academic S&E article output			S&E doctorate holders in academia			Academic S&E articles/ 1,000 S&E doctorate holders in academia		
	2001	2006	2010	2001	2006	2010	2001	2006	2010
EPSCoR states	15,686	17,489	16,921	37,300	40,500	41,000	421	432	413
Non-EPSCoR states	123,090	136,312	135,402	208,500	233,600	254,000	590	584	533
Average EPSCoR state value	na	na	na	na	na	na	402	423	403
Average non-EPSCoR state value	na	na	na	na	na	na	570	563	515
United States	140,601	155,818	154,331	250,600	278,900	300,400	561	559	514
Alabama	1,851	1,868	1,688	3,000	3,300	3,600	617	566	469
Alaska	184	215	245	500	600	700	368	358	350
Arizona	2,082	2,333	2,342	3,200	3,800	3,900	651	614	601
Arkansas	585	713	616	1,600	1,900	2,000	366	375	308
California	17,440	19,566	19,781	25,100	27,600	31,800	695	709	622
Colorado	2,536	2,694	2,673	4,800	5,300	5,600	528	508	477
Connecticut	2,632	2,949	2,910	4,200	4,500	5,200	627	655	560
Delaware	535	604	572	800	800	900	669	755	636
District of Columbia	1,047	1,077	1,044	2,500	2,300	2,300	419	468	454
Florida	4,043	5,029	5,152	7,800	9,000	10,700	518	559	481
Georgia	3,372	3,862	4,084	6,300	7,400	8,400	535	522	486
Hawaii	515	569	595	1,500	1,600	1,600	343	356	372
Idaho	300	356	321	900	1,400	1,200	333	254	268
Illinois	6,598	7,153	7,089	10,600	11,400	12,200	622	627	581
Indiana	2,891	3,291	3,415	5,600	6,100	6,700	516	540	510
Iowa	2,068	2,099	1,980	3,200	3,500	3,900	646	600	508
Kansas	1,194	1,172	1,241	2,200	2,600	2,500	543	451	496
Kentucky	1,291	1,509	1,415	3,200	3,600	3,500	403	419	404
Louisiana	1,733	1,782	1,770	3,300	3,400	3,000	525	524	590
Maine	221	301	280	1,100	1,200	1,100	201	251	255
Maryland	4,786	5,158	4,922	5,800	7,200	7,900	825	716	623
Massachusetts	9,167	10,073	9,945	12,900	14,300	14,100	711	704	705
Michigan	4,833	5,328	5,549	8,700	9,300	10,200	556	573	544
Minnesota	2,289	2,410	2,483	5,300	5,600	6,000	432	430	414
Mississippi	669	816	805	2,000	2,000	1,900	335	408	424
Missouri	3,111	3,165	3,202	5,600	5,600	6,300	556	565	508
Montana	317	412	348	800	1,200	1,300	396	343	268
Nebraska	972	1,076	977	1,900	1,800	2,100	512	598	465
Nevada	414	521	491	1,300	1,600	1,400	318	326	351
New Hampshire	582	715	638	1,200	1,200	1,600	485	596	399
New Jersey	2,896	3,201	2,977	5,400	6,000	6,300	536	534	473
New Mexico	754	839	753	2,800	2,100	2,300	269	400	327
New York	11,722	12,468	12,075	20,200	21,800	23,700	580	572	509
North Carolina	4,932	5,590	5,740	8,600	9,900	10,400	573	565	552
North Dakota	263	371	369	700	1,000	1,100	376	371	335
Ohio	4,857	5,339	4,969	9,800	10,100	10,100	496	529	492
Oklahoma	862	973	1,020	2,800	2,800	3,300	308	348	309
Oregon	1,497	1,835	1,648	3,100	3,500	3,500	483	524	471
Pennsylvania	7,941	8,756	8,723	13,300	15,800	16,000	597	554	545
Rhode Island	840	894	971	1,700	2,000	1,600	494	447	607
South Carolina	1,299	1,453	1,509	2,900	3,500	3,600	448	415	419
South Dakota	124	154	196	600	700	700	207	220	280
Tennessee	2,178	2,574	2,555	4,700	5,500	6,000	463	468	426
Texas	8,709	9,884	9,842	13,600	16,600	19,300	640	595	510
Utah	1,509	1,734	1,692	3,000	3,500	3,500	503	495	483
Vermont	400	451	410	1,000	1,000	900	400	451	456
Virginia	2,896	3,161	3,332	6,500	7,600	8,400	446	416	397
Washington	3,217	3,381	3,216	6,200	7,000	7,200	519	483	447
West Virginia	375	428	425	1,100	1,300	1,300	341	329	327
Wisconsin	2,888	3,279	3,106	5,000	5,700	6,700	578	575	464
Wyoming	184	237	230	600	500	500	307	474	460
Puerto Rico	185	254	271	1,000	1,300	1,500	185	195	181

na = not applicable.

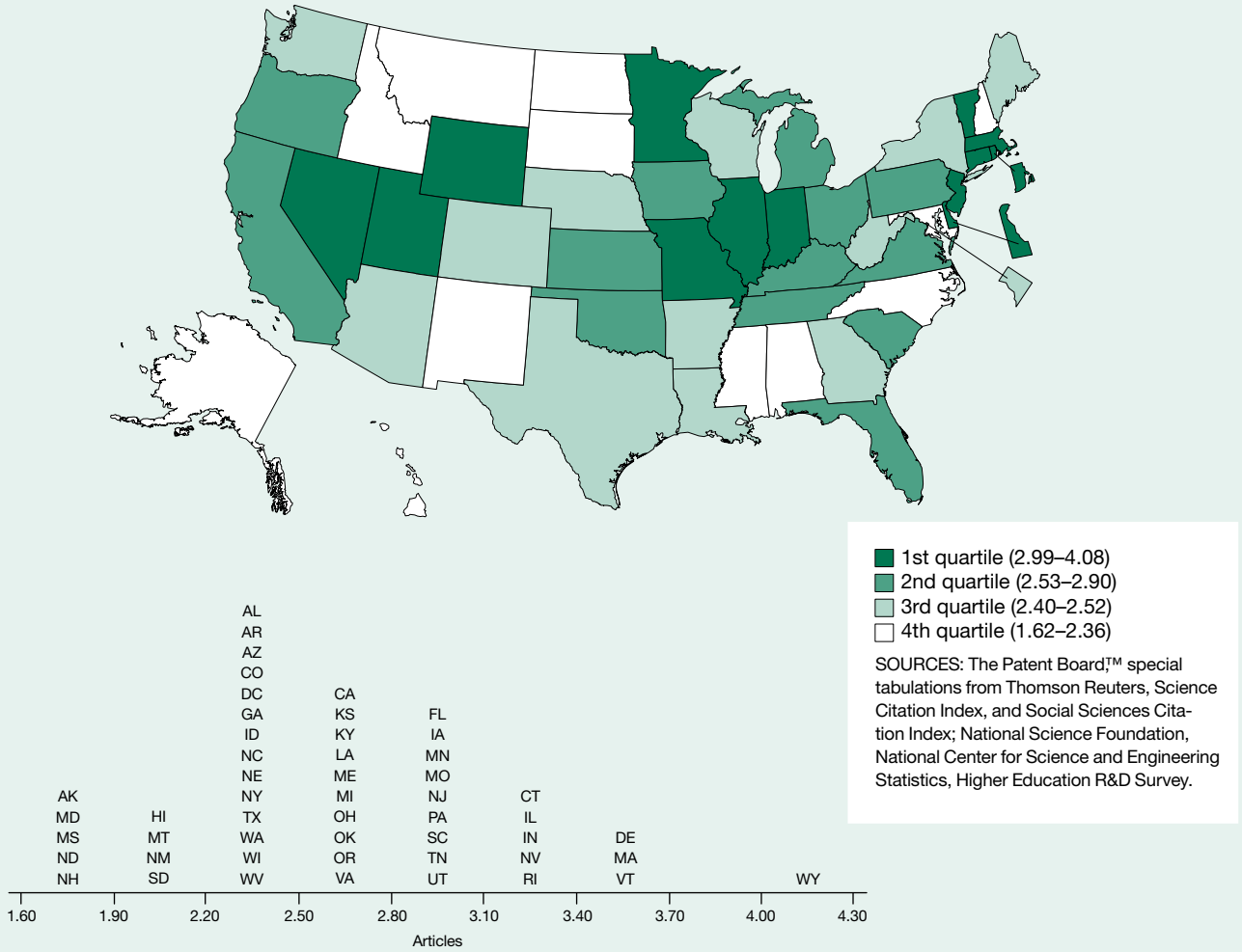
EPSCoR = Experimental Program to Stimulate Competitive Research.

NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCES: The Patent Board,™ special tabulations (2013) from Thomson Reuters, Science Citation Index and Social Sciences Citation Index http://thomsonreuters.com/products_services/science/; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (various years).

Academic Science and Engineering Article Output per $1 Million of Academic S&E R&D

Figure 8-50
Academic science and engineering article output per $1 million of academic S&E R&D: 2012



Findings

- From 2003 to 2012, the number of academic S&E publications rose from about 148,000 to about 163,000—an increase of 10% that may reflect both an increase in publications and an increase in the number of journals in the Thomson Reuters database.
- In 2012, academic researchers produced an average of 2.62 publications per $1 million of academic R&D, compared with 3.71 in 2003. This partly reflects the effect of general price inflation but may also indicate rising academic research costs.
- The value of this indicator ranged from 1.62 to 4.08 across the states in 2012.
- Between 2003 and 2012, the value for this indicator decreased 29% nationwide and in all states but Wyoming, Alaska, Nevada, and Vermont.

This indicator represents the relationship between the number of academic S&E publications and the amount of money expended for academic R&D. Academic institutions include 2-year colleges, 4-year colleges or universities, medical schools, and university-affiliated research centers. This indicator is not an efficiency measure; it is affected by the highly variable costs of R&D and by publishing conventions in different fields and institutions. It may also reflect variations in field emphasis among states and institutions.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Reuters in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at *N* institutions, each institution would be credited with 1/*N* of the article.

Table 8-50
Academic science and engineering article output per $1 million of academic S&E R&D, by state: 2003, 2008, and 2012

State	Academic S&E article output			Academic S&E R&D ($millions)			Academic S&E articles/ $1 million academic S&E R&D		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
United States	148,487	167,518	162,877	40,002	51,736	62,097	3.71	3.24	2.62
Alabama	1,851	1,976	1,824	551	708	808	3.36	2.79	2.26
Alaska	195	285	238	142	128	136	1.37	2.23	1.75
Arizona	2,152	2,455	2,388	618	831	987	3.48	2.95	2.42
Arkansas	664	716	683	184	247	276	3.61	2.90	2.47
California	18,756	21,003	20,485	5,358	7,026	8,093	3.50	2.99	2.53
Colorado	2,615	2,854	3,044	695	924	1,249	3.76	3.09	2.44
Connecticut	2,748	3,070	3,108	595	732	925	4.62	4.19	3.36
Delaware	581	650	627	105	133	177	5.53	4.89	3.54
District of Columbia	1,060	1,106	1,096	281	375	455	3.77	2.95	2.41
Florida	4,549	5,678	5,543	1,205	1,592	1,935	3.78	3.57	2.86
Georgia	3,641	4,300	4,187	1,177	1,521	1,709	3.09	2.83	2.45
Hawaii	572	696	622	185	279	328	3.09	2.49	1.90
Idaho	305	360	322	105	113	143	2.90	3.19	2.25
Illinois	6,958	7,655	7,393	1,614	1,973	2,271	4.31	3.88	3.26
Indiana	3,022	3,645	3,681	726	955	1,150	4.16	3.82	3.20
Iowa	2,212	2,215	2,015	499	528	695	4.43	4.20	2.90
Kansas	1,235	1,292	1,327	310	404	480	3.98	3.20	2.76
Kentucky	1,434	1,604	1,471	378	499	547	3.79	3.21	2.69
Louisiana	1,759	1,753	1,645	514	660	654	3.42	2.66	2.52
Maine	267	285	300	84	128	119	3.18	2.23	2.52
Maryland	4,947	5,453	5,381	2,041	2,747	3,316	2.42	1.99	1.62
Massachusetts	9,451	10,846	10,649	1,822	2,272	3,009	5.19	4.77	3.54
Michigan	5,071	5,804	5,829	1,390	1,594	2,092	3.65	3.64	2.79
Minnesota	2,287	2,633	2,515	518	699	841	4.42	3.77	2.99
Mississippi	710	840	764	324	406	438	2.19	2.07	1.74
Missouri	3,122	3,443	3,215	807	960	1,057	3.87	3.59	3.04
Montana	363	396	376	141	186	185	2.57	2.13	2.03
Nebraska	991	1,115	1,023	301	376	419	3.29	2.97	2.44
Nevada	458	571	471	155	191	149	2.95	2.99	3.16
New Hampshire	627	681	657	252	302	398	2.49	2.25	1.65
New Jersey	3,150	3,327	3,186	754	878	1,061	4.18	3.79	3.00
New Mexico	792	835	763	307	417	391	2.58	2.00	1.95
New York	12,140	13,317	12,816	3,078	3,982	5,166	3.94	3.34	2.48
North Carolina	5,321	6,170	6,182	1,398	1,979	2,619	3.81	3.12	2.36
North Dakota	315	411	363	134	181	214	2.35	2.27	1.70
Ohio	5,090	5,635	5,302	1,268	1,827	2,018	4.01	3.08	2.63
Oklahoma	933	1,081	1,131	295	333	413	3.16	3.25	2.74
Oregon	1,650	1,974	1,853	437	595	681	3.78	3.32	2.72
Pennsylvania	8,263	9,421	8,944	2,015	2,604	3,121	4.10	3.62	2.87
Rhode Island	871	1,020	1,102	187	237	336	4.66	4.30	3.28
South Carolina	1,428	1,587	1,584	435	576	564	3.28	2.76	2.81
South Dakota	165	202	259	50	92	123	3.30	2.20	2.11
Tennessee	2,310	2,826	2,810	600	787	968	3.85	3.59	2.90
Texas	9,423	10,756	10,584	2,765	3,744	4,414	3.41	2.87	2.40
Utah	1,539	1,786	1,851	385	426	608	4.00	4.19	3.04
Vermont	383	475	434	107	117	120	3.58	4.06	3.62
Virginia	2,991	3,593	3,551	776	1,053	1,284	3.85	3.41	2.77
Washington	3,412	3,605	3,334	871	1,058	1,376	3.92	3.41	2.42
West Virginia	375	417	451	125	169	184	3.00	2.47	2.45
Wisconsin	3,129	3,445	3,237	878	1,117	1,331	3.56	3.08	2.43
Wyoming	204	255	261	60	75	64	3.40	3.40	4.08
Puerto Rico	212	265	243	78	NA	NA	2.72	NA	NA

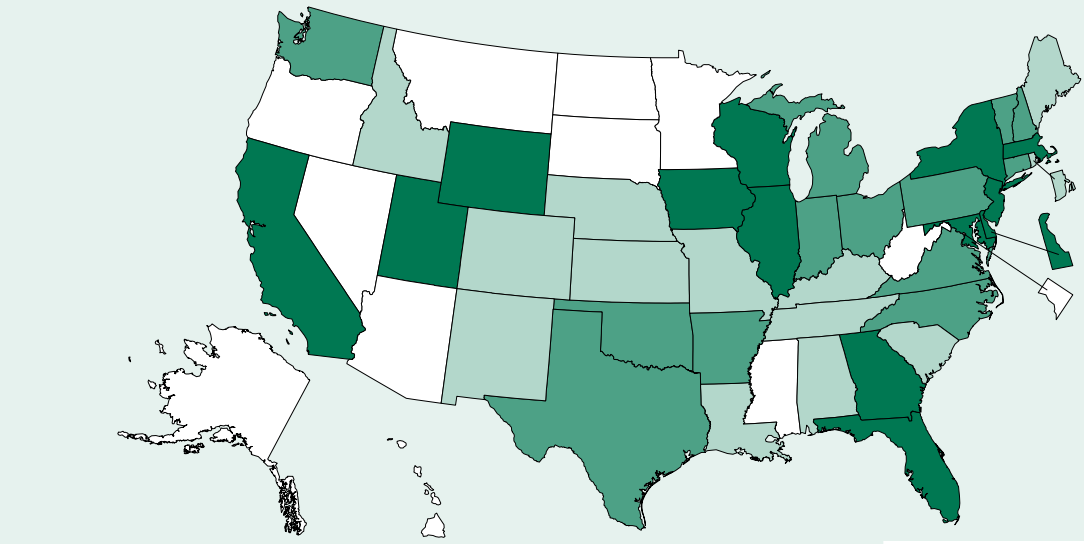
NA = not available.

NOTE: Academic R&D expenditures are reported in current dollars.

SOURCES: The Patent Board,™ special tabulations (2013) from Thomson Reuters, Science Citation Index and Social Sciences Citation Index http://thomsonreuters.com/products_services/science/; National Science Foundation, National Center for Science and Engineering Statistics, Academic R&D Expenditure Survey, Higher Education R&D Survey (various years).

Academic Patents Awarded per 1,000 Science and Engineering Doctorate Holders in Academia

Figure 8-51
Academic patents awarded per 1,000 science and engineering doctorate holders in academia: 2010



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board,™ special tabulations (2013) from the U.S. Patent and Trademark Office (USPTO), Patent Grant Bilbiographic Data.

Findings

- Throughout the United States, the number of new patents assigned to academic institutions increased 28% from 2001 to 2010; the number of academic S&E doctorate holders rose by 20% during the same period.
- In 2010, states varied widely on this indicator, with values ranging from 0 to 25.5 patents per 1,000 S&E doctorate holders employed in academia.
- California showed the highest level of both academic patenting and venture capital investment.
- The value of this indicator fluctuates over time and across states.

Since the early 1980s, academic institutions have increasingly been viewed as engines of economic growth. Growing attention has been paid to the role of academic R&D in creating new products, processes, and services. One indicator of such R&D results is the volume of patents assigned to academic institutions. Academic patenting is highly concentrated and partly reflects the resources devoted to institutional patenting offices.

This indicator relates the number of academic-owned utility patents to the size of the doctoral S&E workforce in academia and is one approximate measure of the degree to which results with perceived economic value are generated by the doctoral academic workforce. Academia includes 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Utility patents, commonly known as patents for inventions, include any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound and represent a key measure of intellectual property. Patent assignments are made on the basis of the address of their original assignee(s). For patents with multiple U.S. university assignees from different U.S. states, the database credits each participating U.S. state as owning one patent.

S&E doctorates include those in computer sciences; mathematics; biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data exclude those with doctorates from foreign institutions and those older than the age of 75. For states with smaller populations, estimates of doctorate holders in academia are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders are presented by employment location regardless of residence.

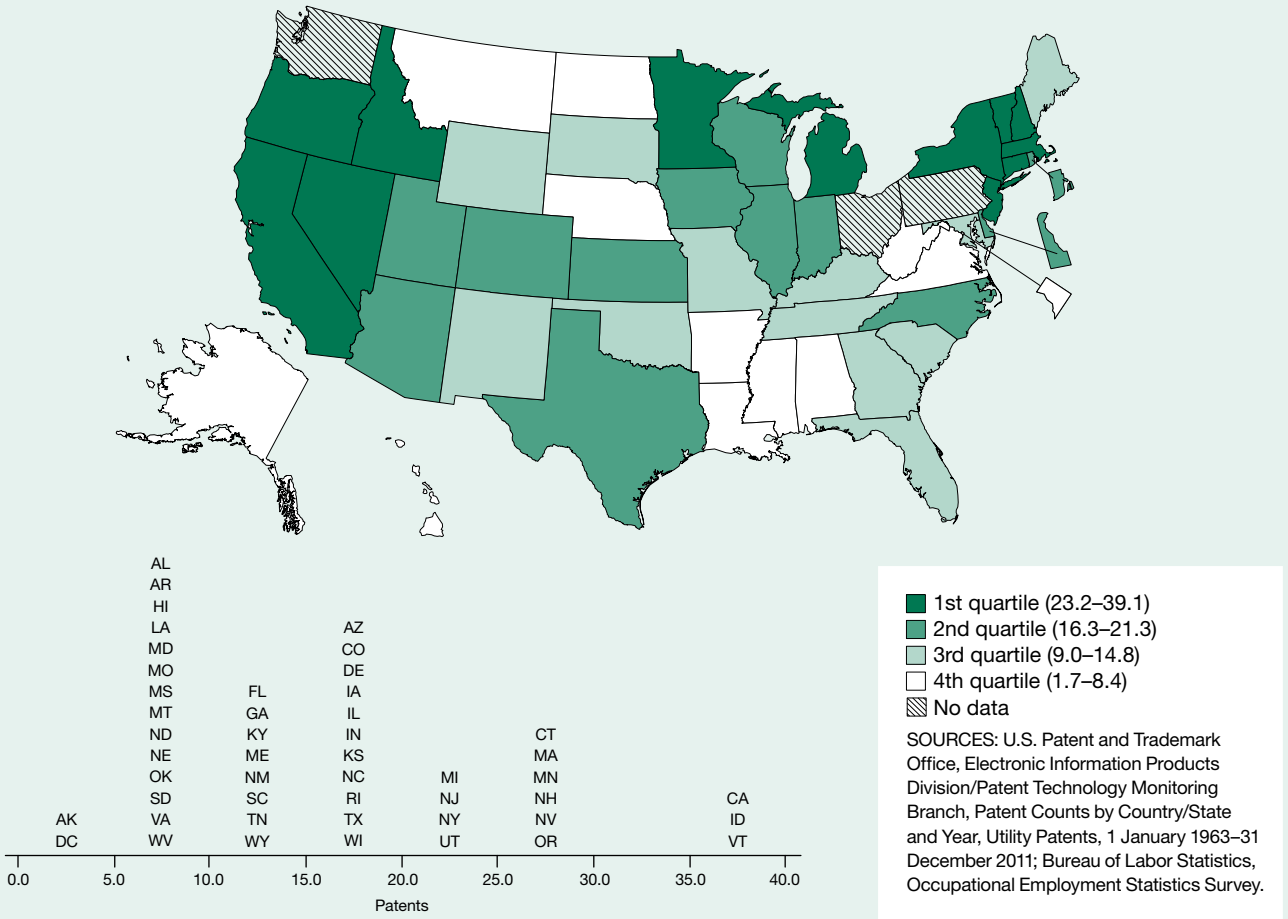
Table 8-51
Academic patents awarded per 1,000 science and engineering doctorate holders in academia, by state: 2001, 2006, and 2010

State	Patents awarded to academic institutions			S&E doctorate holders in academia			Academic patents/1,000 academic S&E doctorate holders		
	2001	2006	2010	2001	2006	2010	2001	2006	2010
United States	3,680	3,646	4,699	250,600	278,900	300,400	14.7	13.1	15.6
Alabama	43	31	37	3,000	3,300	3,600	14.3	9.4	10.3
Alaska	0	0	2	500	600	700	0.0	0.0	2.9
Arizona	24	38	31	3,200	3,800	3,900	7.5	10.0	7.9
Arkansas	30	27	27	1,600	1,900	2,000	18.8	14.2	13.5
California	703	728	787	25,100	27,600	31,800	28.0	26.4	24.7
Colorado	35	32	46	4,800	5,300	5,600	7.3	6.0	8.2
Connecticut	44	53	68	4,200	4,500	5,200	10.5	11.8	13.1
Delaware	5	5	20	800	800	900	6.3	6.3	22.2
District of Columbia	14	13	15	2,500	2,300	2,300	5.6	5.7	6.5
Florida	118	178	258	7,800	9,000	10,700	15.1	19.8	24.1
Georgia	87	87	139	6,300	7,400	8,400	13.8	11.8	16.5
Hawaii	8	10	5	1,500	1,600	1,600	5.3	6.3	3.1
Idaho	6	11	11	900	1,400	1,200	6.7	7.9	9.2
Illinois	151	132	191	10,600	11,400	12,200	14.2	11.6	15.7
Indiana	41	42	79	5,600	6,100	6,700	7.3	6.9	11.8
Iowa	70	57	62	3,200	3,500	3,900	21.9	16.3	15.9
Kansas	19	6	25	2,200	2,600	2,500	8.6	2.3	10.0
Kentucky	23	30	41	3,200	3,600	3,500	7.2	8.3	11.7
Louisiana	49	29	29	3,300	3,400	3,000	14.8	8.5	9.7
Maine	2	5	10	1,100	1,200	1,100	1.8	4.2	9.1
Maryland	133	148	148	5,800	7,200	7,900	22.9	20.6	18.7
Massachusetts	257	255	359	12,900	14,300	14,100	19.9	17.8	25.5
Michigan	121	136	147	8,700	9,300	10,200	13.9	14.6	14.4
Minnesota	42	39	42	5,300	5,600	6,000	7.9	7.0	7.0
Mississippi	15	14	15	2,000	2,000	1,900	7.5	7.0	7.9
Missouri	65	48	62	5,600	5,600	6,300	11.6	8.6	9.8
Montana	5	6	7	800	1,200	1,300	6.3	5.0	5.4
Nebraska	21	21	22	1,900	1,800	2,100	11.1	11.7	10.5
Nevada	4	5	10	1,300	1,600	1,400	3.1	3.1	7.1
New Hampshire	11	20	21	1,200	1,200	1,600	9.2	16.7	13.1
New Jersey	92	92	95	5,400	6,000	6,300	17.0	15.3	15.1
New Mexico	22	11	21	2,800	2,100	2,300	7.9	5.2	9.1
New York	317	317	444	20,200	21,800	23,700	15.7	14.5	18.7
North Carolina	159	137	152	8,600	9,900	10,400	18.5	13.8	14.6
North Dakota	4	4	8	700	1,000	1,100	5.7	4.0	7.3
Ohio	104	104	139	9,800	10,100	10,100	10.6	10.3	13.8
Oklahoma	23	27	40	2,800	2,800	3,300	8.2	9.6	12.1
Oregon	26	24	24	3,100	3,500	3,500	8.4	6.9	6.9
Pennsylvania	243	165	240	13,300	15,800	16,000	18.3	10.4	15.0
Rhode Island	30	14	15	1,700	2,000	1,600	17.6	7.0	9.4
South Carolina	15	23	42	2,900	3,500	3,600	5.2	6.6	11.7
South Dakota	1	0	0	600	700	700	1.7	0.0	0.0
Tennessee	53	40	53	4,700	5,500	6,000	11.3	7.3	8.8
Texas	179	217	244	13,600	16,600	19,300	13.2	13.1	12.6
Utah	51	40	79	3,000	3,500	3,500	17.0	11.4	22.6
Vermont	5	5	12	1,000	1,000	900	5.0	5.0	13.3
Virginia	51	56	107	6,500	7,600	8,400	7.8	7.4	12.7
Washington	67	50	94	6,200	7,000	7,200	10.8	7.1	13.1
West Virginia	6	2	9	1,100	1,300	1,300	5.5	1.5	6.9
Wisconsin	83	108	157	5,000	5,700	6,700	16.6	18.9	23.4
Wyoming	3	4	8	600	500	500	5.0	8.0	16.0
Puerto Rico	6	3	2	1,000	1,300	1,500	6.0	2.3	1.3

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, Patent Grant Bibliographic Data.

Patents Awarded per 1,000 Individuals in Science and Engineering Occupations

Figure 8-52
Patents awarded per 1,000 individuals in science and engineering occupations: 2012



SOURCES: U.S. Patent and Trademark Office, Electronic Information Products Division/Patent Technology Monitoring Branch, Patent Counts by Country/State and Year, Utility Patents, 1 January 1963–31 December 2011; Bureau of Labor Statistics, Occupational Employment Statistics Survey.

Findings

- About 121,000 utility patents were awarded to inventors residing in the United States in 2012, an increase from the 88,000 utility patents awarded in 2003.
- In 2012, the national average for this indicator was 20.3 patents per 1,000 individuals in an S&E occupation, higher than the average of 17.7 in 2003.
- Values for individual states varied widely, ranging from 1.7 to 39.1 patents per 1,000 individuals in S&E occupations in 2012.
- Almost 27% of all 2012 U.S. utility patents were awarded to residents of California. Texas and New York were each awarded approximately 8,000 utility patents in 2012, together representing more than 13% of the national total.

This indicator represents state patent activity normalized to the size of its S&E workforce, specifically employees in S&E occupations. People in S&E occupations include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Although the U.S. Patent and Trademark Office (USPTO) grants several types of patents, this indicator covers only utility patents, commonly known as patents for inventions. Utility patents can be granted for any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound and represent a key measure of intellectual property. USPTO classifies patents geographically according to the residence of the first-named inventor. Only U.S.-origin patents are included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way the data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-52
Patents awarded per 1,000 individuals in science and engineering occupations, by state: 2003, 2008, and 2012

State	Patents awarded			Individuals in S&E occupations			Patents/1,000 individuals in S&E occupations		
	2003	2008	2012	2003	2008	2012	2003	2008	2012
United States	87,864	77,480	120,989	4,961,550	5,781,460	5,968,240	17.7	13.4	20.3
Alabama	397	279	413	56,380	68,580	72,880	7.0	4.1	5.7
Alaska	37	20	28	10,600	13,260	16,260	3.5	1.5	1.7
Arizona	1,584	1,584	2,210	92,120	102,100	116,930	17.2	15.5	18.9
Arkansas	152	108	178	21,340	29,310	29,530	7.1	3.7	6.0
California	19,688	19,182	32,107	676,180	791,750	821,780	29.1	24.2	39.1
Colorado	2,069	1,621	2,442	124,140	147,000	149,020	16.7	11.0	16.4
Connecticut	1,667	1,357	2,108	81,380	80,290	78,450	20.5	16.9	26.9
Delaware	346	325	445	17,370	22,330	23,440	19.9	14.6	19.0
District of Columbia	49	68	131	54,890	63,360	63,600	0.9	1.1	2.1
Florida	2,563	2,046	3,686	221,070	248,200	248,300	11.6	8.2	14.8
Georgia	1,333	1,344	2,128	144,170	147,380	148,830	9.2	9.1	14.3
Hawaii	75	77	108	16,090	18,830	20,930	4.7	4.1	5.2
Idaho	1,803	1,162	930	22,150	23,310	25,260	81.4	49.8	36.8
Illinois	3,296	2,741	4,345	211,230	224,370	220,170	15.6	12.2	19.7
Indiana	1,385	985	1,741	78,410	90,840	94,620	17.7	10.8	18.4
Iowa	665	561	854	37,320	46,180	50,950	17.8	12.1	16.8
Kansas	428	425	1,004	51,970	54,260	50,930	8.2	7.8	19.7
Kentucky	439	413	543	45,230	NA	51,830	9.7	NA	10.5
Louisiana	390	260	364	41,900	41,790	45,920	9.3	6.2	7.9
Maine	150	113	211	15,020	17,000	17,910	10.0	6.6	11.8
Maryland	1,453	1,232	1,609	149,250	167,070	179,550	9.7	7.4	9.0
Massachusetts	3,908	3,516	5,734	184,690	217,310	229,160	21.2	16.2	25.0
Michigan	3,857	2,996	4,598	182,940	204,290	198,610	21.1	14.7	23.2
Minnesota	2,953	2,535	3,902	117,120	134,440	131,690	25.2	18.9	29.6
Mississippi	162	102	140	22,190	27,270	23,640	7.3	3.7	5.9
Missouri	823	615	1,015	84,150	105,390	109,650	9.8	5.8	9.3
Montana	121	91	119	11,450	NA	15,360	10.6	NA	7.7
Nebraska	185	191	292	30,710	31,820	34,720	6.0	6.0	8.4
Nevada	389	375	752	22,330	27,300	27,000	17.4	13.7	27.9
New Hampshire	677	477	734	23,430	29,150	28,950	28.9	16.4	25.4
New Jersey	3,522	2,722	4,224	161,420	198,060	181,480	21.8	13.7	23.3
New Mexico	390	280	417	33,600	34,560	35,310	11.6	8.1	11.8
New York	6,234	4,885	7,640	272,440	326,510	321,480	22.9	15.0	23.8
North Carolina	1,871	1,841	2,977	132,440	153,680	167,900	14.1	12.0	17.7
North Dakota	55	63	96	8,430	9,450	13,120	6.5	6.7	7.3
Ohio	3,183	2,227	3,387	177,100	206,320	NA	18.0	10.8	NA
Oklahoma	516	417	471	44,360	48,900	50,420	11.6	8.5	9.3
Oregon	1,665	1,781	2,059	61,230	70,070	75,780	27.2	25.4	27.2
Pennsylvania	3,182	2,414	3,483	185,560	227,170	NA	17.1	10.6	NA
Rhode Island	266	218	329	18,740	18,090	20,180	14.2	12.1	16.3
South Carolina	571	395	850	48,740	57,770	63,170	11.7	6.8	13.5
South Dakota	80	54	113	9,150	11,870	12,000	8.7	4.5	9.4
Tennessee	797	586	930	63,680	72,760	79,830	12.5	8.1	11.6
Texas	6,029	5,712	8,367	365,270	463,850	493,980	16.5	12.3	16.9
Utah	638	642	1,167	45,570	52,570	54,720	14.0	12.2	21.3
Vermont	429	437	487	11,420	12,360	12,870	37.6	35.4	37.8
Virginia	1,110	1,030	1,691	209,280	259,280	274,280	5.3	4.0	6.2
Washington	2,285	3,517	5,390	150,230	NA	NA	15.2	NA	NA
West Virginia	139	74	135	16,220	17,000	19,900	8.6	4.4	6.8
Wisconsin	1,787	1,349	1,785	93,320	101,680	103,030	19.1	13.3	17.3
Wyoming	71	35	120	6,130	8,850	8,710	11.6	4.0	13.8
Puerto Rico	27	14	34	19,940	22,970	21,750	1.4	0.6	1.6

NA = not available.

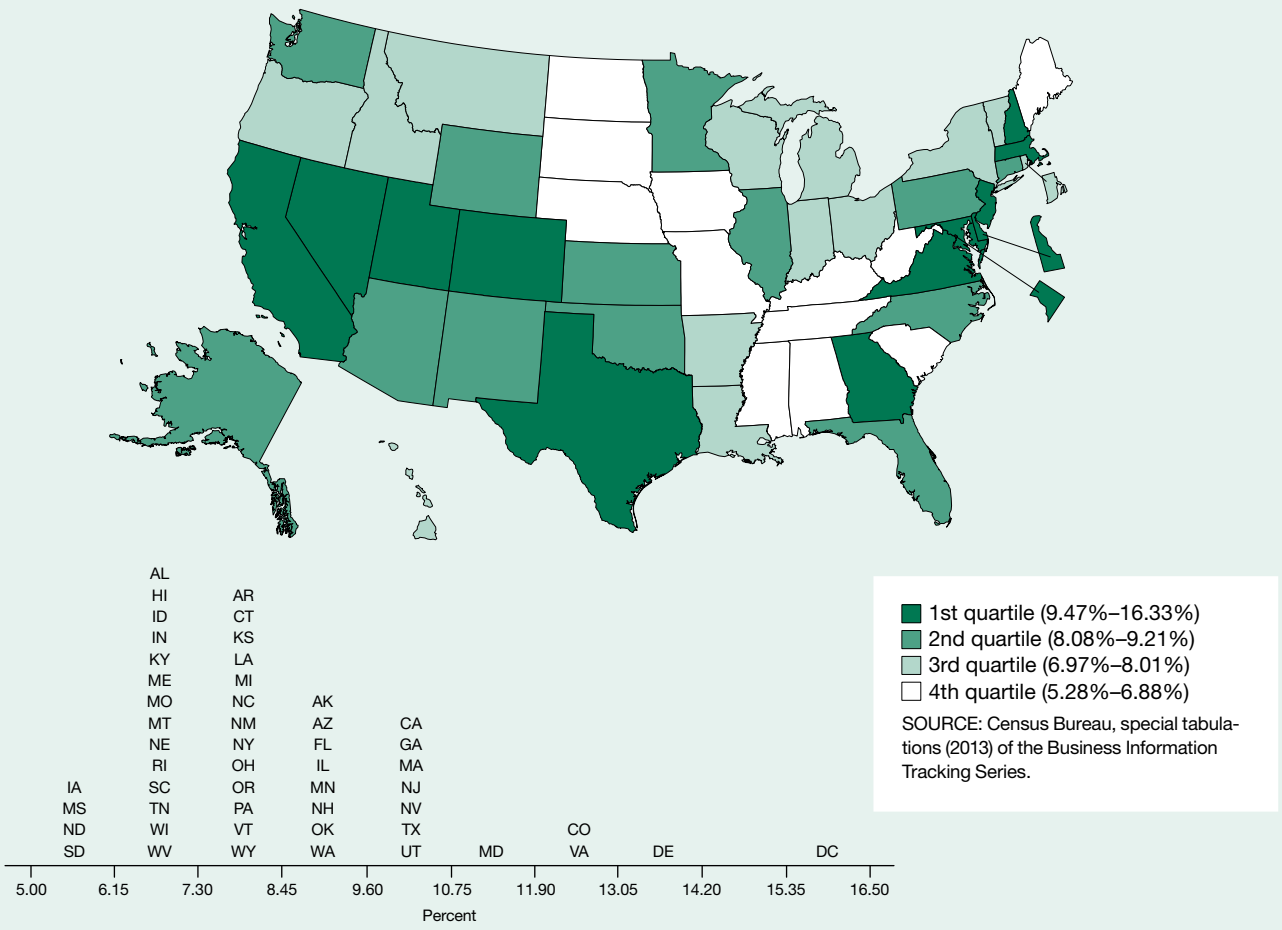
NOTES: Origin of utility patent is determined by the residence of the first-named inventor. National totals for S&E occupations include states with suppressed data. Occupational Employment Statistics estimates for 2003 are based on November data; estimates for the remaining years are based on May data.

SOURCES: U.S. Patent and Trademark Office, Electronic Information Products Division/Patent Technology Monitoring Branch, Patent Counts by Country/State and Year, Utility Patents, 1 January 1963–31 December 2011; Bureau of Labor Statistics, Occupational Employment Statistics Survey (various years).

Science and Engineering Indicators 2014

High-Technology Establishments as a Percentage of All Business Establishments

Figure 8-53
High-technology establishments as a percentage of all business establishments: 2010



Findings

- The number of establishments in high-technology industries rose from about 590,000 in 2003 to nearly 649,000 in 2010, an increase of 10%.
- The percentage of U.S. establishments in high-technology industries went from 8.17% to 8.79% of the total business establishments during the 2003–10 period, and most states showed an upward trend in the percentage of their establishments in high-technology industries.
- Between 2003 and 2010, the largest growth in the number of establishments in high-technology industries occurred in California and Florida, which added approximately 8,200 and 6,500 establishments, respectively.
- The state distribution of this indicator is similar to that of three other indicators: bachelor's degree holders, S&E doctoral degree holders, and workers in S&E occupations, all expressed as a share of the workforce.
- Experimental Program to Stimulate Competitive Research (EPSCoR) states have a lower average value on this indicator than non-EPSCoR states.

This indicator represents the portion of a state's business establishments that are classified as being part of high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. High-technology occupations include scientific, engineering, and technician occupations that employ workers who generally possess in-depth knowledge of the theories and principles of science, engineering, and mathematics at a postsecondary level.

States often consider such industries desirable, in part because they tend to compensate workers better than other industries do. This indicator includes all establishments with an employer identification number regardless of the number of people they employ.

The data pertaining to establishments for the years 2003 to 2008 are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). The data for the years 2009 and 2010 are based on their classification according to the 2007 edition of the NAICS. See table 8-A in the chapter introduction for a list of the industries (by NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Table 8-53
High-technology establishments as a percentage of all business establishments, by state: 2003, 2007, and 2010

State	High-technology establishments			All business establishments			High-technology/all business establishments (%)		
	2003	2007	2010	2003	2007	2010	2003	2007	2010
EPSCoR states	80,403	87,616	88,727	1,150,925	1,221,996	1,173,884	6.99	7.17	7.56
Non-EPSCoR states	504,364	556,553	553,299	6,001,637	6,392,070	6,135,209	8.40	8.71	9.02
Average EPSCoR state value	na	na	na	na	na	na	7.20	7.34	7.73
Average non-EPSCoR state value	na	na	na	na	na	na	8.23	8.52	8.86
United States	590,417	650,707	648,993	7,223,240	7,689,821	7,384,267	8.17	8.46	8.79
Alabama	6,347	6,783	6,786	99,453	105,388	99,097	6.38	6.44	6.85
Alaska	1,345	1,538	1,698	19,037	20,146	19,922	7.07	7.63	8.52
Arizona	10,433	12,540	11,875	120,966	142,649	131,661	8.62	8.79	9.02
Arkansas	4,012	4,550	4,852	64,058	67,513	65,069	6.26	6.74	7.46
California	77,614	87,815	85,787	822,751	889,726	848,238	9.43	9.87	10.11
Colorado	15,532	18,016	18,306	143,398	157,570	151,765	10.83	11.43	12.06
Connecticut	7,827	7,868	7,472	91,207	93,444	89,078	8.58	8.42	8.39
Delaware	3,964	3,573	3,256	24,739	25,476	24,263	16.02	14.02	13.42
District of Columbia	2,589	3,158	3,507	19,357	20,957	21,478	13.38	15.07	16.33
Florida	38,118	44,745	44,577	458,823	522,710	490,492	8.31	8.56	9.09
Georgia	18,820	21,586	21,413	208,350	231,418	216,787	9.03	9.33	9.88
Hawaii	2,097	2,305	2,309	30,950	33,321	31,904	6.78	6.92	7.24
Idaho	2,515	3,107	3,071	39,582	47,284	43,365	6.35	6.57	7.08
Illinois	27,606	29,222	28,886	310,589	324,628	313,654	8.89	9.00	9.21
Indiana	9,626	10,355	10,276	147,073	152,604	144,802	6.55	6.79	7.10
Iowa	4,316	4,679	4,745	80,745	83,008	80,637	5.35	5.64	5.88
Kansas	5,716	6,076	6,144	74,637	76,984	74,163	7.66	7.89	8.28
Kentucky	5,453	5,850	5,913	90,358	93,428	90,665	6.03	6.26	6.52
Louisiana	7,218	7,574	7,850	101,933	104,459	103,234	7.08	7.25	7.60
Maine	2,466	2,612	2,652	40,519	42,409	40,506	6.09	6.16	6.55
Maryland	13,428	15,151	15,589	132,782	141,076	134,417	10.11	10.74	11.60
Massachusetts	17,183	17,470	17,148	177,910	176,304	169,475	9.66	9.91	10.12
Michigan	16,937	17,321	16,555	236,221	234,971	218,752	7.17	7.37	7.57
Minnesota	12,834	13,590	13,014	145,364	151,304	145,247	8.83	8.98	8.96
Mississippi	3,269	3,405	3,496	59,565	61,727	59,196	5.49	5.52	5.91
Missouri	9,562	10,238	9,956	149,753	154,201	149,628	6.39	6.64	6.65
Montana	2,108	2,515	2,593	33,616	37,645	35,950	6.27	6.68	7.21
Nebraska	2,797	3,257	3,361	50,213	52,452	51,803	5.57	6.21	6.49
Nevada	5,387	6,087	6,031	53,080	62,706	59,113	10.15	9.71	10.20
New Hampshire	3,511	3,575	3,539	38,119	39,363	37,385	9.21	9.08	9.47
New Jersey	24,286	24,688	23,686	237,097	242,967	228,577	10.24	10.16	10.36
New Mexico	3,322	3,658	3,611	43,386	46,763	44,134	7.66	7.82	8.18
New York	35,926	38,368	38,636	500,559	518,608	518,527	7.18	7.40	7.45
North Carolina	14,869	17,671	17,967	207,500	227,444	217,768	7.17	7.77	8.25
North Dakota	964	1,075	1,151	20,371	21,477	21,792	4.73	5.01	5.28
Ohio	19,875	20,486	20,180	269,202	269,855	253,136	7.38	7.59	7.97
Oklahoma	6,859	7,512	7,610	85,633	91,054	89,868	8.01	8.25	8.47
Oregon	7,500	8,453	8,587	102,462	113,054	107,181	7.32	7.48	8.01
Pennsylvania	22,266	23,778	23,956	297,040	304,721	296,514	7.50	7.80	8.08
Rhode Island	1,976	2,108	2,071	29,172	30,299	28,477	6.77	6.96	7.27
South Carolina	5,869	6,942	7,010	98,735	107,685	101,902	5.94	6.45	6.88
South Dakota	1,206	1,347	1,426	24,314	25,797	25,562	4.96	5.22	5.58
Tennessee	8,196	8,980	8,702	129,458	137,547	131,302	6.33	6.53	6.63
Texas	45,062	49,237	50,180	481,804	520,405	521,248	9.35	9.46	9.63
Utah	5,474	6,960	7,139	60,011	71,722	68,725	9.12	9.70	10.39
Vermont	1,453	1,570	1,581	21,747	22,298	21,422	6.68	7.04	7.38
Virginia	18,868	22,607	23,623	182,783	200,131	192,780	10.32	11.30	12.25
Washington	13,171	15,138	15,335	166,229	183,984	175,486	7.92	8.23	8.74
West Virginia	2,257	2,352	2,490	40,225	40,415	38,599	5.61	5.82	6.45
Wisconsin	9,035	9,591	9,709	141,560	146,019	139,332	6.38	6.57	6.97
Wyoming	1,353	1,625	1,686	18,804	20,705	20,189	7.20	7.85	8.35
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

na = not applicable; NA = not available.

EPSCoR = Experimental Program to Stimulate Competitive Research.

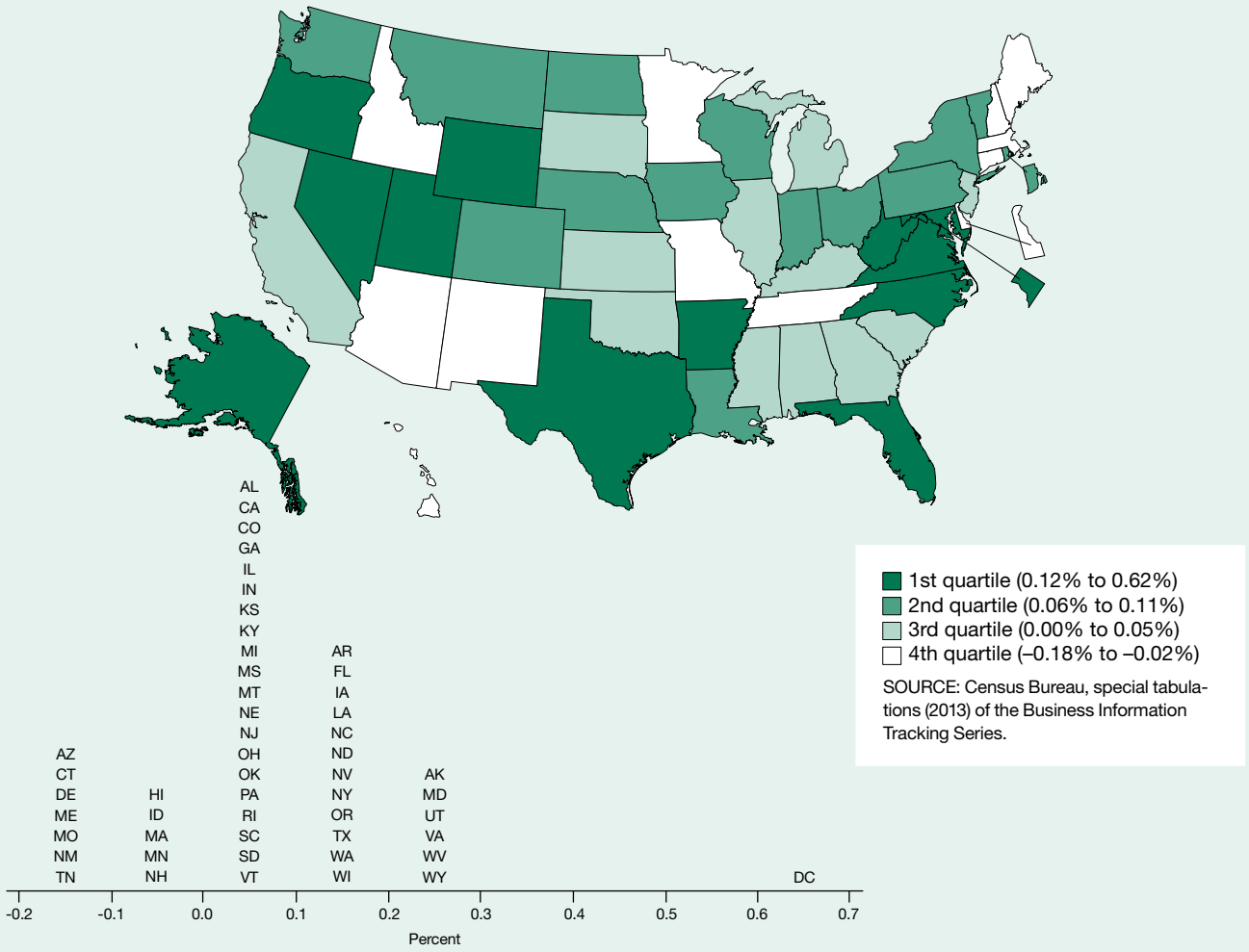
NOTE: For an explanation of EPSCoR and non-EPSCoR averages, see the chapter introduction.

SOURCE: Census Bureau, special tabulations (2007, 2010, 2013) of the Business Information Tracking Series (various years).

Science and Engineering Indicators 2014

Net High-Technology Business Formations as a Percentage of All Business Establishments

Figure 8-54
Net high-technology business formations as a percentage of all business establishments: 2010



Findings

- In 2010, about 4,600 more businesses in high-technology industries were formed than ceased operations in the United States. From a base of approximately 7.4 million total business establishments, 78,862 new business establishments were formed in high-technology industries and 74,231 ceased operations in those same industries.
- The lingering effects of the business downturn were still evident in 2010 as 12 states had more businesses in high-technology industries ceasing operations than were being formed.
- Many of the top-ranking states on this indicator were Experimental Program to Stimulate Competitive Research states. However, the largest numbers of net new businesses were formed in Florida and Texas.

The business base of a state is constantly changing as new businesses form and others cease to exist. The term "net business formations" refers to the difference between the number of businesses that are formed and the number that cease operations during any particular year.

The ratio of the number of net business formations that occur in high-technology industries to the number of business establishments in a state indicates the changing role of high-technology industries in a state's economy. High positive values indicate an increasingly prominent role for these industries.

The data on business establishments in high-technology industries in 2003 through 2008 are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). The data for the years 2009 and 2010 are based on their classification according to the 2007 edition of the NAICS. See table 8-A in the chapter introduction for a list of the industries (by NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Changes in company name, ownership, or address are not counted as business formations or business deaths. Net business formations cannot be used to directly link the number of high-technology business establishments in different years because the primary industry of some establishments may have changed during the period.

Table 8-54
Net high-technology business formations as a percentage of all business establishments, by state: 2004, 2007, and 2010

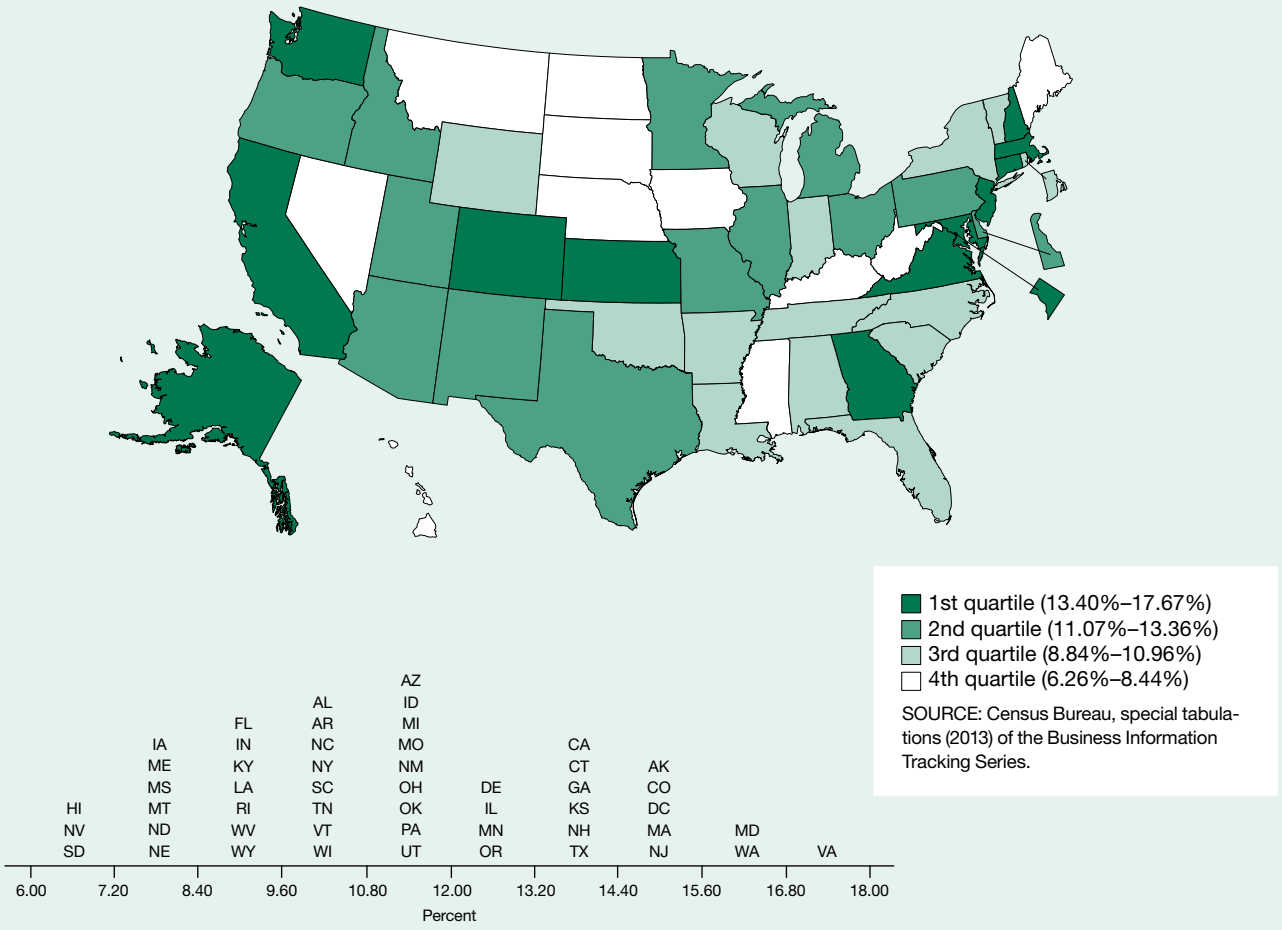
State	Net high-technology business formations			All business establishments			High-technology business formations/ all business establishments (%)		
	2004	2007	2010	2004	2007	2010	2004	2007	2010
United States	11,598	15,113	4,631	7,355,122	7,689,821	7,384,267	0.16	0.20	0.06
Alabama	63	141	-3	100,402	105,388	99,097	0.06	0.13	0.00
Alaska	22	55	49	19,266	20,146	19,922	0.12	0.27	0.25
Arizona	357	464	-213	125,126	142,649	131,661	0.30	0.33	-0.16
Arkansas	123	114	120	65,022	67,513	65,069	0.19	0.17	0.18
California	1,099	1,929	-8	836,783	889,726	848,238	0.13	0.22	0.00
Colorado	490	751	97	146,747	157,570	151,765	0.34	0.48	0.06
Connecticut	-47	62	-113	92,552	93,444	89,078	-0.05	0.07	-0.13
Delaware	-52	-131	-36	25,311	25,476	24,263	-0.21	-0.51	-0.15
District of Columbia	66	143	134	19,498	20,957	21,478	0.34	0.68	0.62
Florida	1,743	873	616	482,910	522,710	490,492	0.38	0.17	0.13
Georgia	642	731	106	213,906	231,418	216,787	0.31	0.32	0.05
Hawaii	51	-30	-32	31,497	33,321	31,904	0.16	-0.09	-0.10
Idaho	54	185	-13	41,121	47,284	43,365	0.14	0.39	-0.03
Illinois	452	545	92	314,707	324,628	313,654	0.15	0.17	0.03
Indiana	208	171	122	148,864	152,604	144,802	0.14	0.11	0.08
Iowa	12	97	91	81,216	83,008	80,637	0.01	0.12	0.11
Kansas	160	41	31	75,478	76,984	74,163	0.21	0.05	0.04
Kentucky	116	48	14	91,437	93,428	90,665	0.13	0.05	0.02
Louisiana	-38	225	117	102,732	104,459	103,234	-0.04	0.22	0.11
Maine	81	0	-44	41,061	42,409	40,506	0.20	0.00	-0.11
Maryland	475	478	342	135,515	141,076	134,417	0.36	0.34	0.25
Massachusetts	156	304	-36	175,154	176,304	169,475	0.09	0.17	-0.02
Michigan	44	267	113	237,062	234,971	218,752	0.02	0.11	0.05
Minnesota	185	276	-54	148,053	151,304	145,247	0.13	0.18	-0.04
Mississippi	7	79	25	60,267	61,727	59,196	0.01	0.13	0.04
Missouri	195	62	-262	153,328	154,201	149,628	0.13	0.04	-0.18
Montana	108	87	26	34,473	37,645	35,950	0.32	0.23	0.07
Nebraska	64	144	32	50,735	52,452	51,803	0.13	0.27	0.06
Nevada	169	181	112	55,590	62,706	59,113	0.32	0.29	0.19
New Hampshire	30	-23	-28	38,650	39,363	37,385	0.08	-0.06	-0.07
New Jersey	-80	-77	31	239,692	242,967	228,577	-0.03	-0.03	0.01
New Mexico	37	93	-69	44,024	46,763	44,134	0.09	0.20	-0.16
New York	702	977	530	509,079	518,608	518,527	0.14	0.19	0.10
North Carolina	514	559	383	212,170	227,444	217,768	0.25	0.25	0.18
North Dakota	-1	52	25	20,739	21,477	21,792	0.00	0.24	0.11
Ohio	204	205	173	270,693	269,855	253,136	0.08	0.08	0.07
Oklahoma	75	245	47	87,064	91,054	89,868	0.09	0.27	0.05
Oregon	156	309	198	104,808	113,054	107,181	0.15	0.27	0.18
Pennsylvania	474	233	198	300,408	304,721	296,514	0.16	0.08	0.07
Rhode Island	67	69	22	29,845	30,299	28,477	0.23	0.23	0.08
South Carolina	175	294	44	100,759	107,685	101,902	0.18	0.27	0.04
South Dakota	16	76	5	24,646	25,797	25,562	0.07	0.29	0.02
Tennessee	39	99	-156	131,161	137,547	131,302	0.03	0.07	-0.12
Texas	401	1,588	600	488,935	520,405	521,248	0.08	0.31	0.12
Utah	283	397	156	62,539	71,722	68,725	0.47	0.55	0.23
Vermont	42	37	17	22,041	22,298	21,422	0.19	0.17	0.08
Virginia	845	844	567	188,281	200,131	192,780	0.46	0.42	0.29
Washington	346	657	185	170,428	183,984	175,486	0.21	0.36	0.11
West Virginia	16	40	99	40,665	40,415	38,599	0.04	0.10	0.26
Wisconsin	215	78	138	143,466	146,019	139,332	0.15	0.05	0.10
Wyoming	37	69	41	19,216	20,705	20,189	0.20	0.33	0.20
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available.

SOURCE: Census Bureau, special tabulations (2007, 2010, 2013) of the Business Information Tracking Series (various years).

Employment in High-Technology Establishments as a Percentage of Total Employment

Figure 8-55
Employment in high-technology establishments as a percentage of total employment: 2010



Findings

- Employment in high-technology industries in the United States decreased slightly from 13.6 million in 2003 to 13.4 million in 2010.
- Nationwide, the value of this indicator changed little from 2003 (11.96%) to 2010 (11.99%).
- States varied greatly on this indicator in 2010, ranging from 6.26% to 17.67% of their workforce employed in high-technology industries.
- During the 2003–10 period, Michigan and New York recorded the largest net losses of jobs in high-technology industries, while Virginia, Georgia, and Colorado posted the largest net gains of jobs in high-technology industries.
- States were distributed similarly on the high-technology employment and high-technology establishment indicators.

This indicator represents the extent to which a state's workforce is employed in high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. High-technology occupations include scientific, engineering, and technician occupations that employ workers who generally possess in-depth knowledge of the theories and principles of science, engineering, and mathematics at a postsecondary level.

The data pertaining to establishments in 2003 through 2008 are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). The data for the years 2009 and 2010 are based on their classification according to the 2007 edition of the NAICS. See table 8-A in the chapter introduction for a list of the industries (by NAICS code) that are defined as high technology. Data on total employment and NAICS industry establishment employment in high-technology establishments are provided by the U.S. Census Bureau and differ from workforce data provided by the Bureau of Labor Statistics. Total employment refers to all U.S. business establishments with paid employees, but does not include crop and animal production, rail transportation, the postal service, or most government employees.

Table 8-55
Employment in high-technology establishments as a percentage of total employment, by state: 2003, 2007, and 2010

State	Employment in high-technology establishments			Total employment			High-technology/ total employment (%)		
	2003	2007	2010	2003	2007	2010	2003	2007	2010
United States	13,563,122	14,152,153	13,428,176	113,373,663	120,579,971	111,956,736	11.96	11.74	11.99
Alabama	152,879	160,545	164,889	1,597,265	1,722,354	1,567,725	9.57	9.32	10.52
Alaska	21,851	30,766	36,813	216,707	244,560	254,694	10.08	12.58	14.45
Arizona	234,603	263,246	238,931	1,997,990	2,403,472	2,065,596	11.74	10.95	11.57
Arkansas	95,180	89,819	95,963	988,822	1,031,129	964,899	9.63	8.71	9.95
California	1,781,830	1,838,795	1,715,056	12,986,496	13,767,970	12,534,832	13.72	13.36	13.68
Colorado	274,979	302,681	303,701	1,883,883	2,075,404	1,955,624	14.60	14.58	15.53
Connecticut	210,114	208,417	195,895	1,550,615	1,538,977	1,436,754	13.55	13.54	13.63
Delaware	52,349	47,144	44,535	385,098	396,251	358,811	13.59	11.90	12.41
District of Columbia	54,314	59,284	67,828	422,912	454,512	463,070	12.84	13.04	14.65
Florida	576,274	632,765	585,325	6,548,276	7,423,816	6,624,005	8.80	8.52	8.84
Georgia	413,384	435,409	447,211	3,386,590	3,647,746	3,315,180	12.21	11.94	13.49
Hawaii	25,777	28,932	29,955	458,952	518,928	478,798	5.62	5.58	6.26
Idaho	55,706	60,056	54,000	466,379	544,337	487,901	11.94	11.03	11.07
Illinois	646,285	644,910	606,229	5,204,887	5,397,867	4,978,701	12.42	11.95	12.18
Indiana	219,598	240,529	220,867	2,540,554	2,647,861	2,400,566	8.64	9.08	9.20
Iowa	102,387	98,655	103,641	1,232,709	1,303,265	1,252,828	8.31	7.57	8.27
Kansas	155,023	160,739	156,591	1,109,699	1,168,907	1,127,221	13.97	13.75	13.89
Kentucky	121,838	132,400	122,950	1,471,622	1,550,035	1,456,297	8.28	8.54	8.44
Louisiana	137,029	145,219	141,384	1,603,492	1,645,547	1,600,202	8.55	8.82	8.84
Maine	35,184	39,004	37,840	488,788	503,725	480,302	7.20	7.74	7.88
Maryland	315,887	353,025	331,437	2,088,552	2,238,894	2,075,391	15.12	15.77	15.97
Massachusetts	460,984	495,550	442,407	2,974,164	3,073,572	2,928,453	15.50	16.12	15.11
Michigan	499,133	449,369	390,824	3,884,881	3,686,604	3,287,170	12.85	12.19	11.89
Minnesota	315,994	351,940	308,919	2,381,860	2,525,488	2,358,867	13.27	13.94	13.10
Mississippi	66,566	64,539	63,467	912,004	941,215	881,489	7.30	6.86	7.20
Missouri	254,299	265,680	254,464	2,387,245	2,457,551	2,292,521	10.65	10.81	11.10
Montana	20,296	23,340	24,377	302,932	353,717	338,366	6.70	6.60	7.20
Nebraska	68,975	65,653	63,881	774,858	795,489	769,404	8.90	8.25	8.30
Nevada	61,847	74,288	64,882	970,678	1,195,473	1,002,731	6.37	6.21	6.47
New Hampshire	63,264	66,235	75,371	540,132	573,026	562,382	11.71	11.56	13.40
New Jersey	550,224	563,587	518,502	3,578,674	3,661,138	3,365,857	15.38	15.39	15.40
New Mexico	60,399	71,616	70,027	571,057	642,068	600,269	10.58	11.15	11.67
New York	823,992	796,369	744,789	7,415,430	7,528,488	7,264,463	11.11	10.58	10.25
North Carolina	349,424	379,831	347,943	3,337,552	3,585,951	3,233,868	10.47	10.59	10.76
North Dakota	20,584	29,850	24,590	258,878	292,851	294,794	7.95	10.19	8.34
Ohio	531,491	520,079	490,703	4,769,406	4,781,448	4,353,123	11.14	10.88	11.27
Oklahoma	132,887	142,168	136,082	1,184,312	1,307,578	1,241,178	11.22	10.87	10.96
Oregon	152,140	162,690	164,454	1,338,380	1,476,970	1,350,947	11.37	11.02	12.17
Pennsylvania	566,406	558,193	556,446	5,028,650	5,194,723	4,975,537	11.26	10.75	11.18
Rhode Island	35,806	40,738	37,962	427,369	441,293	398,960	8.38	9.23	9.52
South Carolina	163,373	166,710	154,343	1,550,227	1,647,759	1,502,540	10.54	10.12	10.27
South Dakota	18,890	21,680	23,558	299,723	330,071	328,930	6.30	6.57	7.16
Tennessee	219,898	244,256	218,686	2,298,836	2,475,155	2,262,886	9.57	9.87	9.66
Texas	1,158,481	1,222,727	1,173,479	8,049,300	9,038,702	8,785,658	14.39	13.53	13.36
Utah	99,856	123,602	120,574	900,331	1,102,528	1,021,872	11.09	11.21	11.80
Vermont	29,402	26,216	27,984	256,401	268,023	264,076	11.47	9.78	10.60
Virginia	459,017	545,693	529,869	2,932,471	3,196,510	2,999,409	15.65	17.07	17.67
Washington	401,413	380,962	387,568	2,292,462	2,500,835	2,325,825	17.51	15.23	16.66
West Virginia	46,635	46,395	47,252	561,317	580,953	560,311	8.31	7.99	8.43
Wisconsin	233,967	260,033	245,381	2,382,979	2,483,664	2,320,269	9.82	10.47	10.58
Wyoming	15,008	19,824	18,351	180,866	215,571	205,184	8.30	9.20	8.94
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

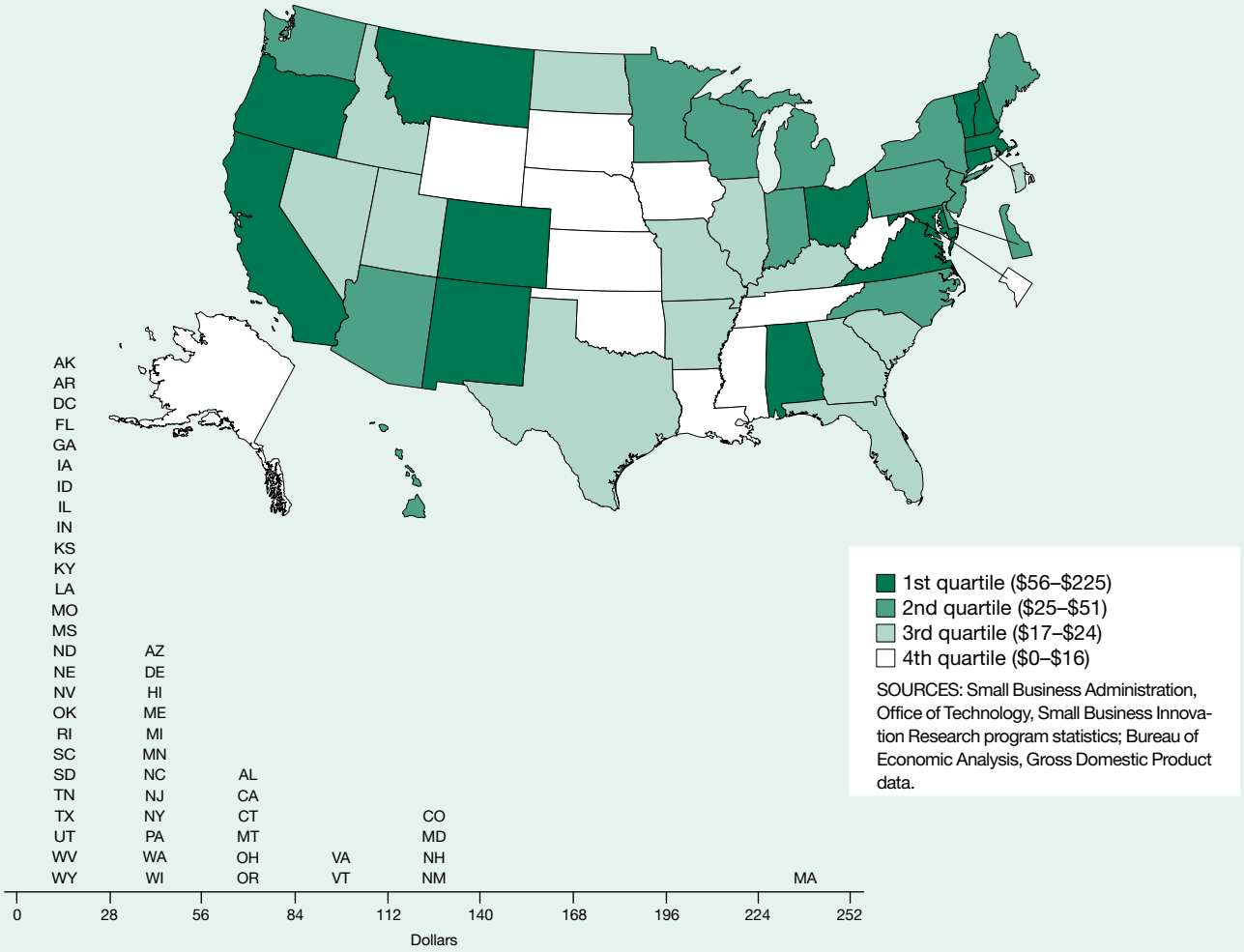
NA = not available.

SOURCE: Census Bureau, special tabulations (2007, 2010, 2013) of the Business Information Tracking Series (various years).

Science and Engineering Indicators 2014

Average Annual Federal Small Business Innovation Research Funding per $1 Million of Gross Domestic Product

Figure 8-56
Average annual federal Small Business Innovation Research funding per $1 million of gross domestic product: 2010–12



Findings

- The SBIR program decreased in size from $1.7 billion in 2002–04 to $700 million in 2010–12.
- Over the 3-year period of 2010–12, SBIR funds were concentrated in relatively few states; the average annual state awards during this period ranged from $23,000 to nearly $133 million.
- Many of the states with the highest rankings on this indicator are locations of federal laboratories or well-recognized academic research institutions from which innovative small businesses have emerged.
- States with a high ranking on this indicator also tended to rank high on the high-technology and venture capital indicators.

Funds awarded through the federal Small Business Innovation Research (SBIR) program support technological innovation in companies with 500 or fewer employees. Awards are made to evaluate the feasibility and scientific merit of new technology (Phase 1—up to $150,000) and to develop the technology to a point where it can be commercialized (Phase 2—up to $750,000). The total award dollars include both Phase 1 and Phase 2 SBIR awards.

Because of year-to-year fluctuations, this indicator is calculated using 3-year averages. The 3-year average annual SBIR award dollars won by small businesses in a state are divided by the 3-year average annual gross domestic product for the same period. A high value indicates that small business firms in a state are doing innovative development work that attracts federal support.

Table 8-56
Average annual federal Small Business Innovation Research funding per $1 million of gross domestic product, by state: 2002–04, 2006–08, and 2010–12

State	Average SBIR funding ($thousands)			Average state GDP ($millions)			SBIR funding ($)/ $1 million GDP		
	2002–04	2006–08	2010–12	2002–04	2006–08	2010–12	2002–04	2006–08	2010–12
United States	1,729,004	1,801,190	699,675	11,138,210	13,806,188	14,971,555	155	130	47
Alabama	33,192	39,376	11,461	132,668	164,976	178,307	250	239	64
Alaska	495	707	23	31,382	45,377	50,335	16	16	0
Arizona	28,534	29,003	11,280	189,045	255,461	256,736	151	114	44
Arkansas	3,240	6,965	2,463	78,672	97,210	106,428	41	72	23
California	361,242	350,717	133,814	1,472,700	1,856,525	1,919,238	245	189	70
Colorado	81,320	86,126	31,818	193,378	241,785	264,444	421	356	120
Connecticut	29,454	24,046	12,721	176,775	216,690	225,498	167	111	56
Delaware	4,195	7,215	3,292	47,198	57,943	64,398	89	125	51
District of Columbia	5,840	3,339	709	72,509	91,808	106,913	81	36	7
Florida	37,543	44,269	16,919	577,287	746,840	750,525	65	59	23
Georgia	16,484	17,983	7,069	327,221	394,815	417,671	50	46	17
Hawaii	5,772	7,820	3,350	48,379	63,680	69,901	119	123	48
Idaho	3,664	3,496	1,138	40,426	53,308	56,993	91	66	20
Illinois	22,500	28,052	14,109	520,654	619,747	669,418	43	45	21
Indiana	10,739	17,080	7,193	220,221	257,119	284,569	49	66	25
Iowa	4,875	4,290	1,949	106,253	130,673	145,624	46	33	13
Kansas	4,971	4,626	1,115	95,996	118,862	133,453	52	39	8
Kentucky	4,237	5,602	4,085	126,177	150,155	167,516	34	37	24
Louisiana	3,126	4,326	2,416	155,554	208,573	236,009	20	21	10
Maine	5,604	7,378	1,464	41,950	48,720	52,496	134	151	28
Maryland	93,753	79,860	39,756	218,398	270,963	306,278	429	295	130
Massachusetts	242,347	228,472	87,740	298,795	350,526	389,769	811	652	225
Michigan	33,544	44,746	19,609	360,031	377,254	384,245	93	119	51
Minnesota	24,805	26,318	8,603	213,719	253,502	281,098	116	104	31
Mississippi	3,232	1,040	1,070	73,636	91,141	98,262	44	11	11
Missouri	7,342	8,792	5,161	200,162	232,695	250,751	37	38	21
Montana	7,045	8,278	2,561	25,765	34,373	38,625	273	241	66
Nebraska	2,998	2,471	1,575	65,767	81,288	95,566	46	30	16
Nevada	7,772	3,364	2,452	90,871	129,638	129,281	86	26	19
New Hampshire	22,208	24,343	8,703	48,944	57,481	63,059	454	423	138
New Jersey	47,712	42,988	22,392	393,407	469,391	494,728	121	92	45
New Mexico	21,965	24,776	8,918	58,588	74,300	79,280	375	333	112
New York	75,741	83,045	33,447	852,183	1,062,116	1,170,594	89	78	29
North Carolina	22,739	36,235	14,732	313,544	394,114	439,664	73	92	34
North Dakota	1,960	918	691	22,033	28,794	40,455	89	32	17
Ohio	67,568	73,611	30,032	411,939	461,850	488,446	164	159	61
Oklahoma	6,630	7,104	2,065	105,269	141,926	154,887	63	50	13
Oregon	19,556	27,406	11,352	127,142	167,326	189,735	154	164	60
Pennsylvania	65,170	78,761	25,430	442,445	527,391	580,324	147	149	44
Rhode Island	7,783	7,056	1,004	40,575	46,991	49,650	192	150	20
South Carolina	7,397	4,630	3,146	129,895	155,340	169,075	57	30	19
South Dakota	1,291	526	110	29,034	34,818	40,809	44	15	3
Tennessee	9,411	13,239	4,072	202,354	242,165	264,755	47	55	15
Texas	71,023	79,874	25,681	836,983	1,137,028	1,315,029	85	70	20
Utah	14,299	15,540	2,820	78,275	107,495	124,388	183	145	23
Vermont	4,808	5,286	2,685	20,671	24,034	26,550	233	220	101
Virginia	98,902	102,923	38,430	309,279	387,343	434,083	320	266	89
Washington	46,963	47,165	13,361	247,384	319,661	358,496	190	148	37
West Virginia	6,002	2,186	1,060	46,373	56,765	66,074	129	39	16
Wisconsin	17,592	25,174	12,125	199,081	233,769	253,437	88	108	48
Wyoming	2,418	2,647	504	21,223	34,443	37,690	114	77	13
Puerto Rico	216	8	120	78,948	92,624	NA	3	0	NA

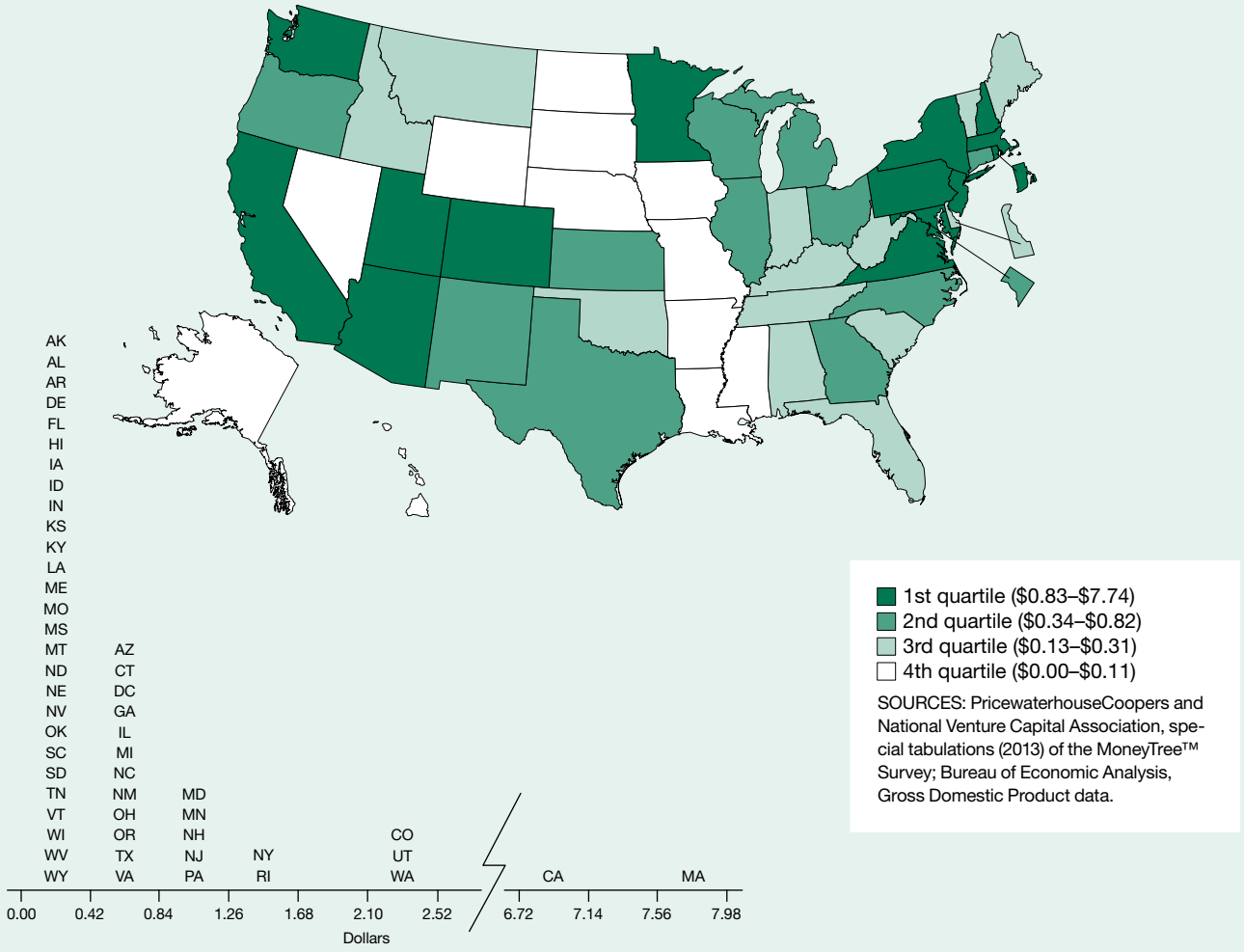
NA = not available.

GDP = gross domestic product; SBIR = Small Business Innovation Research.

SOURCES: Small Business Administration, Office of Technology, Small Business Innovation Research program statistics (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

Venture Capital Disbursed per $1,000 of Gross Domestic Product

Figure 8-57
Venture capital disbursed per $1,000 of gross domestic product: 2012



SOURCES: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2013) of the MoneyTree™ Survey; Bureau of Economic Analysis, Gross Domestic Product data.

Findings

- The total amount of venture capital invested in the United States has increased from $22 billion in 2002 to nearly $27 billion in 2012. The average value for venture capital disbursed per $1,000 of gross domestic product for the United States was $2.08 in 2002 and $1.73 in 2012.
- Venture capital investment is concentrated in relatively few states. Companies in California received more than 50% of the total venture capital disbursed in the United States in 2012, followed by companies in Massachusetts with 12%. Three states reported no venture capital investment in 2012, and a total of 11 states reported less than $10 million.
- In 2012, the value of this indicator across states ranged from $0.00 to $7.74.
- The average indicator value for Experimental Program to Stimulate Competitive Research (EPSCoR) states was substantially lower than that for non-EPSCoR states. The state distribution of venture capital was similar to indicators of high-technology business activity.

Venture capital represents an important source of funding for startup companies. It supports the growth and expansion of these companies early in their development, before they establish a predictable sales history that would qualify them for other types of financing.

This indicator represents the relative magnitude of venture capital investments in a state after adjusting for the size of the state's economy. The indicator is expressed as dollars of venture capital disbursed per $1,000 of gross domestic product. High values indicate that companies in those states are successfully attracting venture capital to fuel their growth. Access to venture capital financing varies greatly among states.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, initial public offerings, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time.

Table 8-57
Venture capital disbursed per $1,000 of gross domestic product, by state: 2002, 2007, and 2012

State	Venture capital disbursed ($millions)			State GDP ($millions)			Venture capital ($)/$1,000 GDP		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
United States	22,010	30,871	26,873	10,572,388	13,936,196	15,566,076	2.08	2.22	1.73
Alabama	57	31	23	125,168	165,665	183,547	0.46	0.19	0.13
Alaska	0	0	0	28,894	44,540	51,859	0.00	0.00	0.00
Arizona	197	203	222	177,068	259,157	266,891	1.11	0.78	0.83
Arkansas	10	0	5	74,167	97,470	109,557	0.13	0.00	0.05
California	9,528	14,735	14,194	1,387,213	1,870,916	2,003,479	6.87	7.88	7.08
Colorado	537	610	585	186,529	242,633	274,048	2.88	2.51	2.13
Connecticut	183	296	158	168,865	221,133	229,317	1.08	1.34	0.69
Delaware	19	7	9	43,672	59,592	65,984	0.44	0.12	0.14
District of Columbia	20	91	64	67,924	91,896	109,793	0.29	0.99	0.58
Florida	410	768	199	536,061	760,936	777,164	0.76	1.01	0.26
Georgia	565	475	262	313,952	399,579	433,569	1.80	1.19	0.60
Hawaii	4	5	1	44,752	64,070	72,424	0.09	0.08	0.01
Idaho	11	16	15	37,729	54,273	58,243	0.29	0.29	0.26
Illinois	309	505	570	497,802	626,611	695,238	0.62	0.81	0.82
Indiana	40	83	84	208,674	261,755	298,625	0.19	0.32	0.28
Iowa	2	6	5	98,584	134,053	152,436	0.02	0.04	0.03
Kansas	7	82	47	91,671	120,599	138,953	0.08	0.68	0.34
Kentucky	14	53	24	121,436	150,487	173,466	0.12	0.35	0.14
Louisiana	19	16	11	139,202	207,312	243,264	0.14	0.08	0.05
Maine	15	5	13	39,989	49,065	53,656	0.38	0.10	0.24
Maryland	637	613	284	206,624	271,985	317,678	3.08	2.25	0.89
Massachusetts	2,530	3,714	3,127	288,352	352,378	403,823	8.77	10.54	7.74
Michigan	108	105	237	351,832	386,591	400,504	0.31	0.27	0.59
Minnesota	403	488	253	201,559	253,374	294,729	2.00	1.93	0.86
Mississippi	5	6	10	69,527	92,107	101,490	0.07	0.07	0.10
Missouri	76	92	21	192,189	232,959	258,832	0.40	0.39	0.08
Montana	0	4	6	23,781	35,085	40,422	0.00	0.11	0.15
Nebraska	13	0	11	61,384	82,135	99,557	0.21	0.00	0.11
Nevada	32	29	7	82,764	133,185	133,584	0.39	0.22	0.05
New Hampshire	208	135	61	46,730	57,868	64,697	4.45	2.33	0.94
New Jersey	905	632	444	376,922	471,372	508,003	2.40	1.34	0.87
New Mexico	54	129	36	53,662	74,356	80,600	1.01	1.73	0.45
New York	799	1,130	1,864	822,408	1,076,255	1,205,930	0.97	1.05	1.55
North Carolina	563	547	197	302,201	396,740	455,973	1.86	1.38	0.43
North Dakota	0	0	2	20,439	28,549	46,016	0.00	0.00	0.05
Ohio	268	193	286	397,966	467,138	509,393	0.67	0.41	0.56
Oklahoma	33	8	34	98,778	140,378	160,953	0.33	0.06	0.21
Oregon	151	312	124	119,571	167,088	198,702	1.26	1.87	0.62
Pennsylvania	456	819	521	424,103	531,098	600,897	1.08	1.54	0.87
Rhode Island	96	7	85	38,135	47,293	50,956	2.52	0.15	1.67
South Carolina	80	87	39	124,391	157,712	176,217	0.64	0.55	0.22
South Dakota	18	4	0	27,610	34,885	42,464	0.65	0.11	0.00
Tennessee	116	125	87	193,069	242,220	277,036	0.60	0.52	0.31
Texas	1,296	1,468	934	782,780	1,147,404	1,397,369	1.66	1.28	0.67
Utah	136	188	318	74,603	108,474	130,486	1.82	1.73	2.44
Vermont	4	9	4	19,599	24,043	27,296	0.20	0.37	0.16
Virginia	429	557	372	290,904	389,570	445,876	1.47	1.43	0.83
Washington	580	1,383	908	237,117	325,118	375,730	2.45	4.25	2.42
West Virginia	16	10	15	44,533	56,864	69,380	0.36	0.18	0.22
Wisconsin	51	90	95	190,241	236,522	261,548	0.27	0.38	0.36
Wyoming	0	0	0	19,262	33,708	38,422	0.00	0.00	0.00
Puerto Rico	NA	NA	0	74,827	93,263	NA	NA	NA	NA

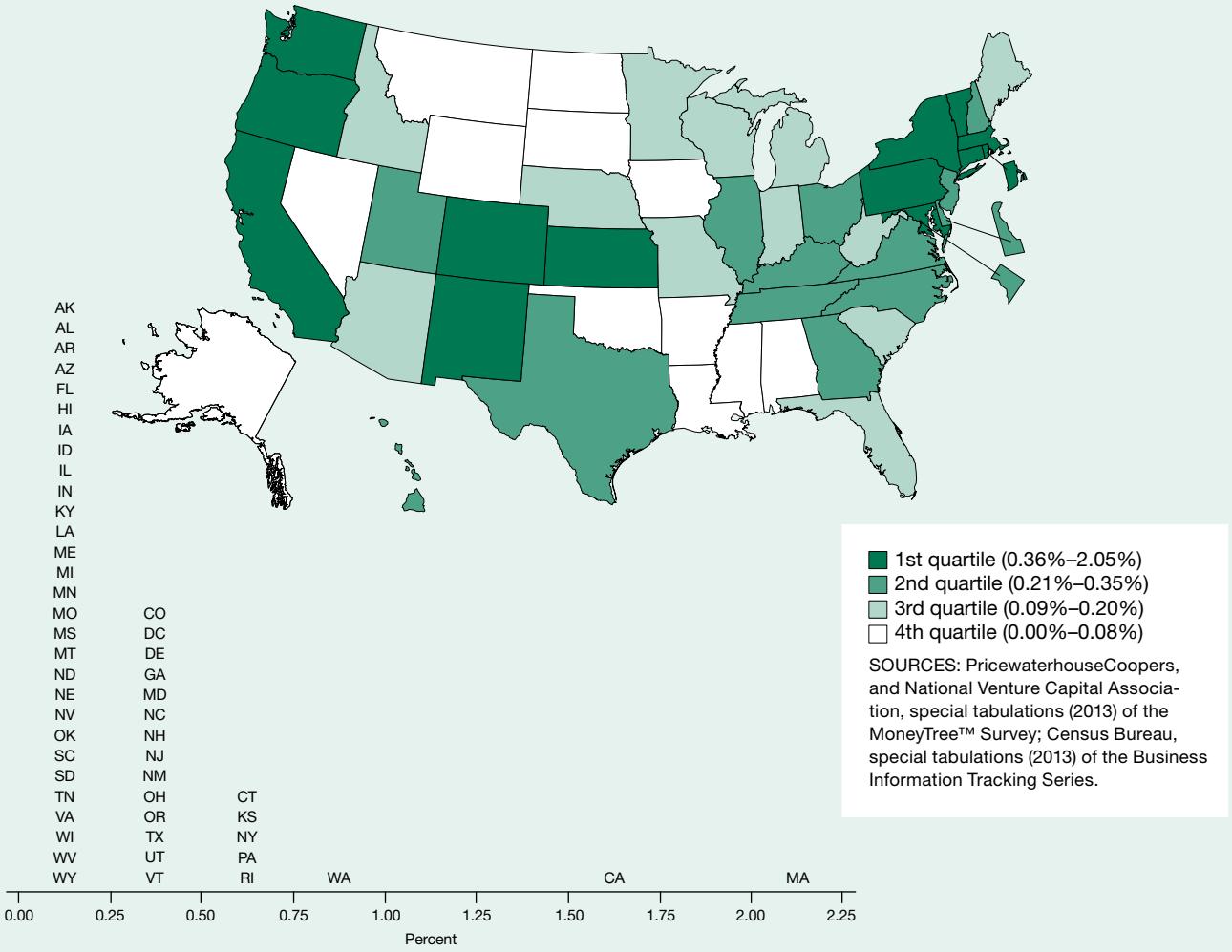
NA = not available.

GDP = gross domestic product.

SOURCES: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011, 2011, 2013) of the MoneyTree™ Survey (various years); Bureau of Economic Analysis, Gross Domestic Product data (June 2013).

Venture Capital Deals as a Percentage of High-Technology Business Establishments

Figure 8-58
Venture capital deals as a percentage of high-technology business establishments: 2010



SOURCES: PricewaterhouseCoopers, and National Venture Capital Association, special tabulations (2013) of the MoneyTree™ Survey; Census Bureau, special tabulations (2013) of the Business Information Tracking Series.

Findings

- The number of venture capital deals that involved U.S. companies increased from about 2,900 deals in 2003 to nearly 3,300 deals in 2010.
- In 2010, venture capital deals were concentrated in only a few states. Indicator values ranged from a low of 0.00% to a high of 2.05% with a median value of 0.21%.
- Companies in high-technology industries located in Massachusetts were the most successful in accessing venture capital investments in 2010, with a 2.05% rate. California companies in high-technology industries obtained venture capital investment at a rate of 1.50%. No other states reached a rate of 1.00%.
- In 2010, companies in Experimental Program to Stimulate Competitive Research (EPSCoR) states tended to receive little venture capital investment, and no venture capital deals were reported in three EPSCoR states.

This indicator represents the extent to which high-technology companies in a state receive venture capital investments. The value of the indicator is calculated by dividing the number of venture capital deals by the number of companies operating in high-technology industries in that state. High values indicate that high-technology companies in a state are frequently using venture capital to facilitate their growth and development. In most cases, a company will not receive more than one infusion of venture capital in a given year.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, initial public offerings, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time. Venture capital investment can help to grow a high-technology company.

Data on business establishments operating in high-technology industries for the years 2003 through 2008 are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). The data for the years 2009 and 2010 are based on their classification according to the 2007 edition of the NAICS. See table 8-A in the chapter introduction for a list of the industries (by NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Table 8-58
Venture capital deals as a percentage of high-technology business establishments, by state: 2003, 2007, and 2010

State	Venture capital deals			High-technology establishments			Venture capital deals/ high-technology establishments (%)		
	2003	2007	2010	2003	2007	2010	2003	2007	2010
United States	2,903	3,948	3,266	590,417	650,707	648,993	0.49	0.61	0.50
Alabama	9	4	2	6,347	6,783	6,786	0.14	0.06	0.03
Alaska	0	0	0	1,345	1,538	1,698	0.00	0.00	0.00
Arizona	16	28	17	10,433	12,540	11,875	0.15	0.22	0.14
Arkansas	3	1	1	4,012	4,550	4,852	0.07	0.02	0.02
California	1,122	1,626	1,289	77,614	87,815	85,787	1.45	1.85	1.50
Colorado	72	97	77	15,532	18,016	18,306	0.46	0.54	0.42
Connecticut	34	37	52	7,827	7,868	7,472	0.43	0.47	0.70
Delaware	1	4	9	3,964	3,573	3,256	0.03	0.11	0.28
District of Columbia	6	17	11	2,589	3,158	3,507	0.23	0.54	0.31
Florida	61	65	39	38,118	44,745	44,577	0.16	0.15	0.09
Georgia	55	76	63	18,820	21,586	21,413	0.29	0.35	0.29
Hawaii	6	4	5	2,097	2,305	2,309	0.29	0.17	0.22
Idaho	5	4	4	2,515	3,107	3,071	0.20	0.13	0.13
Illinois	58	69	60	27,606	29,222	28,886	0.21	0.24	0.21
Indiana	8	17	14	9,626	10,355	10,276	0.08	0.16	0.14
Iowa	1	3	2	4,316	4,679	4,745	0.02	0.06	0.04
Kansas	2	16	36	5,716	6,076	6,144	0.03	0.26	0.59
Kentucky	3	8	14	5,453	5,850	5,913	0.06	0.14	0.24
Louisiana	1	7	3	7,218	7,574	7,850	0.01	0.09	0.04
Maine	2	7	5	2,466	2,612	2,652	0.08	0.27	0.19
Maryland	84	96	70	13,428	15,151	15,589	0.63	0.63	0.45
Massachusetts	378	446	351	17,183	17,470	17,148	2.20	2.55	2.05
Michigan	17	22	33	16,937	17,321	16,555	0.10	0.13	0.20
Minnesota	58	57	26	12,834	13,590	13,014	0.45	0.42	0.20
Mississippi	4	2	0	3,269	3,405	3,496	0.12	0.06	0.00
Missouri	23	17	14	9,562	10,238	9,956	0.24	0.17	0.14
Montana	1	1	2	2,108	2,515	2,593	0.05	0.04	0.08
Nebraska	2	0	3	2,797	3,257	3,361	0.07	0.00	0.09
Nevada	6	8	3	5,387	6,087	6,031	0.11	0.13	0.05
New Hampshire	32	23	10	3,511	3,575	3,539	0.91	0.64	0.28
New Jersey	88	92	71	24,286	24,688	23,686	0.36	0.37	0.30
New Mexico	5	25	13	3,322	3,658	3,611	0.15	0.68	0.36
New York	119	193	266	35,926	38,368	38,636	0.33	0.50	0.69
North Carolina	76	69	57	14,869	17,671	17,967	0.51	0.39	0.32
North Dakota	2	1	0	964	1,075	1,151	0.21	0.09	0.00
Ohio	25	56	52	19,875	20,486	20,180	0.13	0.27	0.26
Oklahoma	2	6	2	6,859	7,512	7,610	0.03	0.08	0.03
Oregon	21	42	33	7,500	8,453	8,587	0.28	0.50	0.38
Pennsylvania	90	158	153	22,266	23,778	23,956	0.40	0.66	0.64
Rhode Island	10	4	13	1,976	2,108	2,071	0.51	0.19	0.63
South Carolina	4	10	8	5,869	6,942	7,010	0.07	0.14	0.11
South Dakota	1	2	0	1,206	1,347	1,426	0.08	0.15	0.00
Tennessee	22	20	18	8,196	8,980	8,702	0.27	0.22	0.21
Texas	165	172	143	45,062	49,237	50,180	0.37	0.35	0.28
Utah	22	33	25	5,474	6,960	7,139	0.40	0.47	0.35
Vermont	6	8	6	1,453	1,570	1,581	0.41	0.51	0.38
Virginia	80	94	51	18,868	22,607	23,623	0.42	0.42	0.22
Washington	81	175	116	13,171	15,138	15,335	0.61	1.16	0.76
West Virginia	5	4	4	2,257	2,352	2,490	0.22	0.17	0.16
Wisconsin	8	21	19	9,035	9,591	9,709	0.09	0.22	0.20
Wyoming	1	1	1	1,353	1,625	1,686	0.07	0.06	0.06
Puerto Rico	1	NA	1	NA	NA	NA	NA	NA	NA

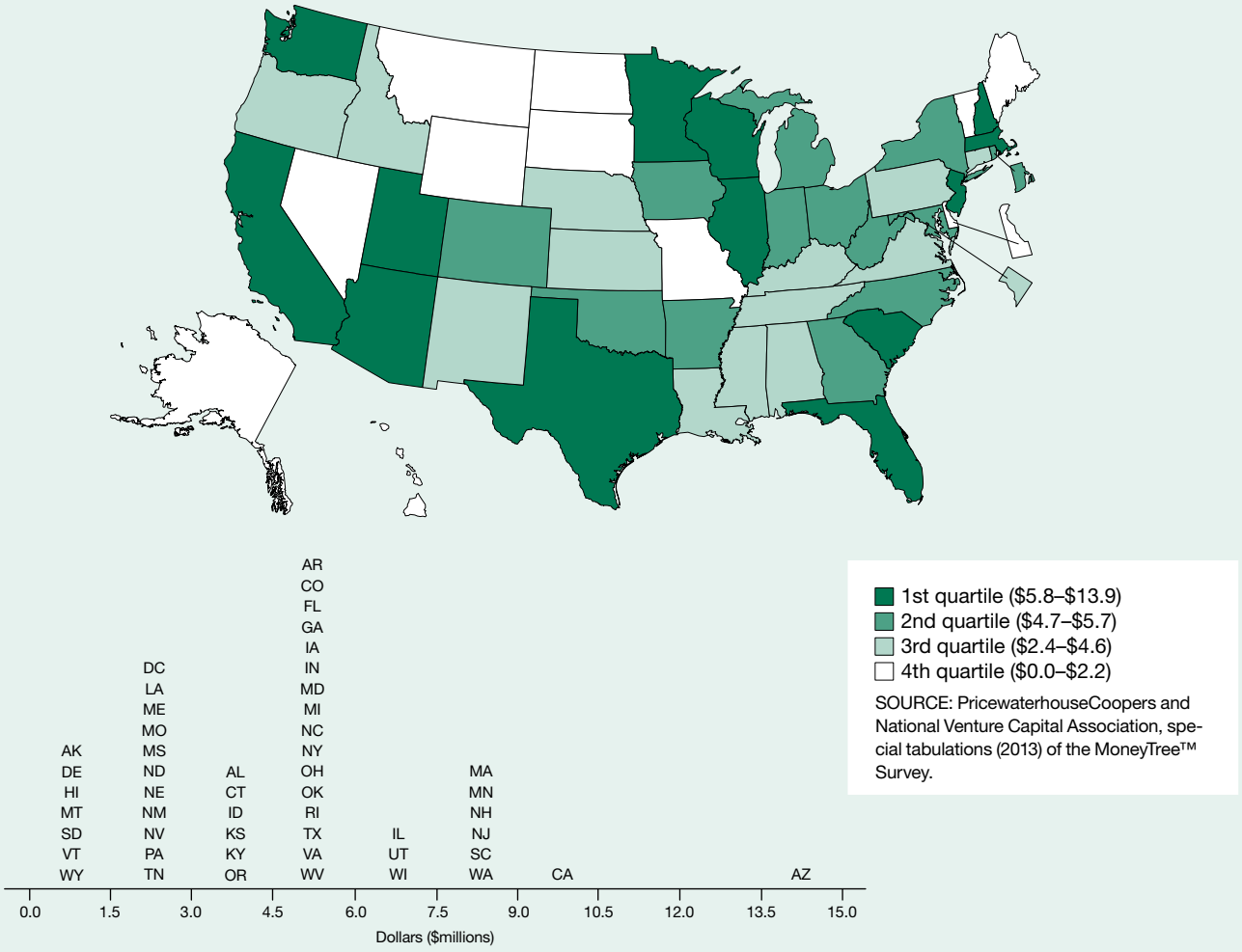
NA = not available.

SOURCES: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011, 2011, 2013) of the MoneyTree™ Survey (various years); Census Bureau, special tabulations (2007, 2010, 2013) of the Business Information Tracking Series (various years).

Science and Engineering Indicators 2014

Venture Capital Disbursed per Venture Capital Deal

Figure 8-59
Venture capital disbursed per venture capital deal: 2012



Findings

- In 2012, the size of the average venture capital investment in the United States was about $7.1 million per deal. This is essentially unchanged from the same investment per deal in 2002.
- The value of this indicator continued to show a high level of variability from year to year and among states.
- The total number of venture capital deals fluctuated between 2002 and 2012. There were 3,101 such deals in 2002, which rose to 3,948 in 2007 and then decreased slightly to 3,769 in 2012.
- Among those states that received venture capital investments in 2012, the state distribution on this indicator was skewed from a high value of nearly $14 million per deal to a low of $300,000 per deal, with a median value of about $4.9 million per deal.

This indicator represents the average size of the venture capital investments being made in a state. The indicator is expressed as the total dollars of venture capital invested in millions divided by the number of companies receiving venture capital. The availability of venture capital may vary widely based on stage of investment, type of company, and numerous other factors.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, initial public offerings, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time.

This indicator provides some measure of the magnitude of investment that developing companies in a state have attracted from venture capital sources. Some states have relatively few venture capital deals taking place in a given year; thus, the value of this indicator may show large fluctuations on a year-to-year basis. Twenty-two states reported fewer than 10 venture capital deals in 2012. In such states, a single large or small venture capital investment can substantially affect the value of this indicator.

Table 8-59
Venture capital disbursed per venture capital deal, by state: 2002, 2007, and 2012

State	Venture capital disbursed ($millions)			Venture capital deals			Venture capital/deal ($millions)		
	2002	2007	2012	2002	2007	2012	2002	2007	2012
United States	22,010	30,871	26,873	3,101	3,948	3,769	7.10	7.82	7.13
Alabama	57	31	23	13	4	6	4.38	7.75	3.83
Alaska	0	0	0	0	0	0	0.00	0.00	0.00
Arizona	197	203	222	24	28	16	8.21	7.25	13.88
Arkansas	10	0	5	5	1	1	2.00	0.00	5.00
California	9,528	14,735	14,194	1,074	1,626	1,551	8.87	9.06	9.15
Colorado	537	610	585	88	97	103	6.10	6.29	5.68
Connecticut	183	296	158	38	37	52	4.82	8.00	3.04
Delaware	19	7	9	2	4	7	9.50	1.75	1.29
District of Columbia	20	91	64	6	17	27	3.33	5.35	2.37
Florida	410	768	199	58	65	34	7.07	11.82	5.85
Georgia	565	475	262	79	76	53	7.15	6.25	4.94
Hawaii	4	5	1	2	4	3	2.00	1.25	0.33
Idaho	11	16	15	2	4	4	5.50	4.00	3.75
Illinois	309	505	570	77	69	83	4.01	7.32	6.87
Indiana	40	83	84	11	17	17	3.64	4.88	4.94
Iowa	2	6	5	1	3	1	2.00	2.00	5.00
Kansas	7	82	47	7	16	11	1.00	5.13	4.27
Kentucky	14	53	24	3	8	7	4.67	6.63	3.43
Louisiana	19	16	11	8	7	4	2.38	2.29	2.75
Maine	15	5	13	4	7	6	3.75	0.71	2.17
Maryland	637	613	284	91	96	51	7.00	6.39	5.57
Massachusetts	2,530	3,714	3,127	373	446	419	6.78	8.33	7.46
Michigan	108	105	237	26	22	50	4.15	4.77	4.74
Minnesota	403	488	253	56	57	30	7.20	8.56	8.43
Mississippi	5	6	10	3	2	4	1.67	3.00	2.50
Missouri	76	92	21	28	17	10	2.71	5.41	2.10
Montana	0	4	6	0	1	6	0.00	4.00	1.00
Nebraska	13	0	11	3	0	4	4.33	0.00	2.75
Nevada	32	29	7	6	8	4	5.33	3.63	1.75
New Hampshire	208	135	61	38	23	8	5.47	5.87	7.63
New Jersey	905	632	444	91	92	57	9.95	6.87	7.79
New Mexico	54	129	36	7	25	15	7.71	5.16	2.40
New York	799	1,130	1,864	154	193	333	5.19	5.85	5.60
North Carolina	563	547	197	85	69	37	6.62	7.93	5.32
North Dakota	0	0	2	0	1	1	0.00	0.00	2.00
Ohio	268	193	286	49	56	61	5.47	3.45	4.69
Oklahoma	33	8	34	4	6	7	8.25	1.33	4.86
Oregon	151	312	124	26	42	29	5.81	7.43	4.28
Pennsylvania	456	819	521	96	158	182	4.75	5.18	2.86
Rhode Island	96	7	85	14	4	15	6.86	1.75	5.67
South Carolina	80	87	39	7	10	5	11.43	8.70	7.80
South Dakota	18	4	0	2	2	1	9.00	2.00	0.00
Tennessee	116	125	87	22	20	32	5.27	6.25	2.72
Texas	1,296	1,468	934	172	172	160	7.53	8.53	5.84
Utah	136	188	318	28	33	44	4.86	5.70	7.23
Vermont	4	9	4	6	8	4	0.67	1.13	1.00
Virginia	429	557	372	85	94	81	5.05	5.93	4.59
Washington	580	1,383	908	108	175	116	5.37	7.90	7.83
West Virginia	16	10	15	8	4	3	2.00	2.50	5.00
Wisconsin	51	90	95	11	21	14	4.64	4.29	6.79
Wyoming	0	0	0	0	1	0	0.00	0.00	0.00
Puerto Rico	NA	NA	0	NA	NA	1	NA	NA	0.00

NA = not available.

NOTE: Venture capital amounts are reported in current dollars.

SOURCE: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011, 2011, 2013) of the MoneyTree™ Survey (various years).

Errata

The following errors were discovered after publication of the print and PDF versions of *Science and Engineering Indicators 2014*. These errors have been corrected in the online version of the volume.

Updated 21 April 2014

Science and Engineering Indicators 2014
Chapter 8

Page 8-20. The interval placement for Minnesota (MN) was incorrect in the state distribution chart of figure 8-5. The correct interval is 295–300.