

## A

- Academia. *See also* College(s); University(ies)
  - applied research by, 4.15–4.16
  - basic research by, 4.4, 4.10, 4.15
  - development funding, 4.16
  - development performance, 4.16
  - doctoral researchers in, federal support of, 5.34–5.35
  - doctoral scientists and engineers in, 5.5–5.6, 5.23–5.35
  - R&D performance, international comparisons, 4.21
  - research article output/production, 5.37–5.40, 5.46–5.47, 5.53
  - underrepresented minorities in, 5.6, 5.27–5.28
  - women in, 5.6, 5.26–5.27
- Academic employment. *See* Employment
- Academic institution(s). *See also* College(s); University(ies)
  - high-performance computing systems, 5.23
- Academic patenting. *See* Patenting
- Academic research, O.15, 4.4. *See also* Academic Research and Development (Chapter 5)
  - funding for, O.19–O.20, 4.4, 4.41
  - international comparisons, 4.21
  - outputs, 5.6–5.7
  - pass-through funding for, O.14, 5.17–5.18
  - S&E fields and, O.19
- Academic Research and Development (Chapter 5), 5.1–5.64
- Advanced Placement (AP). *See* Elementary and Secondary Mathematics and Science Education (Chapter 1)
- Advanced technology products (ATP)
  - U.S. trade in, 6.6, 6.34–6.36
- Aeronautical/aerospace/astronautical engineering
  - race and ethnicity trends in, 3.46–3.47
  - women in, 3.43
- Aerospace industry. *See also* Aeronautical/aerospace/astronautical engineering
  - advanced technology products in, U.S. trade in, 6.35–6.36
  - applied research in, 4.15–4.16
  - innovation activities, 6.39
  - patents in, 6.41
  - R&D, 4.23, 4.30
  - women in, 3.43
- Africa. *See also* North Africa; *specific country*
  - R&D performance in, 4.17
  - sub-Saharan, public concern about climate change, 7.40
- African American(s). *See* Black(s) or African American(s)
- Age composition
  - of S&E labor force, 3.6, 3.40–3.42
  - of tenure status, among academically employed SEH doctorate holders, 5.25–5.26
  - of U.S.-trained academic S&E doctoral workforce, 5.6, 5.29
- Agency(ies), federal. *See also specific agency*
  - research funding, by field, 4.38–4.39
  - support for academic R&D, 5.11
- Agricultural science(s)
  - academic R&D in, 5.14–5.15
  - academic research equipment, federal funding, 5.21
  - doctoral degrees in, 2.36
  - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
  - percentages of bachelor's degrees in, O.17
  - research space at academic institutions, 5.19–5.20
- Agriculture
  - in global marketplace, 6.8–6.9
  - R&D, federal funding for, 4.32–4.33
- Agriculture, Department of (USDA)
  - EPSCoR and EPSCoR-like program budgets, 5.14
  - R&D expenditures, 4.5, 4.36
  - research funding, by field, 4.38–4.39
  - support for academic R&D, 5.11
  - technology transfer activities, 4.43–4.46
- Aircraft and spacecraft. *See also* Aeronautical/aerospace/astronautical engineering
  - global trade in, 6.31, 6.33
  - innovation in, O.12, 6.39
  - U.S. production of, 6.28, 6.33
- Air pollution. *See also* Pollution mitigation
  - public concern about, 7.39–7.40
- Alabama. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
- Alaska. *See* State Indicators (Chapter 8)
- Algebra. *See* Elementary and Secondary Mathematics and Science Education (Chapter 1)
- Alternative energy production
  - patents potentially applicable to, 5.52–5.54
  - public attitudes about, U.S. patterns and trends, 7.42–7.43
- American Indian(s) or Alaska Native(s)
  - doctoral degrees awarded, 2.32–2.33
  - graduate enrollment, 2.28
  - K–12 students' performance in mathematics and science, 1.4
  - master's degrees earned, 2.30
  - on-time graduation from high school, 1.6, 1.38
  - and performance gaps in grades 4 and 8, 1.15–1.16
  - in S&E academic doctoral workforce, 5.27–5.28
  - in S&E labor force, O.17, 3.6, 3.45–3.46
- American Recovery and Reinvestment Act of 2009 (ARRA)
  - and academic research equipment funding, 5.21
  - and investment in clean energy, 6.6, 6.52
  - and R&D, O.20, 4.9, 4.32–4.33, 5.5, 5.9, 5.21
  - and RD&D for clean energy technologies, 6.6, 6.52
- Americas. *See also specific country*
  - recipients of U.S. S&E doctorates from, 2.35–2.36
- Analytical Business Enterprise R&D, 4.29–4.30
- AP. *See* Advanced Placement (AP)
- Applied research
  - federal expenditures on, by field, 4.37–4.39
  - funding for, O.19, 4.4, 4.15–4.16
  - higher education expenditures on, 5.9
  - performers, 4.4, 4.15–4.16
  - public attitudes about, 7.5
- Argentina, research article output/production, preferred collaboration partners, 5.44
- Arizona. *See* State Indicators (Chapter 8)
- Arkansas. *See* State Indicators (Chapter 8)
- ARRA. *See* American Recovery and Reinvestment Act of 2009 (ARRA)
- Asia. *See* Asia-Pacific region
- Asian(s) or Pacific Islander(s), 1.42
  - and Advanced Placement (AP), 1.26
  - doctoral degrees earned, 2.33
  - graduate enrollment, 2.28
  - master's degrees earned, 2.30
  - math coursetaking by ninth graders, 1.22
  - on-time graduation from high school, 1.6, 1.38
  - and performance gaps in grades 4 and 8, 1.15–1.16
  - in S&E labor force, O.17, 3.6, 3.45–3.47, 5.27–5.28
  - science coursetaking by ninth graders, 1.23

- Asia-Pacific region. *See also specific country; specific region*  
 doctoral degrees awarded in, 2.41  
 first university degrees in S&E, 2.6, 2.38–2.39  
 foreign-born scientists and engineers from, 3.53  
 foreign direct investment in U.S. KTI industries, 6.38–6.39  
 high-technology manufacturing in, 6.26–6.27, 6.29  
 information and communication technology infrastructure in, 6.15–6.16  
 KTI economic activity in, O.3–O.4, 6.29  
 patenting activity, by technology area, 6.42–6.44  
 public concern about climate change, 7.40  
 public confidence in science community's leadership, 7.32  
 public views on cause of climate change, 7.41  
 public's general attitudes about science in, 7.30  
 recipients of U.S. S&E doctorates from, 2.34  
 research article output/production, 5.37, 5.42, 5.44  
 researchers in workforce, 3.60  
 trade  
   in high-technology goods, 6.32–6.34  
   KTI, 6.29  
   in R&D services, 6.32  
 as U.S. advanced technology product trading partner, 6.35  
 U.S. direct investment in, 6.38  
 U.S. MOFA R&D in, 4.5, 4.27–4.29  
 workers with S&E skills, O.8
- Associate's degree(s). *See also Tertiary degree(s)*  
 S&E, 2.25
- Astronomy  
 academic R&D in, 5.15  
 academic research equipment, federal funding, 5.21  
 research article output/production, international collaboration in, 5.41
- Atmospheric science(s)  
 academic research equipment, federal funding, 5.21
- Attitude(s), public. *See Science and Technology: Public Attitudes and Understanding (Chapter 7)*
- Australia  
 commercial knowledge-intensive services, 6.25  
 commodity exports, 6.25  
 as destination for foreign students, 2.6  
 doctoral degrees awarded in, by sex, 2.41  
 economic integration with China, 6.25  
 first university degrees in S&E, 2.6, 2.39  
 foreign students in, O.9, 2.42–2.43  
 information and communication technology share of business and consumer spending, 6.17  
 KTI share of economy, 6.13–6.14  
 R&D performance in, 4.17  
 RD&D of clean energy and nuclear technologies in, 6.52–6.53  
 research article output/production, preferred collaboration partners, 5.44  
 U.S. students in, as foreign students, 2.44
- Austria  
 foreign students in, 2.43  
 public interest in S&T, 7.11–7.12  
 public visits to informal science and other cultural institutions, 7.19
- B**
- Bachelor's degree(s). *See also Tertiary degree(s)*  
 citizenship status and, 2.27  
 and employment involuntarily out of field, 3.31, 3.34  
 field distribution, 2.4, 2.6  
 institutions awarding, 2.4  
 international comparisons, O.8, 2.6  
 numbers, trends in, O.8, O.16–O.17, 2.4, 2.6, 3.10  
 racial and ethnic distributions, O.16–O.17, 2.4, 2.26–2.27  
 and salaries of recent graduates, 3.34  
 S&E, 2.25–2.27, 3.10  
 in S&E fields vs. non-S&E fields, O.16–O.17  
 by sex, 2.4, 2.25–2.26
- Basic research  
 federal expenditures on, by field, 4.37–4.39  
 federal funding of, public attitudes about, 7.30  
 funding for, O.19, 4.4, 4.15  
 higher education expenditures on, 5.9  
 international comparisons, 4.21  
 performers, 4.4, 4.10, 4.15
- Belgium  
 public attitudes about genetically modified crops, 7.5  
 R&D performed in, by affiliates of foreign MNCs, 4.30
- Bibliometric data, 5.35–5.36. *See also Literature, scientific and technical*
- Bioenergy  
 patenting activity, 6.53–6.55  
 patents potentially applicable to, identification of, 5.52–5.54  
 public RD&D expenditures in, 6.52–6.53
- Bioengineering, race and ethnicity trends in, 3.45
- Biofuels  
 investment in, venture capital, 6.51–6.52  
 patents potentially applicable to, identification of, 5.52–5.54
- Biological science(s). *See also Agricultural science(s); Biology; Biomedical science(s); Environmental science(s); Evolution*  
 academic R&D in, 5.14–5.15  
 academic research equipment expenditures and funding, 5.21  
 doctoral degrees, 2.5, 2.34, 2.41  
 graduate enrollment in, 2.5  
 occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17  
 percentages of bachelor's degrees in, O.17  
 research article output/production, 5.39–5.41, 5.53  
 research space at academic institutions, 5.5, 5.19–5.21  
 S&E degree holders working in, by level and field of highest S&E degree, 3.17–3.19  
 women in, 3.43–3.44
- Biology. *See also Biological science(s)*  
 Advanced Placement (AP), 1.5, 1.23–1.26  
 ninth graders' coursetaking in, 1.4, 1.22–1.23  
 seen as scientific by public, 7.36–7.37
- Biomedical engineering. *See Engineering, biomedical*
- Biomedical science(s). *See also Engineering, biomedical*  
 doctorates in, employment, 3.39  
 research space at academic institutions, 5.5, 5.19–5.21
- Biotechnology, patents granted in, 6.42  
 academic, 5.55  
 international comparisons, O.11, 6.44
- Black(s) or African American(s)  
 and advanced placement (AP), 1.5, 1.26  
 doctoral degrees awarded, 2.32–2.33  
 graduate enrollment, 2.28  
 K–12 students' performance in mathematics and science, 1.4  
 master's degrees earned, 2.30  
 ninth graders, math coursetaking, 1.22  
 on-time graduation from high school, 1.6, 1.38  
 and performance gaps in grades 4 and 8, 1.15–1.16  
 in S&E labor force, O.17, 3.6, 3.45–3.47, 5.27–5.28
- Blended learning. *See also Online learning*  
 definition of, 1.6  
 enrollment in, 1.6, 1.36–1.37
- Brazil  
 commercial knowledge-intensive services, 6.21  
 expenditures on higher education, 2.37  
 high-technology manufacturing in, 6.26–6.27

- information and communication technology in, 6.16–6.17
- intellectual property trade, O.13, 6.45
- investment in clean energy technologies, 6.50
- KTI economic activity in, O.3, 6.5, 6.7, 6.29
- KTI share of economy, 6.14
- labor productivity growth in, 6.18
- R&D performance, O.6–O.7, 4.17
- recipients of U.S. S&E doctorates from, 2.35–2.36
- research article output/production, O.10, 5.6, 5.37, 5.43–5.44
- researchers in, numbers of, 3.60
- tertiary education attainment in, 2.38
- trade
  - KTI, 6.29
  - in royalties and fees, O.13, 6.45
  - in value-added indicators, 6.34
- U.S. MOFA R&D in, 4.5, 4.27–4.29
- Budget appropriations, federal government, for R&D
  - cross-national comparisons, 4.39
  - by national objectives, 4.31–4.33
  - total, 4.31–4.32
- Budget authority/appropriations, 4.31, 4.33
- Budget function(s), 4.31
- Bulgaria, public attitudes about genetically modified food, 7.43
- Bureau of Labor Statistics (BLS)
  - alternative measures of labor underutilization, 3.29–3.30
  - unemployment rate, 3.28
- Business sector
  - applied research by, 4.4, 4.15–4.16
  - basic research by, 4.15
  - development funding, 4.16
  - development performance, 4.16
  - innovation activities, 6.39–6.40
  - R&D funding, O.19–O.20, 4.4, 4.21–4.25, 5.5, 5.13
  - R&D performance, 4.4–4.5, 4.7–4.9, 4.20–4.25, 4.29–4.30
  - S&E employment in, 3.5, 3.19–3.24. *See also* Industry(ies)
  - support for academic R&D, by institution type, 5.16
- Business services
  - employment in, 6.23, 6.36
  - global trade in, 6.30
  - providers, 6.21–6.25
  - U.S. multinational companies in, 6.36
- C**
- Calculus, Advanced Placement (AP). *See* Elementary and Secondary Mathematics and Science Education (Chapter 1)
- California. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
- Canada
  - doctoral degrees awarded in, by sex, 2.41
  - expenditures on higher education, 2.37–2.38
  - first university degrees in S&E, 2.6, 2.39
  - foreign students in, 2.43–2.44
  - information and communication technology in, 6.15–6.17
  - KTI share of economy, O.3, 6.13–6.14
  - public concern about climate change, 7.40
  - R&D performance in, 4.17
  - RD&D of clean energy and nuclear technologies in, 6.52–6.53
  - recipients of U.S. S&E doctorates from, 2.35–2.36
  - research article output/production, preferred collaboration partners, 5.42, 5.44
    - as U.S. advanced technology product trading partner, 6.35
  - U.S. MOFA R&D in, 4.5, 4.27–4.29
  - U.S. students in, as foreign students, 2.44
- Carbon dioxide (CO<sub>2</sub>) capture and storage. *See* Carbon sequestration
- Carbon sequestration
  - patents potentially applicable to, identification of, 5.52–5.54
  - public RD&D expenditures in, 6.52–6.53
- Central America. *See also specific country*
  - R&D performance in, 4.17
- Central Asia. *See also specific country*
  - R&D performance in, 4.17
- Chemical industry
  - applied research in, 4.15–4.16
  - domestic R&D performance, 4.23
  - multinational companies in, R&D performed by affiliates of, 4.27, 4.29
  - R&D funding, 4.23–4.25
- Chemistry
  - Advanced Placement (AP), participation in, 1.23
  - ninth graders' coursetaking in, 1.22
  - research article output/production, 5.40–5.41, 5.53
- Chile, research article output/production, preferred collaboration partners, 5.43
- China
  - and Australia, economic integration, 6.25
  - basic research in, 4.21–4.22
  - business R&D in, distribution by industry, 4.30
  - commercial knowledge-intensive services, 6.21
  - consumer market in, 6.26
  - currency exchange rate, 6.24
  - doctoral degrees awarded in, numbers, 2.6, 2.41
  - first university degrees in S&E, O.8–O.9, 2.6, 2.39
  - foreign-born scientists and engineers from, 3.53
  - foreign students from, 2.44
  - foreign students in, 2.42, 2.44
  - GDP per capita in, 6.20
  - as global provider of knowledge-intensive services, 6.5
  - high-technology manufacturing in, 6.5, 6.25–6.26, 6.29
  - information and communication technology in, 6.15–6.17
  - intellectual property trade, O.13, 6.45
  - investment in clean energy technologies, 6.6, 6.49–6.51
  - knowledge-intensive services exports, 6.5
  - KTI economic activity in, O.3–O.4, 6.5, 6.7, 6.14, 6.29
  - labor productivity growth in, 6.5, 6.18
  - multinational companies in, 6.25–6.26
  - in non-knowledge-intensive services industries, 6.8–6.9
  - in nonmanufacturing and nonservices industries, 6.9
  - patenting activity, O.11
  - pharmaceutical industry in, 6.25
  - public interest in S&T, 7.12
  - public perceptions of S&E occupations in, 7.34–7.35
  - public visits to informal science and other cultural institutions, 7.19
  - public's general attitudes about science in, 7.30
  - R&D in, O.5–O.7, 4.4, 4.17, 4.20–4.22
  - R&D intensity, 4.5, 4.20
  - recipients of U.S. S&E doctorates from, 2.34, 2.41
  - research article output/production, O.10, 5.6, 5.35–5.37, 5.42–5.44
  - researchers in, O.7–O.8, 3.6, 3.59–3.60
  - semiconductor manufacturing in, 6.25
  - sources of S&T information used by public in, 7.18
  - students from, in United States, 2.5
  - tertiary education attainment in, 2.38
  - trade
    - in commercial knowledge-intensive services, 6.30
    - in high-technology goods, 6.5–6.6, 6.32–6.33
  - KTI, 6.29
  - in R&D services, 6.32
  - in royalties and fees, O.13, 6.45
  - in value-added indicators, 6.34
  - as U.S. advanced technology product trading partner, 6.35–6.36
  - U.S. MOFA R&D in, 4.5, 4.27–4.29
  - U.S. patents granted to, 6.40–6.41

- U.S. students in, as foreign students, 2.44
  - value added for manufacturing industries, 6.9
  - workers with S&E skills, O.7–O.8
  - Civil engineering
    - academic research equipment, federal funding, 5.22
    - race and ethnicity trends in, 3.46–3.47
  - Clean energy technology(ies). *See also* Energy; Industry, Technology, and the Global Marketplace (Chapter 6)
    - innovation in, 6.6
    - investment in, 6.6, 6.49–6.55
    - patenting activity, 6.53–6.55
    - patents potentially applicable to, 5.52–5.54
    - RD&D, public expenditures for, 6.52–6.53
  - Climate change
    - public attitudes about, 7.5, 7.40–7.41
    - public policy on, influence of scientific experts on, public assessment of, 7.37
  - Collaboration. *See also* Overview
    - in academia, 5.17–5.18, 5.46–5.47
    - cross-institution, O.13–O.14, 5.7, 5.40
    - cross-national, O.13–O.14, 5.7, 5.40–5.47
    - cross-sector, O.13–O.15, 5.46–5.47
    - interinstitutional, O.13–O.14
    - international, O.10, 5.7, 5.40–5.47
    - in research publications, O.10, O.13–O.15, 5.7, 5.40–5.47
    - in transnational higher education, 2.42
    - in United States, O.13–O.15, 5.46–5.47
  - College(s). *See also* Academia; Community college(s)
    - institutional funding for S&E academic R&D, 5.11
    - patents granted to, 5.54–5.55
    - support for academic R&D, 5.16
  - College enrollment. *See* Postsecondary education, enrollment
  - Colorado. *See* State Indicators (Chapter 8)
  - Commerce, Department of (DOC)
    - R&D expenditures, 4.5, 4.36
    - research funding, by field, 4.38–4.39
    - technology transfer activities, 4.43–4.46
  - Commercialization
    - of academic patents, 5.55–5.57
    - of federal R&D, 4.5, 4.39–4.46
    - of patents, 6.40
  - Commercial knowledge-intensive services. *See* Knowledge-intensive services
  - Common Core State Standards (CCSS), 1.20
  - Communications equipment/equipment manufacturing
    - business R&D for, cross-national comparisons, 4.29–4.30
    - employment in, by U.S. multinational companies, 6.38
    - global trade in, 6.30–6.31
    - innovation in, O.12, 6.39
    - patents in, 6.41
    - U.S. direct investment abroad in, 6.38
    - U.S. multinational companies in, 6.37–6.38
  - Community college(s). *See also* Postsecondary institution(s)
    - attendance, among S&E degree recipients, 2.4, 2.9–2.11, O.15
    - revenues and expenditures, 2.14–2.15
  - Computer(s)
    - global trade in, 6.31
    - innovation in, O.12, 6.39
    - patents in, 6.41
  - Computer and electronics manufacturing
    - advanced technology products in, U.S. trade in, 6.35–6.36
    - domestic R&D performance, 4.23
    - employment in, by U.S. multinational companies, 6.38
    - multinational companies in, R&D performed by affiliates of, 4.27, 4.29
    - R&D funding, 4.23
    - U.S., foreign direct investment in, 6.6, 6.38–6.39
    - U.S. multinational companies in, 6.37–6.38
    - U.S. overseas investment in, 6.6
  - Computer industry. *See* Computer and electronics manufacturing
  - Computer programming
    - employment projections for, 3.12
    - growth, 6.23
    - seen as scientific by public, U.S. patterns and trends, 7.36
  - Computer science(s)
    - academic R&D in, 5.13–5.15
    - Advanced Placement (AP), 1.5, 1.23, 1.26
    - age distribution of degree holders in, 3.41–3.42
    - doctoral degrees in, 2.5
    - employment projections for, 3.11–3.12
    - graduate enrollment in, unemployment and, 2.27
    - graduate students in, 2.5
    - master's degrees in, 2.5, 2.29
    - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
    - percentages of bachelor's degrees in, O.17
    - race and ethnicity trends in, 3.45–3.47
    - R&D activity in, 3.25
    - research, federal spending on, 4.37–4.39
    - research article output/production, international collaboration in, 5.41
    - research space at academic institutions, 5.19–5.20
    - salaries in, 3.49
    - S&E degree holders working in, by level and field of highest S&E degree, 3.17, 3.19
    - women in, 3.43–3.44
  - Computer services
    - business R&D, industry share, cross-national comparisons, 4.30
    - global trade in, 6.30
  - Computer support specialists, race and ethnicity trends in, 3.46
  - Connecticut. *See* State Indicators (Chapter 8)
  - Conservation science(s), race and ethnicity trends in, 3.45
  - Cyberinfrastructure, for academic R&D. *See* Academic Research and Development (Chapter 5)
  - Cyprus, foreign students from, 2.40
  - Czech Republic
    - public concern about climate change, 7.40
    - public interest in S&T, 7.11–7.12
    - public's general attitudes about science in, 7.30
    - research article output/production, preferred collaboration partners, 5.44
    - and study-abroad programs, 2.40
- ## D
- Defense, Department of (DOD)
    - EPSCoR and EPSCoR-like program budgets, 5.14
    - R&D expenditures, O.19, 4.5, 4.32, 4.34
    - research funding, by field, 4.38–4.39
    - S&E employment in, 3.23
    - support for academic R&D, 5.11, 5.15
    - support for graduate students, 2.18–2.19
    - technology transfer activities, 4.43–4.46
  - Defense industry, R&D. *See also* Aerospace industry
    - federal funding for, 4.5, 4.32
    - government support for, cross-national comparisons, 4.39
    - industry share, cross-national comparisons, 4.30
  - Degree(s)
    - associate's, S&E, 2.25
    - bachelor's. *See* Bachelor's degree(s)
    - doctoral. *See* Doctoral degree(s)
    - dual, in transnational higher education, 2.42
    - foreign-born workers with, O.17–O.19

- and freshmen's intentions to major in S&E, 2.20–2.23
  - institutions awarding, 2.4, 2.7–2.12
  - international comparisons, O.8–O.9
  - joint, in transnational higher education, 2.42
  - master's. *See* Master's degree(s)
  - in S&E, O.8–O.9, O.15–O.19, 2.4, 2.7–2.12, 2.20–2.24
  - undergraduate, 2.24–2.27
  - U.S. trends in, O.15–O.17
  - Delaware. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
  - Demographics
    - of college-age populations, international comparisons, 2.42
    - and K–12 students' performance disparities in mathematics and science, 1.4
    - of postdocs in academic employment, 5.31
    - and salary gap, 3.51
    - of U.S. S&E labor force, O.17–O.19, 3.6
    - of U.S.-trained S&E doctorate holders, 5.6
  - Denmark
    - public attitudes about genetically modified food, 7.43
    - public interest in S&T, 7.11–7.12
    - public visits to informal science and other cultural institutions, 7.19
    - public's general attitudes about science in, 7.30
    - R&D intensity, 4.4, 4.18
    - R&D performance, O.5
    - researchers in workforce, 3.60
    - sources of S&T information used by public in, 7.17
  - Developing country(ies)/economy(ies), 5.35
    - commercial knowledge-intensive services, 6.21
    - GDP per capita in, 6.20
    - high-technology manufacturing in, 6.25–6.26
    - information and communication technology infrastructure, 6.15–6.16
    - intellectual property trade, O.13, 6.45
    - investment in clean energy technologies, 6.49–6.50
    - knowledge-intensive services exports, 6.5
    - KTI economic activity in, O.3–O.4, 6.5, 6.7–6.9, 6.29
    - labor productivity growth in, 6.5, 6.18
    - patenting activity, O.11, 6.40–6.41
    - R&D performance and expenditures in, 4.17
    - research article output/production, O.10, 5.36–5.37
    - trade
      - in commercial knowledge-intensive services, 6.30
      - in high-technology goods, 6.32–6.33
      - KTI, 6.29
      - in royalties and fees, O.13, 6.45
    - U.S. patents granted to, 6.40–6.41
    - World Bank classification of, 6.9
  - Development
    - as component of U.S. R&D, 4.4, 4.16
    - higher education expenditures on, 5.9
  - DHS. *See* Homeland Security, Department of (DHS)
  - Digital education, 1.34
  - Digital learning, 1.34
  - Disability(ies)
    - and doctoral degrees awarded, 2.32
    - and graduate enrollment, 2.28
    - and undergraduate enrollment, 2.24
  - Discipline-based education research, 2.23
  - Discovery(ies), scientific, public interest in, 7.4, 7.10–7.11
  - Distance education. *See also* Online learning
    - access to, 1.6
    - in higher education, 2.12
    - for K–12 students, 1.36–1.37
  - District of Columbia. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
  - DOC. *See* Commerce, Department of (DOC)
  - Doctoral degree(s)
    - by citizenship status, 2.33
    - by disability status, 2.32
    - and employment involuntarily out of field, 3.31, 3.34
    - foreign students earning, 2.5, 2.33–2.37, 3.6
    - institutions awarding, 2.4
    - international comparisons, 2.6, 2.41
    - non-S&E, 2.34
    - numbers, trends in, O.16, 2.5, 2.31, 3.10
    - by race or ethnicity, 2.32–2.33
    - and salaries of recent graduates, 3.34
    - S&E, 2.31–2.37, 2.41, 3.10
    - by sex, 2.32
    - time to completion, 2.31–2.32
  - Doctoral scientists and engineers, in academia. *See* Academic Research and Development (Chapter 5)
  - DOD. *See* Defense, Department of (DOD)
  - DOE. *See* Energy, Department of (DOE)
  - DOI. *See* Interior, Department of (DOI)
  - DOT. *See* Transportation, Department of (DOT)
  - Drug(s). *See* Pharmaceutical(s)/pharmaceutical industry
- ## E
- Earth science
    - ninth graders' coursetaking in, 1.4, 1.22–1.23
    - race and ethnicity trends in, 3.45
  - East Asia
    - KTI economic activity in, O.3–O.4
    - R&D performance, O.5–O.6, 4.4, 4.17
    - research article output/production, O.10
    - researchers in workforce, 3.60
  - Economic downturn. *See* Recession, global
  - Economics
    - doctoral degrees in, foreign students earning, 2.5
    - master's degrees in, foreign students earning, 2.5
    - seen as scientific by public, 7.36–7.37
    - women in, 3.43–3.44
  - Economy(ies). *See also* Overview
    - developed
      - investment in clean energy technologies, 6.51
      - KTI share of, 6.13–6.14
    - developing, KTI share of, 6.14
    - global. *See also* Developed country(ies); Developing country(ies)
      - knowledge-intensive services in, O.3–O.4, 6.5
      - KTI industries in, O.3–O.4, 6.5, 6.10–6.20
    - knowledge-intensive, O.3–O.4
    - KTI share of, 6.13–6.14
    - science and technology in, state indicators, 8.116–8.129
    - S&E labor force in, 3.5, 3.19–3.24
    - U.S., KTI industries in, 6.5
  - ED. *See* Education, Department of (ED)
  - Education. *See also* Precollege education
    - in engineering, public attitudes about, 7.46
    - federal funding of, public attitudes about, 7.4
    - in mathematics, public attitudes about, 7.46
    - parental, and ninth graders' coursetaking, 1.4, 1.22–1.23
    - public attitudes about, 7.46
    - R&D, federal funding for, 4.32–4.33
    - S&E employment in, 3.5, 3.19, 3.21, 3.23
    - in science, public attitudes about, 7.46
  - Education, Department of (ED)
    - Beginning Teacher Longitudinal Study (BTLS), 1.26, 1.33–1.34
    - National Education Technology Plan (NETP), 1.34
    - R&D expenditures, 4.36
  - Educational services

- S&E employment in, 3.24
- worldwide distribution of, 6.20–6.21
- Electrical engineering, women in, 3.43
- Electrical equipment, appliances, and components manufacturing, foreign multinational companies in, R&D performed by U.S. affiliates of, 4.27
- Electronic product manufacturing. *See* Computer and electronics manufacturing
- Electronics. *See also* Medical electronics
  - global trade in, 6.33
- Elementary and secondary education in S&E. *See also* Elementary and Secondary Mathematics and Science Education (Chapter 1)
  - state indicators, 8.12–8.41
- Elementary and Secondary Mathematics and Science Education (Chapter 1), 1.1–1.53
- Elementary school(s), 1.45
- Employment. *See also* Labor force; Unemployment
  - academic, O.15, 3.21
  - of biomedical sciences doctorates, 3.39
  - in business sector, 3.5, 3.19, 3.21, 3.23
  - in business services, 6.23, 6.36
  - in commercial knowledge-intensive services, 6.21
  - in education, 3.5, 3.19–3.21
  - employer size and, 3.5, 3.23–3.24
  - in financial services, 6.36
  - geographic distribution, differences, 3.5, 3.24
  - global recession and, 6.27–6.28
  - globalized, in knowledge-intensive services, 6.36
  - in government, 3.5, 3.19, 3.21, 3.23–3.24
  - growth of, 3.5
  - by highest degree, 3.5
  - in high-technology manufacturing, 6.26–6.28, 6.37–6.38
  - in industry, 3.5
  - in information services, 6.36
  - involuntarily out of field, 3.31, 3.34
  - in knowledge-intensive services, 6.36
  - in KTI industries, 6.5
  - male-female gap in, credentials and, 3.44–3.46
  - in manufacturing sector, 6.28
  - metropolitan areas and, 3.5, 3.24
  - of postdocs, 3.37–3.40
  - projections for, 3.5
  - R&D, abroad, by U.S. companies, 3.61
  - salaries/earnings for, 3.5, 3.32–3.33
  - in S&E occupations, 3.5, 3.19–3.24, 3.32–3.33, 3.44–3.46
  - small firms and, 3.5, 3.23–3.24
  - trends in, 3.5
  - U.S., 6.21, 6.23, 6.26–6.28
  - by U.S. multinational companies, 6.36–6.38
- Employment sector(s), of S&E workforce, 3.5, 3.19, 3.21, 3.23
- Energy. *See also* Alternative energy; Clean energy technology(ies); Fossil fuel(s); Fuel cell(s); Nuclear energy; Solar energy; Wind energy
  - conservation, patents potentially applicable to, identification of, 5.52–5.54
  - management, patents potentially applicable to, identification of, 5.52–5.54
  - public attitudes about, U.S. patterns and trends, 7.42–7.43
  - R&D, federal funding for, 4.32–4.33
- Energy, Department of (DOE)
  - EPSCoR and EPSCoR-like program budgets, 5.14
  - R&D expenditures, 4.5, 4.32–4.36
  - research funding, by field, 4.38–4.39
  - S&E employment in, 3.23
  - support for academic R&D, 5.11, 5.15
  - technology transfer activities, 4.43–4.46
- Energy efficiency
  - patents potentially applicable to, identification of, 5.52–5.54
  - public RD&D expenditures in, 6.52–6.53
- Energy smart and efficiency technologies, investment in, venture capital, 6.51–6.52
- Energy storage
  - patenting activity, 6.53–6.55
  - patents potentially applicable to, 5.52–5.54
- Engineer(s)
  - employment projections for, 3.12
  - influence on public issues, public assessment of, 7.37
  - public attitudes about, 7.5
  - public confidence in, international comparisons, 7.32
  - public perceptions of, 7.32–7.35
- Engineering. *See also* Biotechnology; Higher Education in Science and Engineering (Chapter 2); Science and Engineering Labor Force (Chapter 3); *specific field*
  - academic R&D in, 5.13–5.15
  - academic research equipment expenditures and funding, 5.21
  - aeronautical/aerospace/astronautical. *See* Aeronautical/aerospace/astronautical engineering
  - bachelor's degrees in, O.17, 2.6
  - biomedical, race and ethnicity trends in, 3.45–3.47
  - civil. *See* Civil engineering
  - degrees in, by sex, 2.21
  - doctoral degrees, 2.5, 2.34–2.37, 2.41
  - doctorate holders, tenure status, 5.25
  - and employment involuntarily out of field, 3.31
  - first university degrees in, international comparisons, 2.39
  - foreign students in, 2.5
  - freshmen intending to major in, 2.21–2.22
  - graduate enrollment in, 2.5, 2.27
  - master's degrees in, 2.5, 2.29
  - mechanical, women in, 3.43
  - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
  - research, federal spending on, 4.37–4.39
  - research article output/production, 5.40
    - citations in U.S. patents, 5.53
  - research space at academic institutions, 5.19–5.20
  - salaries in, 3.49–3.51
  - S&E degree holders working in, by level and field of highest S&E degree, 3.17–3.19
  - seen as scientific by public, U.S. patterns and trends, 7.36
  - undergraduate degrees in, international comparisons, 2.39
  - unemployment and, 2.27
  - women in, 3.43–3.44
- Enrollment(s). *See also* Higher education in Science and Engineering (Chapter 2); Postsecondary education, enrollment
- Environment. *See also* Air pollution; Climate change
  - public concern about, 7.5, 7.38–7.40
- Environmental Protection Agency, U.S. (EPA)
  - EPSCoR and EPSCoR-like program budgets, 5.14
  - R&D expenditures, 4.36
  - S&E employment in, 3.23
- Environmental quality, public concern about, 7.38
- Environmental science(s)
  - academic R&D in, 5.13–5.15
  - Advanced Placement (AP), 1.5, 1.24, 1.26
  - ninth graders' coursetaking in, 1.4
  - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
  - research, federal spending on, 4.37–4.39
  - S&E degree holders working in, by level and field of highest S&E degree, 3.17, 3.19

EPA. *See* Environmental Protection Agency, U.S. (EPA)

EPO. *See* European Patent Office (EPO)

EPSCoR. *See* Experimental Program to Stimulate Competitive Research (EPSCoR)

EU. *See* European Union (EU)

Europe. *See also* European Union (EU); *specific country*

- first university degrees in S&E, O.8–O.9, 2.38–2.39
- public attitudes about nuclear energy, 7.43
- public concern about climate change, 7.40
- public confidence in science community's leadership, 7.32
- public interest in S&T, 7.11–7.12
- public views on cause of climate change, 7.41
- public visits to informal science and other cultural institutions, 7.19
- public's general attitudes about science in, 7.28–7.30
- R&D performance, 4.17, 4.30
- recipients of U.S. S&E doctorates from, 2.34–2.35
- sources of S&T information used by public in, 7.17–7.18
- trade, in R&D services, 6.32
- U.S. MOFA R&D in, 4.5, 4.27–4.29

European Patent Office (EPO), 6.43

- academic share of patents granted by, 5.54

European Union (EU)

- commercial knowledge-intensive services, 6.21–6.25
- currency exchange rate, 6.24
- doctoral degrees awarded in, 2.41
- first university degrees in S&E, O.8–O.9
- foreign direct investment in U.S. KTI industries, 6.39
- as global provider of knowledge-intensive services, 6.5
- high-technology manufacturing in, 6.26–6.27
- information and communication technology in, 6.15, 6.17
- intellectual property trade, O.13, 6.45
- investment in clean energy technologies, 6.6, 6.51
- knowledge-intensive services exports, 6.5
- KTI share of economies, O.3–O.4, 6.5, 6.13–6.14, 6.29
- labor productivity growth in, 6.20
- in non-knowledge-intensive services industries, 6.8–6.9
- in nonmanufacturing and nonservices industries, 6.9
- number of researchers in, O.8
- patenting activity, O.10–O.12, 6.40–6.41
  - in clean energy and pollution control, 6.53–6.55
  - by technology area, 6.42–6.44
- pharmaceutical industry in, 6.25
- public attitudes
  - about animal research, 7.46
  - about nanotechnology, 7.44
- public interest in S&T, 7.12
- R&D performance, O.5–O.6, 4.4, 4.17–4.18
- RD&D of clean energy and nuclear technologies in, 6.52–6.53
- research article output/production, O.10, 5.6, 5.36–5.37, 5.42
- researchers in, numbers of, 3.6, 3.60
- trade
  - in commercial knowledge-intensive services, 6.30–6.31
  - in high-technology goods, 6.31–6.33
  - KTI, 6.29
  - in royalties and fees, O.13, 6.45
- as U.S. advanced technology product trading partner, 6.35–6.36
- U.S. direct investment in, 6.38
- U.S. patents granted to, 6.40–6.41
- value added for manufacturing industries, 6.9

Evolution

- public understanding of, 7.21–7.23
- teaching about, in schools, public attitudes about, 7.45

Experimental Program to Stimulate Competitive Research (EPSCoR), 5.11, 5.14

Exports. *See* Trade

## F

Faculty. *See also* Academic Research and Development (Chapter 5); Non-tenure-track faculty positions; Tenure-track faculty positions; *specific faculty*

Federal funding

- for academic R&D, 5.5, 5.10–5.11, 5.15–5.16
- for academic research equipment, 5.21–5.22
- for applied research, 4.15–4.16, 4.37–4.39, 5.10–5.11
- for basic research, 4.15, 4.37–4.39, 5.10–5.11
- for development, 4.16
- for doctoral researchers in academia, 5.34–5.35
- for domestic business R&D performance, 4.22–4.23
- and gap between performer- and source-reported expenditures, 4.34–4.35
- for graduate students, 2.5, 2.17–2.19
- obligations, 4.33–4.34
- priorities, public attitudes about, 7.4
- for public universities, 2.4
- for R&D, O.19–O.20, 4.4–4.5, 4.22–4.23, 4.31–4.39
- for research, by field, 4.37–4.39
- for S&E graduate students, 2.5
- for scientific research, public attitudes about, 7.4, 7.30–7.32
- in various policy areas, public assessment of, 7.31

Federal government, U.S.

- applied research by, 4.15–4.16
- basic research by, 4.15
- and commercialization of federal R&D, 4.5, 4.39–4.46
- development performance, 4.16
- promotion of technology transfer, 4.5, 4.39–4.46
- R&D expenditures, by agency, 4.33–4.37
- R&D performance, 4.31–4.39
- research article output/production, 5.37–5.40
  - citations in U.S. patents, 5.53
  - collaboration patterns, 5.46–5.47
- R&E tax credit, 4.23–4.24
- S&E workforce employed in, 3.5, 3.19, 3.21, 3.23–3.24
- support for R&D. *See also* Federal funding
  - direct and indirect, 4.23–4.24

Federally funded research and development center(s) (FFRDC[s])

- R&D performance, 4.10–4.11, 4.16
- research article output/production, 5.37–5.40
  - citations in U.S. patents, 5.53
  - collaboration patterns, 5.46–5.47

Fellowships. *See* Financial aid

FFRDC(s). *See* Federally funded research and development center(s) (FFRDC[s])

Fields of research and practical activities, seen as scientific by public

- international comparisons, 7.37
- U.S. patterns and trends, 7.35–7.37

Fields of science and engineering. *See specific field*

Finance, global trade in, 6.30

Financial aid

- fellowships, 2.17–2.19
- for graduate education, 2.5, 2.17–2.19
- postsecondary, 2.5, 2.17–2.19
- for undergraduate education, 2.15–2.16

Financial services

- employment in, globalized, 6.36
- global trade in, 6.31
- U.S. direct investment abroad in, 6.38
- U.S. multinational companies in, 6.36

Finland

- foreign students in, 2.40
- R&D intensity, 4.4, 4.18
- R&D performance, O.5–O.6

- researchers in workforce, 3.60
  - Florida. *See* State Indicators (Chapter 8)
  - Foreign-born scientists and engineers
    - age distribution of, 3.53
    - characteristics of, 3.52–3.53
    - from China, 0.19
    - countries of origin, 3.53
    - educational levels of, 3.52–3.53
    - highest degree levels of, 3.52–3.53
    - from India, 0.19
    - occupational fields of, 3.52–3.53
    - reasons for migration, 3.53–3.54
    - in S&E labor force, 0.17–0.19, 3.6
    - sex distribution of, 3.53
    - source of education, 3.53–3.54
    - in U.S. economy, 3.51–3.52
  - Foreign direct investment
    - in KTI industries, 6.38–6.39
    - in R&D, 4.25–4.26
    - in U.S. high-technology industries, 6.6
    - in U.S. KTI industries, 6.6
  - Foreign students. *See also* Higher Education in Science and Engineering (Chapter 2); Internationally mobile students
  - Forestry, race and ethnicity trends in, 3.45–3.47
  - France
    - basic research in, 4.21–4.22
    - business R&D in, distribution by industry, 4.30
    - defense R&D in, distribution by industry, 4.30
    - as destination for foreign students, 2.6
    - first university degrees in S&E, 2.6, 2.39
    - foreign students from, 2.44
    - foreign students in, 0.9, 2.40, 2.42, 2.44
    - government R&D support, by socioeconomic objectives, 4.39
    - information and communication technology infrastructure in, 6.15
    - multinational companies based in, R&D performed by U.S.
      - affiliates of, 4.26–4.27
      - public interest in S&T, 7.11–7.12
      - public visits to informal science and other cultural institutions, 7.19
    - R&D in, 0.5, 0.7, 4.17–4.18, 4.20–4.22
    - R&D intensity, 4.4, 4.20
    - recipients of U.S. S&E doctorates from, 2.34–2.35
    - research article output/production, 5.37, 5.42, 5.44
    - and study-abroad programs, 2.40
    - U.S. students in, as foreign students, 2.44
  - Free/reduced-price lunch, eligibility for, concentrations of, as economic indicator, 1.27
  - Fuel cell(s), public RD&D expenditures in, 6.52–6.53
  - Fukushima accident, effect on public opinion, 7.42
  - Funding. *See also* Federal funding; Overview
    - from abroad, for R&D, 4.21, 4.24–4.25
    - for higher education, international comparisons, 2.37–2.38
    - for new construction of research space at academic institutions, 5.20
    - pass-through, 0.14, 5.17–5.18
    - R&D, 0.19–0.20, 4.21
- G**
- GDP. *See* Gross domestic product (GDP)
  - Gender. *See also* Women
    - and factual knowledge of S&T, 7.4, 7.21–7.22
    - and underrepresented minorities in academic S&E doctoral employment, 5.27
  - General science, R&D, federal funding for, 4.32–4.33
  - Geology, race and ethnicity trends in, 3.45
  - Georgia. *See* State Indicators (Chapter 8)
  - Geoscience(s), research article output/production
    - citations in U.S. patents, 5.53
    - international collaboration in, 5.41
  - Geothermal energy, patents potentially applicable to, identification of, 5.52–5.54
  - Germany
    - business R&D in, distribution by industry, 4.29–4.30
    - as destination for foreign students, 2.6
    - doctoral degrees awarded in, 2.6, 2.41
    - first university degrees in S&E, 0.8–0.9, 2.6, 2.39
    - foreign students from, 2.44
    - foreign students in, 0.9, 2.40, 2.42
    - government R&D support, by socioeconomic objectives, 4.39
    - high-skill emigrants in, 3.58
    - information and communication technology infrastructure in, 6.15
    - investment in clean energy technologies, 6.51
    - KTI economic activity in, 0.4
    - multinational companies based in, R&D performed by U.S.
      - affiliates of, 4.26–4.29
    - public interest in S&T, 7.11–7.12
    - public visits to informal science and other cultural institutions, 7.19
    - public's general attitudes about science in, 7.30
    - R&D in, 0.7, 4.17–4.18, 4.20–4.21
    - R&D intensity, 4.4, 4.18–4.20
    - recipients of U.S. S&E doctorates from, 2.34–2.35
    - research article output/production, 5.37, 5.42, 5.44
    - and study-abroad programs, 2.40
    - U.S. students in, as foreign students, 2.44
  - Global recession. *See* Recession, global
  - Global trade. *See* Trade
  - Global warming
    - causes of, public understanding of, 7.40–7.41
    - public concern about, 7.5, 7.40–7.41
  - Globalization. *See also* Trade
    - of commercial knowledge-intensive services, 6.7
    - data classification systems, 6.10–6.12
    - of high-technology manufacturing, 6.7
    - indicators, 6.5–6.6, 6.29
  - Government. *See also* Federal government, U.S.
    - R&D funding, international comparisons, 4.21
    - R&D performance, international comparisons, 4.21
    - R&D priorities, cross-national comparisons, 4.39
    - S&E employment in, 3.5, 3.19, 3.21, 3.23–3.24
    - state/local. *See* State/local government
  - Graduate education. *See* Higher Education in Science and Engineering (Chapter 2)
  - Graduate students. *See* Higher Education in Science and Engineering (Chapter 2)
  - Greece, recipients of U.S. S&E doctorates from, 2.34–2.35
  - Gross domestic product (GDP)
    - growth, U.S. R&D expenditures and, 4.7
    - per capita, in developing economies, 6.20
- H**
- Hawaii. *See* State Indicators (Chapter 8)
  - HBCUs. *See* Historically black colleges and universities
  - Health and clinical science(s). *See also* Biomedical science(s); Medical and health sciences; Pharmaceutical(s)/pharmaceutical industry
    - research space at academic institutions, 5.19–5.21
  - Health and environment objective, government R&D support for, cross-national comparisons, 4.39
  - Health and Human Services, Department of (HHS)
    - R&D expenditures, 4.5, 4.34
    - research funding, by field, 4.37–4.39
    - support for academic R&D, 5.11, 5.15
    - technology transfer activities, 4.43–4.46



- Health care practitioner(s), employment projections for, 3.12
- Health-related occupations, women in, 3.44
- Health-related R&D, federal funding for, 4.32–4.33
- Health-related technology(ies), patents granted in, 6.42
- Health services, worldwide distribution of, 6.20–6.21
- HHEs. *See* High Hispanic enrollment institutions
- HHS. *See* Health and Human Services, Department of (HHS)
- Higher education. *See also* Higher Education in Science and Engineering (Chapter 2); Overview
- international comparisons, O.8–O.9, 2.6, 2.37–2.44
  - organization, in United States, O.15, 2.7–2.20
  - revenues and expenditures, O.15–O.16, 2.4, 2.12–2.15
  - state indicators, 8.42–8.75
  - transition to, among high school graduates, 1.6–1.7
- Higher Education in Science and Engineering (Chapter 2), 2.1–2.51
- Higher Education Research and Development Survey (HERD), 5.9
- High Hispanic enrollment institutions, 2.8–2.9
- High-performance computing, for academic R&D, 5.23
- High school(s). *See* Elementary and Secondary Mathematics and Science Education (Chapter 1)
- High-skill migration, worldwide, 3.58
- High technology. *See also* Knowledge- and technology-intensive (KTI) industry(ies); Knowledge-intensive services
- exports, 6.5–6.6
  - foreign direct investment in, 6.6
  - product innovation, 6.6
- High-technology manufacturing. *See* Industry, Technology, and the Global Marketplace (Chapter 6)
- High-technology services, U.S. small businesses in, 6.47
- Hispanics
- and Advanced Placement (AP), 1.5, 1.26
  - doctoral degrees awarded, 2.32–2.33
  - graduate enrollment, 2.28
  - K–12 students' performance in mathematics and science, 1.4
  - master's degrees earned, 2.30
  - ninth graders, math coursetaking, 1.22
  - on-time graduation from high school, 1.6, 1.38
  - and performance gaps in grades 4 and 8, 1.15–1.16
  - in S&E labor force, O.17, 3.6, 3.45–3.47, 5.27–5.28
- Historically black colleges and universities, 2.8–2.9
- Homeland Security, Department of (DHS), R&D expenditures, 4.5, 4.36
- Hong Kong, grades 4 and 8 students' TIMSS test scores in, 1.4
- Hungary
- public interest in S&T, 7.12
  - and study-abroad programs, 2.40
- Hydrogen technology
- public attitudes about, U.S. patterns and trends, 7.42–7.43
  - public RD&D expenditures in, 6.52–6.53
- I**
- ICT. *See* Information and communication technology
- Idaho. *See* State Indicators (Chapter 8)
- Illinois. *See also* State Indicators (Chapter 8)
- R&D performance in, 4.12–4.13
- Immigration. *See also* Stay rate(s)
- by high-skill workers, 3.58
  - and S&E workforce, 3.51–3.52
- Imports. *See* Trade
- India
- commercial knowledge-intensive services, 6.21
  - doctoral degrees awarded in, 2.41
  - foreign-born scientists and engineers from, 3.53
  - foreign students from, 2.44
  - high-skill emigrants in, 3.58
  - high-technology manufacturing in, 6.26–6.27
  - information and communication technology in, 6.15–6.17
  - investment in clean energy technologies, 6.50
  - knowledge-intensive services exports, 6.5
  - KTI economic activity in, 6.5, 6.7, 6.14, 6.29
  - labor productivity growth in, 6.5, 6.18
  - patenting activity, O.11
  - R&D performance, O.5–O.7, 4.4, 4.17
  - recipients of U.S. S&E doctorates from, 2.34
  - research article output/production, O.10, 5.6, 5.37
  - researchers in, numbers of, 3.60
  - sources of science and technology information used by public in, 7.18
  - trade
    - in commercial knowledge-intensive services, 6.30
    - in high-technology goods, 6.33
    - KTI, 6.29
    - in R&D services, 6.32
    - in royalties and fees, 6.45
    - in value-added indicators, 6.34
  - U.S. MOFA R&D in, 4.5, 4.27–4.29
  - U.S. patents granted to, 6.40–6.41
- Indiana. *See* State Indicators (Chapter 8)
- Indians, American. *See* American Indian(s) or Alaska Native(s)
- Indonesia
- commercial knowledge-intensive services, 6.21–6.22
  - foreign students from, 2.44
  - information and communication technology in, 6.15–6.17
  - investment in clean energy technologies, 6.50
  - KTI economic activity in, 6.7, 6.14, 6.29
  - labor productivity growth in, 6.18
  - trade
    - KTI, 6.29
    - in value-added indicators, 6.34
- Industry(ies). *See also* Industry, Technology, and the Global Marketplace (Chapter 6); Knowledge- and technology-intensive (KTI) industry(ies); *specific industry*
- applied research in, 4.15–4.16
  - domestic R&D performance, 4.23
  - high-technology, 8.10
  - nonmanufacturing
    - domestic R&D performance, 4.23
    - patents in, 6.41–6.42
  - research article output/production, 5.37–5.40
    - citations in U.S. patents, 5.53
    - collaboration patterns, 5.46–5.47
  - S&E employment in, 3.5, 3.24
    - that are not knowledge or technology intensive, 6.8–6.9
- Industry, Technology, and the Global Marketplace (Chapter 6), 6.1–6.60
- Information and communication technology. *See* Industry, Technology, and the Global Marketplace (Chapter 6)
- Information processing and networking, patents granted in, 6.42
- international comparisons, 6.43
- Information science
- age distribution of degree holders in, 3.42
  - research space at academic institutions, 5.19–5.20
- Information security analysts, race and ethnicity trends in, 3.46
- Information services
- domestic R&D performance, 4.23
  - employment in, globalized, 6.36
  - global trade in, 6.30
  - multinational companies in, R&D performed by affiliates of, 4.27, 4.29
  - R&D funding, 4.23
  - S&E employment in, 3.24
  - U.S. direct investment abroad in, 6.38

- U.S. multinational companies in, 6.36
  - Innovation, 6.7, 6.39–6.49. *See also* Industry, Technology, and the Global Marketplace (Chapter 6); Overview; Patent(s); Technology transfer
  - Instructional technology, 1.6, 1.34–1.38. *See also* Distance education; Internet access; Online learning
  - Intellectual property. *See also* Patent(s)
    - trade, O.12–O.13, 6.45; *see also specific country*
  - Interior, Department of (DOI), R&D expenditures, 4.36
  - International comparisons. *See also* Research and Development: National Trends and International Comparisons (Chapter 4)
    - of educational achievement, 2.6
      - in grades 4 and 8, 1.17–1.19
    - of enrollments, 1.40
    - of first-time enrollment in university-level education, 1.7, 1.40
    - of first university degrees in S&E, O.8–O.9, 2.6, 2.38–2.39
    - of high school graduation rates, 1.7, 1.39
    - of K–12 students' TIMSS test scores, 1.4, 1.17–1.19
    - of KTI industries, O.3–O.4
    - of postsecondary degrees, 2.6
    - of public acceptance/rejection of pseudoscience, 7.26
    - of public assessment of government spending on scientific research, 7.31–7.32
    - of public attitudes
      - about animal research, 7.46
      - about climate change, 7.40–7.41
      - about cloning, 7.45
      - about environmental problems, 7.38
      - about genetically modified food, 7.43
      - about nanotechnology, 7.44
      - about nuclear energy, 7.43
      - about promises of science, 7.28–7.30
      - about stem cell research, 7.45
    - of public confidence in science community's leadership, 7.32
    - of public esteem for S&E occupations, 7.34–7.35
    - of public factual knowledge of science, 7.22–7.23
    - of public interest in science and technology, 7.11–7.12
    - of public reservations about science, 7.28–7.30
    - of public understanding of scientific process, 7.25
    - of public's perceived knowledge about causes and solutions to environmental problems, 7.26
    - of R&D, O.5–O.7, 4.4–4.5, 4.16–4.22
    - of R&D trends, O.5–O.7
    - of S&E doctoral degrees, 2.41
    - of workforces, O.7–O.9, 2.38, 3.59–3.61
  - Internationally mobile students, 2.6, 2.42–2.44. *See also* Foreign students
  - International trade. *See* Trade
  - Invention(s), valuable, patenting. *See* Patent(s), triadic
  - Iowa. *See* State Indicators (Chapter 8)
  - iPhones, global trade in, metrics for, 6.34
  - Iran
    - first university degrees in S&E, 2.39
    - foreign students from, 2.44
    - recipients of U.S. S&E doctorates from, 2.37
    - research article output/production, 5.37, 5.41
  - Ireland
    - foreign students in, 2.43
    - multinational companies based in, R&D performed by affiliates of, 4.30
  - Israel
    - multinational companies based in, R&D performed by affiliates of, 4.5, 4.27–4.30
    - public perceptions of S&E occupations in, 7.35
    - R&D intensity, 4.4, 4.18
    - R&D performance, O.5–O.6, 4.5, 4.27–4.30
    - research article output/production, preferred collaboration partners, 5.43
  - Italy
    - doctoral degrees awarded in, by sex, 2.41
    - first university degrees in S&E, 2.6, 2.39
    - information and communication technology infrastructure in, 6.15
    - public interest in science and technology, 7.11–7.12
    - R&D performance in, 4.17
    - recipients of U.S. S&E doctorates from, 2.34–2.35
    - research article output/production, preferred collaboration partners, 5.42
    - U.S. students in, as foreign students, 2.44
- ## J
- Japan
    - basic research in, 4.21–4.22
    - commercial knowledge-intensive services, 6.21–6.25
    - currency exchange rate, 6.24
    - doctoral degrees awarded in, 2.6, 2.41
    - first university degrees in S&E, O.9, 2.6, 2.39
    - foreign students in, 2.42–2.44
      - as global provider of knowledge-intensive services, 6.5
      - government R&D support, by socioeconomic objectives, 4.39
      - high-technology manufacturing in, 6.26–6.27
      - information and communication technology in, 6.15, 6.17
      - intellectual property trade, O.13
      - KTI share of economy, O.3–O.4, 6.5, 6.13–6.14, 6.29
      - labor productivity growth in, 6.20
      - multinational companies based in, R&D performed by affiliates of, 4.5, 4.26–4.30
      - in non-knowledge-intensive services industries, 6.8–6.9
      - in nonmanufacturing and nonservices industries, 6.9
      - number of researchers in, O.8
      - patenting activity, O.10–O.11
        - in clean energy and pollution control, 6.53–6.55
        - by technology area, 6.43–6.44
      - public attitudes about genetically modified food, 7.43
      - public concern about climate change, 7.40
      - public confidence in science community's leadership, 7.32
      - public interest in science and technology, 7.12
      - public visits to informal science and other cultural institutions, 7.19
      - public's general attitudes about science in, 7.30
      - R&D funding, 4.21–4.22
      - R&D in, O.5–O.7, 4.4, 4.17–4.18, 4.20–4.21, 4.26–4.27, 4.30
      - R&D intensity, 4.4–4.5, 4.18–4.20
      - RD&D of clean energy and nuclear technologies in, 6.52–6.53
      - research article output/production, O.10, 5.6, 5.36–5.37, 5.42–5.44
      - researchers in, 3.6, 3.60–3.61
      - trade
        - in commercial knowledge-intensive services, 6.30–6.31
        - in high-technology goods, 6.32–6.34
        - KTI, 6.29
        - in R&D services, 6.32
      - as U.S. advanced technology product trading partner, 6.35
      - U.S. direct investment in, 6.38
      - U.S. patents granted to, 6.40–6.41
      - value added for manufacturing industries, 6.9
    - Jordan
      - foreign students in, 2.42
      - recipients of U.S. S&E doctorates from, 2.37
    - Journal articles. *See* Literature, scientific and technical
    - Justice, Department of, R&D expenditures, 4.32, 4.36

## K

    - Kansas. *See* State Indicators (Chapter 8)
    - K–12 education. *See* Elementary and secondary education in S&E;

Elementary and Secondary Mathematics and Science Education (Chapter 1)

Kentucky. *See* State Indicators (Chapter 8)

Kindergarten. *See also* Elementary and secondary education in S&E; Elementary and Secondary Mathematics and Science Education (Chapter 1)

mathematics and science performance in, 1.10–1.12

student learning in, nonschool factors affecting, 1.12–1.13

Knowledge- and technology-intensive (KTI) industry(ies) and services, O.3–O.4, O.12. *See also* Industry, Technology, and the Global Marketplace (Chapter 6)

Korea. *See* South Korea

KTI. *See* Knowledge- and technology- intensive (KTI) industry(ies) and services

**L**

Labor force, S&E, O.7–O.9, O.17–O.19. *See also* Employment; Researcher(s); Science and Engineering Labor Force (Chapter 3); Unemployment

academic, 5.5–5.6, 5.27

college-educated workers in, 2.38, 3.5, 3.10–3.11, 3.14–3.15

doctorates in, 5.5–5.6

foreign-trained, 5.5–5.6, 5.27

international comparisons, O.7–O.9, 2.38

state indicators, 8.76–8.89

U.S.-trained, 5.5–5.6

Labor market. *See also* Unemployment and earnings/salaries, 3.32–3.33 and involuntarily working out of field, 3.31, 3.34 for recent S&E graduates, 3.33–3.40

Labor market indicators, 3.28

Labor productivity, growth

in developed countries, 6.5, 6.18–6.20

in developing countries, 6.5, 6.18

Labor underutilization. *See also* Unemployment alternative measures of, 3.29–3.30

Latin America. *See also specific country*

public concern about climate change, 7.40

research article output/production, preferred collaboration partners, 5.44

U.S. MOFA R&D in, 4.5, 4.27–4.29

Law enforcement, seen as scientific by public, U.S. patterns and trends, 7.36–7.37

Library(ies), public, public attitudes toward, 7.18–7.19

Life science(s)

academic R&D in, 5.5, 5.13–5.15

academic research equipment expenditures and funding, 5.21

advanced technology products in, U.S. trade in, 6.35–6.36

doctorate holders, 5.25

and employment involuntarily out of field, 3.31

employment projections for, 3.11–3.12

occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17

race and ethnicity trends in, 3.46–3.47

R&D activity in, 3.25

research, federal spending on, 4.37–4.39

research article output/production, 5.39–5.41

salaries in, 3.49–3.51

women in, 3.43–3.44

Literature, scientific and technical

academic and non-academic, in United States, 5.39

article output/production, O.10, 5.6, 5.35–5.53

Chinese-authored, citation data, 5.7, 5.48–5.50

citation by USPTO patents, 5.51–5.53

citation data, O.10, 5.7, 5.45

coauthorship, O.14, 5.7, 5.40–5.41, 5.46–5.47

collaboration patterns, O.10, O.13–O.15, 5.7, 5.40–5.47

by country, 5.36–5.37

EU-authored, citation data, 5.7, 5.48–5.50

by field, international comparisons, 5.37, 5.39–5.40

highly cited, trends, by country, 5.7, 5.48–5.50

international comparisons, O.10, 5.6–5.7, 5.36, 5.46–5.48

Japan-authored, citation data, 5.50

relative citation index, 5.45, 5.48, 5.50

U.S.-authored, citation data, 5.7, 5.48–5.50

by U.S. sector, 5.37–5.40

Louisiana. *See* State Indicators (Chapter 8)

Luxembourg, public interest in science and technology, 7.12

## M

Maine. *See* State Indicators (Chapter 8)

Malaysia

foreign students from, 2.44

R&D performance, O.5, 4.4, 4.17

research article output/production, 5.37

sources of science and technology information used by public in, 7.18

as U.S. advanced technology product trading partner, 6.35–6.36

Malta, foreign students in, 2.40

Manager(s), S&E employment, 3.24

projections for, 3.12–3.13

Manufacturing sector, 6.8–6.9

foreign multinational companies in, R&D performed by U.S. affiliates of, 4.26–4.27

innovation activities, 6.39–6.40

non-high-technology, 6.8–6.9

R&D performance, 4.23, 4.29–4.30

S&E employment in, 3.24

U.S. employment in, 6.28

U.S. MOFA R&D in, 4.29

Maryland. *See also* State Indicators (Chapter 8)

R&D performance in, 4.12–4.13

Massachusetts. *See also* State Indicators (Chapter 8)

R&D performance in, 4.12–4.13

Master's degree(s)

citizenship status and, 2.29–2.31

and employment involuntarily out of field, 3.31, 3.34

by field, 2.29

foreign students earning, 2.5, 2.31

institutions awarding, 2.4

numbers, trends in, O.16, O.18, 2.5, 3.10

professional science, 2.29–2.30

by race and ethnicity, 2.29–2.30

and salaries of recent graduates, 3.34

S&E, 2.29–2.31, 3.10

by sex, 2.29

success rates, 2.29–2.30

Mathematical science(s)

academic R&D in, 5.13–5.15

age distribution of degree holders in, 3.41–3.42

doctoral degrees in, 2.35

doctorate holders employed in academia, 5.25

employment projections for, 3.11–3.12

foreign-born students in, 2.5

graduate students in, 2.5

occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17

percentages of bachelor's degrees in, O.17

race and ethnicity trends in, 3.45–3.47

R&D activity in, 3.25

research, federal spending on, 4.37–4.39

salaries in, 3.49–3.51

S&E degree holders working in, by level and field of highest S&E degree, 3.17–3.19

- and tenure status, 5.25
  - women in, 3.43–3.44
  - Mathematics. *See also* Elementary and Secondary Mathematics and Science Education (Chapter 1)
    - K–12 students' learning in, 1.4
    - K–12 students' proficiency in, 1.4
    - ninth graders' coursetaking in, 1.21–1.22
    - research article output/production, international collaboration in, 5.41
    - students' coursetaking in, 1.4, 1.19–1.26
  - Measuring and instrumentation. *See* Automation, control, and measuring technology(ies)
  - Mechanical engineering. *See* Engineering, mechanical
  - Medical and health sciences
    - academic R&D in, 5.14–5.15
    - academic research equipment expenditures and funding, 5.21
    - doctoral degrees in, 2.33–2.34
    - graduate students in, federal financial support, 2.5
    - research article output/production, 5.39–5.40
    - women in, 3.43–3.44
  - Medical electronics, patents granted in, 6.42
    - international comparisons, O.11, 6.44
  - Medical equipment, patents granted in, 6.42
    - academic, 5.55
    - international comparisons, O.11, 6.44
  - Medical science(s). *See* Medical and health sciences
  - Medicine. *See also* Biomedical science(s)
  - Mexico
    - doctoral degrees awarded in, by sex, 2.41
    - high-skill emigrants in, 3.58
    - information and communication technology infrastructure in, 6.16
    - investment in clean energy technologies, 6.50
    - KTI share of economy, 6.14
    - public attitudes about genetically modified food, 7.43
    - R&D performance in, 4.17
    - recipients of U.S. S&E doctorates from, 2.35–2.36
    - research article output/production, preferred collaboration partners, 5.43–5.44
    - as U.S. advanced technology product trading partner, 6.35
  - Michigan. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13
  - Microbusiness(es), U.S., high-technology, 6.45–6.49
  - Middle East
    - public concern about climate change, 7.40
    - R&D performance in, 4.17
    - recipients of U.S. S&E doctorates from, 2.37
    - U.S. MOFA R&D in, 4.5, 4.27–4.29
  - Minnesota. *See* State Indicators (Chapter 8)
  - Minority(ies). *See also* Underrepresented minority(ies); *specific minority*
    - as postdocs in academic employment, 5.31
    - salaries for, 3.49–3.51
    - in S&E labor force, 3.43, 3.45–3.51
  - Mississippi. *See* State Indicators (Chapter 8)
  - Missouri. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13
  - MOFA(s). *See* Multinational company(ies), majority-owned foreign affiliate(s) (MOFA[s])
  - Mongolia, foreign students from, 2.44
  - Montana. *See* State Indicators (Chapter 8)
  - MOOC(s) (massive open online course[s]). *See* Online learning
  - Motor vehicle industry, R&D performance, cross-national comparisons, 4.29–4.30
  - Multinational company(ies)
    - in China, 6.25–6.26
    - foreign, U.S. affiliates, R&D performance, 4.26–4.27
    - foreign affiliates, business enterprise R&D and R&D, 4.29–4.30
    - in high-technology manufacturing, 6.36–6.38
    - in KTI industries, 6.36–6.38
    - majority-owned foreign affiliate(s) (MOFA[s]), R&D performance, 4.5, 4.27–4.29
    - parent companies and foreign affiliates, R&D performance, 4.5, 4.27–4.29
    - and pharmaceutical industry, in China, 6.25
    - R&D investments, O.6–O.7, 4.5, 4.25–4.29, 6.32
    - U.S., 4.27–4.29, 6.36–6.38
- ## N
- Nanotechnology, public attitudes about
    - international comparisons, 7.44
    - U.S. patterns and trends, 7.44
  - NASA. *See* National Aeronautics and Space Administration (NASA)
  - National Aeronautics and Space Administration (NASA)
    - EPSCoR and EPSCoR-like program budgets, 5.14
    - media coverage of, 7.12–7.13
    - R&D expenditures, 4.5, 4.36
    - research funding, by field, 4.38–4.39
    - S&E employment in, 3.23
    - support for academic R&D, 5.11, 5.15
    - technology transfer activities, 4.43–4.46
  - National Institutes of Health (NIH)
    - biomedical employment working group report, 3.39
    - EPSCoR and EPSCoR-like program budgets, 5.14
    - R&D funding for, 4.33
    - support for academic R&D, 5.11, 5.15
    - support for graduate students, 2.18–2.19
  - National Research Council, recommendations for strengthening research universities, 5.12
  - National Science Foundation (NSF). *See also* Industry/University Cooperative Research Centers (I/UCRC) Program; Scientists and Engineers Statistical Data System (SESTAT)
    - classification of degree fields and occupations, 3.8
    - EPSCoR and EPSCoR-like program budgets, 5.14
    - R&D expenditures, 4.5, 4.36
    - research funding, by field, 4.38–4.39
    - S&E employment in, 3.23
    - support for academic R&D, 5.11, 5.15
    - support for graduate students, 2.18
  - Native Hawaiian or Other Pacific Islander. *See* Asian(s) or Pacific Islander(s)
  - Natural resources, research space at academic institutions, 5.19–5.20
  - Natural resources and environment, R&D, federal funding for, 4.32–4.33
  - Natural sciences
    - degrees in, 2.21
    - doctoral degrees, international comparisons, 2.41
    - first university degrees in, international comparisons, 2.39
    - freshmen intending to major in, 2.21–2.22
  - Nebraska. *See* State Indicators (Chapter 8)
  - Nepal, foreign students from, 2.44
  - Netherlands
    - doctoral degrees awarded in, by sex, 2.41
    - public interest in science and technology, 7.11–7.12
    - public visits to informal science and other cultural institutions, 7.19
    - sources of science and technology information used by public in, 7.17
  - Networking. *See also* Information processing and networking, patents granted in
    - as component of cyberinfrastructure for academic R&D, 5.22–5.23
  - Nevada. *See* State Indicators (Chapter 8)
  - New Hampshire. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13
  - New Jersey. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13

- New Mexico. *See also* State Indicators (Chapter 8)  
 R&D performance in, 4.12–4.13
- New York. *See also* State Indicators (Chapter 8)  
 R&D performance in, 4.12–4.13
- New Zealand  
 foreign students in, 2.43  
 public concern about climate change, 7.40  
 research article output/production, preferred collaboration partners, 5.44  
 U.S. students in, as foreign students, 2.44
- NIH. *See* National Institutes of Health (NIH)
- No Child Left Behind Act of 2001 (NCLB), 1.8
- Nondefense R&D  
 federal funding for, 4.32–4.33  
 government support for, cross-national comparisons, 4.39
- Nonprofit organization(s)  
 applied research by, 4.15–4.16  
 basic research by, 4.15  
 development funding, 4.16  
 development performance, 4.16  
 funding for S&E academic R&D, 5.5, 5.12–5.13, 5.16  
 R&D, 4.11–4.12, 4.15  
 research article output/production, 5.37–5.40  
   citations in U.S. patents, 5.53  
   collaboration patterns, 5.46–5.47  
 S&E employment in, 3.19, 3.21  
 support for academic R&D, by institution type, 5.16
- Non-tenure-track faculty positions, O.15
- North Africa, public concern about climate change, 7.40
- North America. *See also* Canada; Mexico; United States  
 R&D performance in, 4.17  
 sources of science and technology information used by public in, 7.17
- North American Free Trade Agreement (NAFTA)  
 and KTI trade, 6.29  
 U.S. advanced technology product trading partners in, 6.35
- North Carolina. *See also* State Indicators (Chapter 8)  
 R&D performance in, 4.12–4.13
- North Dakota. *See* State Indicators (Chapter 8)
- Norway, researchers in workforce, 3.60
- NSF. *See* National Science Foundation (NSF)
- Nuclear energy  
 Fukushima accident and, 7.42  
 international comparisons, 7.43  
 patenting activity, 6.53–6.55  
 patents potentially applicable to, identification of, 5.52–5.54  
 public attitudes about, 7.5, 7.42–7.43  
 public policy on, influence of scientific experts on, public assessment of, 7.37  
 public RD&D expenditures in, 6.52–6.53  
 U.S. patterns and trends, 7.42–7.43
- Nuclear Regulatory Commission, S&E employment in, 3.23
- O**
- Occupation(s), 7.32–7.35; *See also* Science and Engineering Labor Force (Chapter 3)
- Ocean science(s), doctoral degrees in  
 Asian recipients of, 2.34  
 European recipients of, 2.35
- OECD. *See* Organisation for Economic Co-operation and Development (OECD)
- Offshore energy development, public attitudes about, 7.5, 7.42–7.43
- Ohio. *See also* State Indicators (Chapter 8)  
 R&D performance in, 4.12–4.13
- Oil drilling, public attitudes about, 7.5
- Oklahoma. *See* State Indicators (Chapter 8)
- Online learning  
 access to, 1.6  
 benefits of, 1.37  
 effectiveness of, research on, 1.38  
 enrollment in, 1.6  
 in higher education, 2.12  
 for K–12 students, 1.36–1.37  
 massive open online courses, 2.12  
 reasons for offering, 1.6
- Optoelectronics, advanced technology products in, U.S. trade in, 6.35
- Oregon. *See* State Indicators (Chapter 8)
- Organisation for Economic Co-operation and Development (OECD)  
 data  
   on first-time enrollment in university-level education, 1.7  
   on global S&E workforce, 3.59–3.61  
   on higher-education expenditures, 2.38  
   on high school graduation rate, 1.7, 1.39  
   on high-skill migration, 3.58  
   on internationally mobile students, 2.42–2.44  
   on R&D, 4.16–4.22  
 definition of tertiary-type A program, 1.40  
 estimate of trade in value-added terms, 6.34  
 estimate of U.S. trade balance in iPhones, 6.34  
 KTI industry classification, 6.7
- Overview, O.1–O.23
- P**
- Pacific Islander(s). *See* Asian(s) or Pacific Islander(s)
- Pakistan, research article output/production, 5.37
- Pass-through funding, O.14  
 for academic R&D, 5.17–5.18
- Patent(s)  
 academic, 5.7, 5.53–5.57  
 applications, O.10, 3.26  
 biotechnology, 5.7  
 clean energy technology, 6.53–6.55  
 commercialization rate for, 6.40  
 in computer systems design, 6.42–6.43  
 in developed countries, 6.40–6.41  
 in developing countries, 6.40–6.41  
 energy-related, identification of, 5.52–5.54  
 environment-related, identification of, 5.52–5.54  
 global trends in, 6.40–6.44  
 higher education and, O.14–O.15  
 in high-technology industries, 6.40  
 by industry, 6.40–6.42  
 international comparisons, O.10–O.13, 6.40–6.44  
 by location of inventor, O.10–O.13, 6.6, 6.40–6.41  
 numbers, 6.40  
 pendency, 5.51  
 pollution control, 6.53–6.55  
 scientists and engineers and, 3.26  
 S&E article citation by, 5.51–5.53  
 S&E degrees and disciplines and, 3.26  
 by technology area, 6.42  
 thickets of, 6.40  
 triadic, O.11, 6.6, 6.44–6.45  
 to U.S. inventors, 6.6, 6.40
- Patent activity rate, 3.26
- Patent and Trademark Office (USPTO), 3.26  
 patents granted, O.10–O.13, 5.54–5.55, 6.40–6.44
- Pennsylvania. *See also* State Indicators (Chapter 8)  
 R&D performance in, 4.12–4.13
- Pharmaceutical(s)/pharmaceutical industry  
 in China, 6.25  
 cross-national comparisons, 4.29–4.30  
 domestic R&D in, 4.23

- employment in, by U.S. multinational companies, 6.38
- in EU, 6.25
- foreign multinational companies in, R&D performed by U.S.
  - affiliates of, 4.27
- global trade in, 6.31, 6.33
- innovation in, O.12, 6.39
- international comparisons, O.11–O.12, 6.44
- patents granted in, O.11–O.12, 5.55, 6.41–6.42, 6.44
- R&D funding, from abroad, 4.24–4.25
- R&D performance, 4.23, 4.29–4.30
- U.S. multinational companies in, 6.37–6.38
- U.S., trends in, 6.29, 6.33
- Pharmaceutical science(s). *See* Pharmaceutical(s)/pharmaceutical industry
- Philippines, high-skill emigrants in, 3.58
- Physical science(s). *See also* Astronomy; Atmospheric science(s); Chemistry; Earth science; Geoscience(s); Ocean science(s); Physics
  - academic R&D in, 5.13–5.15
  - academic research equipment expenditures and funding, 5.21
  - doctoral degrees, 2.34–2.35, 2.41
  - doctorate holders employed in academia, 5.25
  - and employment involuntarily out of field, 3.31
  - employment projections for, 3.12–3.13
  - graduate students in, federal financial support, 2.5
  - ninth graders' coursetaking in, 1.4
  - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
  - percentages of bachelor's degrees in, O.17
  - race and ethnicity trends in, 3.46–3.47
  - research, federal spending on, 4.37–4.39
  - research space at academic institutions, 5.19–5.20
  - salaries in, 3.49–3.51
  - S&E degree holders working in, by level and field of highest S&E degree, 3.17–3.19
  - and tenure status, 5.25
  - women in, 3.43–3.44
- Physics
  - academic research equipment, federal funding, 5.21
  - Advanced Placement (AP), 1.5, 1.23–1.26
  - doctoral degrees in, foreign students earning, 2.5
  - master's degrees in, foreign students earning, 2.5
  - ninth graders' coursetaking in, 1.22
  - research article output/production, 5.40
    - citations in U.S. patents, 5.53
    - international collaboration in, 5.41
  - seen as scientific by public, 7.36–7.37
- Poland
  - first university degrees in S&E, 2.6, 2.39
  - foreign students in, 2.40
  - public interest in science and technology, 7.11–7.12
  - public's general attitudes about science in, 7.30
  - research article output/production, preferred collaboration partners, 5.44
  - researchers in, by sex, 3.61
- Political science
  - master's degrees in, 2.5, 2.29
  - race and ethnicity trends in, 3.45–3.47
- Pollution control technology(ies), patenting activity, 6.53–6.55
- Pollution mitigation
  - patenting activity, 6.53–6.55
  - patents potentially applicable to
    - citations to S&E literature, 5.53
    - identification of, 5.52–5.54
- Portugal
  - doctoral degrees awarded in, by sex, 2.41
  - foreign students in, 2.40
- Postdoc fellowship. *See* Postdocs
- Postdocs
  - in academic employment, 3.38, 5.6, 5.24–5.25, 5.29, 5.31–5.33
  - compensation for, 3.38
  - demographics, 5.31
  - by discipline, 3.38, 5.31
  - early-career, 5.31–5.32
  - employment characteristics of, 3.37–3.40
  - foreign-born share of, 5.6, 5.29
  - by institution type, 5.31–5.32
  - number of, 3.38, 5.6, 5.31
  - reasons for taking positions, 3.38–3.40, 5.32
  - recently degreed, 5.31–5.32
  - as researchers, 5.32
  - salaries and benefits for, 3.37–3.38
  - SEH doctorate holders in, 5.6, 5.24–5.25
  - as share of academic positions, 5.6
  - trends in, 3.38
  - U.S.-trained, 5.6, 5.31
  - by years since doctorate, 5.31–5.32
- Postsecondary education
  - enrollment, 1.7, 1.39–1.40, 2.4, 2.20–2.24
  - and freshmen's intentions to major in S&E, 2.20–2.23
  - by high school graduates, 1.7, 1.39–1.40
  - international comparisons, 1.40
  - remedial courses in, 1.40–1.41
  - sex differences in, 1.39–1.40
  - socioeconomic status and, 1.40
- Postsecondary institution(s). *See also* College(s); University(ies)
  - four-year
    - math remediation rate for, 1.7, 1.40
    - revenues and expenditures, 2.14
    - S&E workforce employed in, 3.19–3.21
  - graduate public, revenues and expenditures, 2.14
  - international comparisons, 2.38
  - private, revenues and expenditures, 2.38
  - public, revenues and expenditures, 2.15, 2.38
  - two-year
    - math remediation rate for, 1.7, 1.40
    - S&E workforce employed in, 3.19–3.21
- Postsecondary teacher(s), employment projections for, 3.12–3.13
- Precollege education, S&E workforce employed in, 3.19–3.21
- Private university(ies). *See* University(ies), private
- Professional, scientific, and technical services
  - domestic R&D performance, 4.23
  - patents in, 6.42
  - R&D funding, 4.23, 4.25
  - S&E employment in, 3.5, 3.24
  - U.S. direct investment abroad in, 6.38
  - U.S. MOFA R&D in, 4.29
- Professional development, for teachers, 1.6, 1.31–1.32
- PST services. *See* Professional, scientific, and technical services
- Psychology
  - academic R&D in, 5.13–5.15
  - doctorate holders employed in academia, 5.25
  - doctorate recipients, 2.19, 2.34
  - foreign graduate students in, 2.5
  - graduate students in, federal financial support, 2.5
  - master's degrees in, 2.5, 2.29
  - percentages of bachelor's degrees in, O.17
  - research, federal spending on, 4.37–4.39
  - research article output/production, international collaboration in, 5.41
  - research space at academic institutions, 5.19–5.20
  - and student debt levels, 2.19
  - and tenure status, 5.25

- women in, 3.44
- Publications. *See* Literature, scientific and technical
- Public attitude(s). *See* Science and Technology: Public Attitudes and Understanding (Chapter 7)
- Public knowledge-intensive services. *See* Knowledge-intensive services
- Public university(ies). *See* University(ies), public
- ## R
- Race and ethnicity. *See also* specific ethnicity; specific race
- and Advanced Placement (AP), 1.5, 1.25–1.26
  - and doctoral degrees awarded, 2.32–2.33
  - and freshmen intending S&E major, 2.21
  - and graduate enrollment, 2.5
  - and master's degrees, 2.5
  - and ninth graders' coursetaking, 1.22–1.23
  - and on-time graduation from high school, 1.6, 1.38
  - and performance gaps in grades 4 and 8, 1.15–1.16
  - and salaries among S&E workforce, 3.49–3.51
  - and S&E degrees, O.16–O.17, 2.4
  - and S&E labor force, O.17–O.18, 3.45
- Recent graduates, S&E. *See* Science and Engineering Labor Force (Chapter 3)
- Recession, global
- and commercial knowledge-intensive services, 6.21, 6.23
  - and employment out of field, among recent graduates, 3.34
  - and high-technology industries, 6.5
  - and high-technology manufacturing, 6.27
  - and immigration of scientists and engineers to United States, 3.6
  - and investment in clean energy technologies, 6.49, 6.51
  - and KTI economic activity, 6.5, 6.9
  - and labor productivity growth, 6.5, 6.18
  - and R&D expenditures, O.19–O.21
  - and S&E activity, O.21
  - and unemployment, 3.28–3.30, 3.34
  - and U.S. employment, 6.27–6.28
- Relative citation index, for S&E articles, 5.45, 5.48, 5.50
- Renewable energy, public RD&D expenditures in, 6.52–6.53
- Republic of Korea. *See* South Korea
- Research. *See also* Animal research; Discipline-based education research
- academic. *See* Academic research
  - applied. *See* Applied research
  - basic. *See* Basic research
  - business sector, O.19–O.20, 4.4, 4.15–4.16
  - federal expenditures on, by field, 4.37–4.39
  - federal funding of, public attitudes about, 7.4, 7.30–7.32
  - non-oriented, government funding of, cross-national comparisons, 4.39
  - as primary activity of full-time faculty, 5.6
  - scientific, public assessment of, 7.28
- Research, development, and demonstration (RD&D), for clean energy technologies, 6.6, 6.52–6.53
- Research and development. *See also* Academic Research and Development (Chapter 5); Research; Research and Development: National Trends and International Comparisons (Chapter 4); Researcher(s)
- academic. *See* Academic Research and Development (Chapter 5)
  - comparative composition, by country, 4.20–4.22
  - employment abroad, by U.S. companies, 3.61
  - expenditures, 4.16–4.18, 4.21–4.22
  - federal funding for, 4.32–4.33
  - financial inputs, state indicators, 8.7, 8.90–8.105
  - funding from abroad, 4.21
  - funding sources, 4.21
  - geographic concentration, 4.17
  - government priorities in, cross-national comparisons, 4.39
  - international comparisons, O.7, 4.4–4.5, 4.16–4.22
  - by multinational companies, 4.5, 4.25–4.29
  - performers, international comparisons, 4.20–4.22
  - U.S., 4.12–4.13
    - from abroad, 4.24–4.25
    - academic, O.16, 4.4, 4.10, 4.12–4.13, 4.15
    - basic research as share of, 4.21–4.22
    - business sector, 4.4–4.5, 4.7–4.10, 4.12, 4.20, 4.22–4.25
    - by character of work, 4.15–4.16
    - collaborative research and, O.13–O.15
    - commercialization, 4.5, 4.39–4.46
    - defense-related, 4.5, 4.30, 4.32, 4.39
    - expenditures, 4.21–4.22, 4.34–4.35
    - federal, 4.4–4.5, 4.9–4.13, 4.22–4.23, 4.39–4.46
    - federally funded R&D center, 4.10–4.13
    - foreign funding for, 4.24–4.25
    - funding for, O.19–O.20, 4.4–4.5, 4.9–4.12, 4.15, 4.22, 4.24–4.25
    - gap between performer- and source-reported, 4.34–4.35
    - health-related, O.19, 4.5
    - national trends, O.13–O.16, 4.4, 4.6–4.16
    - nongovernmental sector, 4.4–4.5, 4.9, 4.12, 4.22
    - by nonprofits, 4.11–4.12, 4.15
    - performance, 4.13
    - performers, 4.4–4.5, 4.9–4.13
    - scientists and engineers in, 3.24–3.26
    - by sector, 4.12–4.13
    - sources, 4.12–4.15
    - by state, 4.12–4.13
    - total, 4.6–4.9
    - in U.S. National Income and Product Accounts, 4.6
  - Research and development intensity, O.5–O.6
    - international comparisons, 4.4–4.5, 4.17–4.20
    - by state, 4.12–4.13
  - Research and Development: National Trends and International Comparisons (Chapter 4), 4.1–4.50
  - Research and development services
    - industry share, cross-national comparisons, 4.30
    - innovation in, 6.40
    - patents in, 6.42
    - scientific, 6.40, 6.42
    - U.S. trade in, 6.31–6.32
  - Research and experimentation (R&E), federal tax credit, 4.23–4.24
  - Research assistantships, 2.17–2.19
    - in academia, 5.6
    - graduate, 5.31
  - Research associate(s). *See* Postdocs
  - Researcher(s)
    - academic, 5.6, 5.29–5.31
    - definition of, 3.59
    - doctoral S&E, 5.29–5.30
    - female, international comparisons, 3.61
    - international comparisons, O.7–O.8, 3.6, 3.59–3.61
    - numbers of, O.7–O.8, 3.6, 3.59–3.61
    - outside tenure-track faculty, 5.6
    - postdoctoral, 5.32
    - S&E full-time faculty, 5.30–5.31
    - in workforce, international comparisons, 3.60
  - Research facility(ies), for academic R&D, 5.5, 5.19–5.21
  - Research output, 5.35–5.57
    - academic, 5.6–5.7, 5.35–5.57. *See also* Literature, scientific and technical; Patent(s)
    - state indicators, 8.7, 8.106–8.115
  - Research space, for academic R&D, 5.5, 5.19–5.21
    - by field, 5.5, 5.19–5.20
    - growth in, 5.5, 5.19–5.20
    - new construction, 5.20–5.21

- repair and renovation, 5.21
  - Restaurants and hotels, in global marketplace, 6.8–6.9
  - Retirement, of scientists and engineers, 3.42–3.43
  - Rhode Island. *See* State Indicators (Chapter 8)
  - Romania, recipients of U.S. S&E doctorates from, 2.34–2.35
  - Royalties and fees, global trade in, O.13, 6.45
  - Russia
    - doctoral degrees awarded in, 2.6, 2.41
    - intellectual property trade, O.13
    - number of researchers in, O.8
    - recipients of U.S. S&E doctorates from, 2.34–2.35
    - researchers in, numbers of, 3.6, 3.59–3.60
    - tertiary education attainment in, 2.38
    - trade, in value-added indicators, 6.34
  - Russian Federation, R&D performance in, 4.17
- S**
- Salary(ies)
    - education and, 3.49–3.51
    - for employed college-educated individuals, 3.32
    - experience and, 3.49–3.51
    - of H1-B visa recipients, 3.55
    - highest degree and, 3.33, 3.49–3.51
    - for minorities in S&E workforce, 3.49–3.51
    - for non-S&E occupations, 3.32–3.33
    - for postdoctoral positions, 3.37–3.38
    - for recent S&E graduates, 3.34, 3.37
    - for S&E occupations, 3.5, 3.32–3.33
    - for S&E-related occupations, 3.32–3.33
    - for women in S&E workforce, 3.49–3.51
    - for workers without a bachelor's degree, 3.33
  - Salary gap
    - among recent graduates, 3.51
    - demographics and, 3.51
    - education and, 3.49–3.51
    - employment/occupation and, 3.49–3.51
    - experience and, 3.49–3.51
    - for racial and ethnic minorities in S&E workforce, 3.49–3.51
    - for women in S&E workforce, 3.49–3.51
  - Saudi Arabia
    - expenditures on higher education, 2.37
    - research article output/production, international collaboration in, 5.41
    - students from, in United States, 2.5
  - SBIR. *See* Small Business Innovation Research (SBIR)
  - Scandinavia, research article output/production, preferred collaboration partners, 5.44
  - Science and Engineering Labor Force (Chapter 3), 3.1–3.61
  - Science and Technology: Public Attitudes and Understanding (Chapter 7), 7.1–7.53
  - Science Citation Index (SCI), 5.36
  - Science education, public attitudes about, 7.46
  - Science instruction
    - barriers to, 1.6
    - school support for, 1.6
  - Scientific literacy, 7.20
  - Scientific R&D services, funding from abroad, 4.25
  - Self-employment, of scientists and engineers, 3.19–3.23
    - business size and, 3.23–3.24
  - Semiconductor(s)/semiconductor industry
    - business R&D for, cross-national comparisons, 4.29–4.30
    - in China, 6.25
    - employment in, by U.S. multinational companies, 6.38
    - global trade in, 6.31
    - international comparisons, 6.43
    - patents in, 5.55, 6.41–6.43
    - U.S. direct investment abroad in, 6.38
    - U.S. multinational companies in, 6.37–6.38
  - Service industry(ies), 6.8
    - knowledge-intensive, 6.7. *See also* Knowledge-intensive services non-knowledge-intensive, 6.8
    - R&D, industry share, cross-national comparisons, 4.30
  - SEVIS. *See* Student Exchange Visitor Information System (SEVIS)
  - Sex differences. *See also* Women
    - in Advanced Placement (AP), 1.5, 1.25–1.26
    - in fields of S&E degrees, 3.44–3.45
    - in high school graduates enrolling in postsecondary education, 1.7
    - in K–12 students' performance in mathematics and science, 1.4
    - in levels of S&E degrees, 3.44–3.45
    - in on-time high school graduation rates, 1.38–1.39
    - and performance gaps in grades 4 and 8, 1.15–1.16
    - in postsecondary enrollment, 1.39–1.40
    - in salaries among S&E workforce, 3.49–3.51
    - in S&E occupations, 3.43–3.46
  - Singapore
    - first university degrees in S&E, 2.39
    - foreign students in, 2.42
    - high-technology manufacturing in, 6.27, 6.29
    - K–12 students' TIMSS test scores in, 1.4
    - R&D performance, O.5, 4.4, 4.17
    - research article output/production, 5.37
    - researchers in workforce, 3.60
    - trade, in high-technology goods, 6.32
    - workers with S&E skills, O.8
  - Slovakia, foreign students in, 2.40
  - Small business, U.S.
    - entrepreneurial investment in, 6.47–6.49
    - high-technology, 6.45–6.49
  - Small Business Innovation Research (SBIR), 4.5, 4.42–4.46
    - financing, 6.48–6.49
  - Small Business Technology Transfer, 4.5, 4.42–4.46
  - Smart grid
    - patenting activity, 6.53–6.55
    - patents potentially applicable to
      - citations to S&E literature, 5.53
      - identification of, 5.52–5.54
  - Social media, S&T topics in, 7.13
  - Social science(s). *See also* Economics; Political science; Psychology; Public administration; Sociology
    - academic R&D in, 5.13–5.15
    - doctoral degrees in, 2.34
    - doctorate holders employed in academia, 5.25
    - and employment involuntarily out of field, 3.31
    - employment projections for, 3.11–3.12
    - foreign graduate students in, 2.5
    - foreign undergraduate students in, 2.5
    - graduate enrollment in, 2.5
    - graduate students in, federal financial support, 2.5
    - occupational distribution of S&E highest degree holders in, by field of highest degree, 3.17
    - percentages of bachelor's degrees in, O.17
    - public attitudes about, 7.5
    - race and ethnicity trends in, 3.45–3.47
    - R&D activity in, 3.25
    - research, federal spending on, 4.37–4.39
    - research article output/production, international collaboration in, 5.41
    - salaries in, 3.49–3.51
    - S&E degree holders working in, by level and field of highest S&E degree, 3.17–3.19
    - and tenure status, 5.25
    - women in, 3.43–3.44
  - Sociology
    - academic R&D in, 5.15



- race and ethnicity trends in, 3.46–3.47
    - seen as scientific by public, U.S. patterns and trends, 7.36
  - Software industry
    - innovation in, O.12, 6.6, 6.39
    - patents in, 6.42
    - race and ethnicity trends in, 3.45–3.47
  - Solar energy
    - investment in, 6.49–6.52
    - patenting activity, 6.53–6.55
    - patents potentially applicable to, identification of, 5.52–5.54
    - public attitudes about, U.S. patterns and trends, 7.42–7.43
    - public RD&D expenditures in, 6.52–6.53
  - South Africa
    - information and communication technology in, 6.16–6.17
    - KTI economic activity in, O.3
    - labor productivity growth in, 6.18
    - trade, in value-added indicators, 6.34
  - South America, R&D performance in, 4.17
  - South Asia, R&D performance, O.5, 4.4, 4.17
  - South Carolina. *See* State Indicators (Chapter 8)
  - South Dakota. *See* State Indicators (Chapter 8)
  - Southeast Asia
    - KTI economic activity in, O.3–O.4
    - R&D performance, O.5–O.6, 4.4, 4.17
    - research article output/production, O.10
  - South Korea
    - business R&D in, distribution by industry, 4.30
    - doctoral degrees awarded in, 2.6, 2.41
    - expenditures on higher education, 2.38
    - first university degrees in S&E, O.9, 2.6, 2.39
    - foreign students from, 2.44
    - foreign students in, 2.42
    - government R&D support, by socioeconomic objectives, 4.39
    - high-technology manufacturing in, 6.27, 6.29
    - information and communication technology in, 6.15, 6.17
    - K–12 students' TIMSS test scores in, 1.4
    - KTI share of economy, O.3, 6.13–6.14
    - labor productivity growth in, 6.18–6.20
    - patenting activity, O.11
      - in clean energy and pollution control, 6.53–6.55
      - by technology area, 6.44
    - public confidence in science community's leadership, 7.32
    - public interest in S&T, 7.12
    - public perceptions of S&E occupations in, 7.35
    - public's general attitudes about science in, 7.30
    - R&D in, O.5–O.6, 4.4, 4.17–4.18, 4.20–4.21
    - R&D intensity, 4.4–4.5, 4.18, 4.20
    - RD&D of clean energy and nuclear technologies in, 6.52–6.53
    - recipients of U.S. S&E doctorates from, 2.34
    - research article output/production, 5.37, 5.43–5.44
    - researchers in, 3.6, 3.60–3.61
    - sources of S&T information used by public in, 7.18
    - students from, in United States, 2.5
    - trade, in high-technology goods, 6.32–6.34
    - U.S. patents granted to, 6.40–6.41
    - as U.S. advanced technology product trading partner, 6.35–6.36
    - workers with S&E skills, O.8
  - Space research and technology, R&D, federal funding for, 4.32–4.33
  - Spain
    - first university degrees in S&E, 2.6, 2.39
    - foreign students in, 2.40
    - investment in clean energy technologies, 6.51
    - public concern about climate change, 7.40
    - public interest in S&T, 7.11–7.12
    - R&D performance in, 4.17
    - researchers in, by sex, 3.61
      - U.S. students in, as foreign students, 2.44
  - State Indicators (Chapter 8), 8.1–8.129
  - State/local government
    - funding for S&E academic R&D, 5.5, 5.12
    - research article output/production, 5.37–5.40, 5.46–5.47
    - S&E workforce employed in, 3.19–3.21, 3.23
  - Stay rate(s), 3.51
    - for U.S. S&E doctorate recipients, 3.6, 3.55–3.58
  - Stem cell research
    - public attitudes about, 7.5, 7.44–7.45
    - public policy on, influence of scientific experts on, public assessment of, 7.37
  - STEM education
    - K–12, monitoring progress in, 1.8–1.9
    - retention of undergraduates in, 2.22–2.23
    - teacher training and retention for, 100Kin10 program, 1.34
  - STTR. *See* Small Business Technology Transfer
  - Student aid. *See* Financial aid
  - Student debt, 2.4
    - graduate, 2.4, 2.19–2.20
    - undergraduate, 2.4, 2.16–2.17
  - Student Exchange Visitor Information System (SEVIS), 2.23, 2.29
  - Sweden
    - foreign students in, 2.43
    - information and communication technology infrastructure in, 6.15
    - public interest in S&T, 7.12
    - R&D intensity, 4.4, 4.18
    - R&D performance, O.5
    - researchers in, 3.60–3.61
  - Switzerland
    - foreign students in, 2.43
    - multinational companies based in, R&D performed by U.S. affiliates of, 4.26–4.27
    - R&D intensity, 4.4, 4.18
    - R&D performance, O.5, O.7
- ## T
- Taipei, K–12 students' TIMSS test scores in, 1.4
  - Taiwan
    - doctoral degrees awarded in, by sex, 2.41
    - first university degrees in S&E, 2.6, 2.39
    - high-technology manufacturing in, 6.27, 6.29
    - patenting activity, by technology area, 6.43–6.44
    - R&D intensity, 4.4, 4.18
    - R&D performance, O.5, 4.4, 4.17
    - recipients of U.S. S&E doctorates from, 2.34
    - research article output/production, 5.37, 5.43–5.44
    - researchers in workforce, 3.60
    - trade, in high-technology goods, 6.32–6.34
    - U.S. patents granted to, 6.40–6.41
    - workers with S&E skills, O.8
  - Teacher(s)
    - beginning, attrition among, 1.33–1.34
    - elementary mathematics
      - degrees held by, 1.5, 1.29
      - self-assessment of preparedness to teach, 1.5, 1.30–1.31
    - elementary school, professional development activity, 1.6, 1.31
    - elementary science
      - degrees held by, 1.5, 1.29
      - self-assessment of preparedness to teach, 1.5, 1.30–1.31
    - high school, professional development activity, 1.6, 1.31
    - high school mathematics
      - degrees held by, 1.5, 1.29
      - self-assessment of preparedness to teach, 1.30–1.31
    - high school science
      - degrees held by, 1.5, 1.29

- self-assessment of preparedness to teach, 1.30–1.31
  - K–12, 1.26–1.34
  - middle school, professional development activity, 1.6, 1.31
  - middle school mathematics, self-assessment of preparedness to teach, 1.30–1.31
  - middle school science, self-assessment of preparedness to teach, 1.30–1.31
  - novice, 1.5, 1.27
  - professional development for, 1.6, 1.31–1.32
  - public confidence in, international comparisons, 7.32
  - in schools with high-poverty students, 1.5, 1.27
  - in schools with minority students, 1.5, 1.27
  - secondary, attrition rates, 1.6, 1.33–1.34
  - training, 100Kin10 program, 1.34
  - Teaching assistantships, 2.17
  - Technician(s), S&E, employment projections for, 3.12–3.13
  - Technology. *See also* Industry, Technology, and the Global Marketplace (Chapter 6); Science and Technology: Public Attitudes and Understanding (Chapter 7); *specific technology*
  - Technology transfer, federal
    - activities, 4.43
    - metrics, 4.43
    - programs promoting, 4.5, 4.39–4.46
  - Telecommunications services, patents granted in, 6.42
  - international comparisons, 6.43
  - Tennessee. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
  - Tenure
    - SEH doctorates with, 3.35–3.37
    - U.S.-trained S&E doctorate holders with, 5.6
  - Tenure-track faculty positions, O.15
  - recent doctorate recipients and, 3.35, 3.37
  - Tertiary degree(s), 2.38
  - Tertiary education, internationally mobile students enrolled in, international comparisons, O.9, 2.6, 2.42–2.44
  - Tertiary-type A program, OECD definition of, 1.40
  - Testing, measuring and control instruments
    - employment in, by U.S. multinational companies, 6.38
    - global trade in, 6.31, 6.33
    - innovation in, O.12, 6.39
    - patents in, 6.41
    - U.S. direct investment abroad in, 6.38
    - U.S. multinational companies in, 6.37–6.38
    - U.S. production of, 6.28
  - Texas. *See also* State Indicators (Chapter 8)
  - R&D performance in, 4.12–4.13
  - Thailand
    - foreign students from, 2.44
    - R&D performance in, 4.17
    - research article output/production, 5.37
  - Trade, 6.5–6.6. *See also* Industry, Technology, and the Global Marketplace (Chapter 6)
  - international, 6.5–6.6. *See also* Globalization
  - measured in value-added terms, 6.34
  - Trade balance(s), U.S.
    - in advanced technology products, 6.35–6.36
    - in iPhones, 6.34
  - Trade deficit(s)
    - EU, in information and communication technology products, 6.33
    - U.S.
      - in advanced technology products, 6.6, 6.35–6.36
      - in high-technology products, 6.6
      - in information and communication technology products, 6.33
  - Trade in Value Added (TiVA), OECD/WTO initiative, 6.34
  - Trade surplus(es)
    - Chinese, in high-technology goods, 6.32–6.33
  - EU
    - in business services, 6.31
    - in commercial knowledge-intensive services, 6.31
    - in high-technology goods, 6.33
    - in knowledge-intensive services, 6.5
  - U.S.
    - in advanced technology products, 6.35–6.36
    - in business services, 6.30–6.31
    - in commercial knowledge-intensive services, 6.30–6.31
    - in high-technology goods, 6.33
  - Traineeships, 2.17–2.19
  - Training, work-related, of S&E labor force, 3.15, 3.26–3.28
  - Transport and storage, in global marketplace, 6.8–6.9
  - Transportation, Department of (DOT), R&D expenditures, 4.5, 4.36
  - Transportation equipment manufacturing
    - domestic R&D performance, 4.23
    - multinational companies in, R&D performed by affiliates of, 4.27, 4.29
    - R&D for, cross-national comparisons, 4.30
    - R&D funding, 4.23
  - Trends in International Mathematics and Science Study (TIMSS)
    - K–12 students' test scores, international comparisons, 1.4, 1.17–1.19
    - mathematics performance of students in grades 4 and 8, 1.18
    - performance trends, 1.19
    - science performance of students in grades 4 and 8, 1.18–1.19
  - Triadic patent(s), O.11, 6.44–6.45
    - EU share of, 6.6, 6.44–6.45
    - Japan's share of, 6.6, 6.44–6.45
    - U.S. share of, 6.6, 6.44–6.45
  - Tuition and fees. *See also* Student debt
    - for colleges and universities, trends in, 2.15
    - at community colleges, 2.14
    - in private 4-year colleges, 2.15
    - at public institutions, comparison, 2.15
    - at public 2-year colleges, 2.15
    - at public 4-year colleges, 2.15
    - in U.S. higher education, 2.4
  - Tunisia, research article output/production, 5.37
  - Turkey
    - first university degrees in S&E, 2.6, 2.39
    - foreign students from, 2.44
    - information and communication technology in, 6.16–6.17
    - KTI economic activity in, O.3, 6.5, 6.7, 6.14
    - recipients of U.S. S&E doctorates from, 2.37
    - research article output/production, preferred collaboration partners, 5.43
    - researchers in, by sex, 3.61
- ## U
- Undergraduate education. *See also* Higher Education in Science and Engineering (Chapter 2)
  - financial support for, 2.15–2.16
  - Underrepresented minority(ies). *See also* American Indian(s) or Alaska Native(s); Black(s) or African American(s); Hispanics
  - in academic S&E doctoral employment, 5.6, 5.27–5.28
  - doctoral degrees awarded, 2.32–2.33
  - female, in academic S&E doctoral employment, 5.27
  - graduate enrollment, 2.28
  - master's degrees earned, 2.30
  - in S&E labor force, 3.6, 3.43, 3.45–3.47, 3.49
  - Unemployment
    - alternative measures of, 3.29–3.30
    - career stage and, 3.28–3.29
    - in entire labor force, compared to S&E labor force, 3.28–3.30
    - global economic downturn and, 3.28–3.30
    - and graduate enrollment by field, 2.27

- highest degree and, 3.28–3.29
  - non-S&E occupations and, 3.28–3.29
  - of recent doctorate recipients, 3.35
  - recent S&E graduates and, 3.34
  - S&E occupations and, 3.5, 3.28–3.29
  - UNESCO. *See* United Nations Educational, Scientific and Cultural Organization (UNESCO)
  - United Kingdom
    - business R&D in, distribution by industry, 4.29–4.30
    - defense R&D in, distribution by industry, 4.30
    - as destination for foreign students, 2.6
    - doctoral degrees awarded in, numbers, 2.6, 2.41
    - expenditures on higher education, 2.38
    - first university degrees in S&E, 2.6, 2.39
    - foreign students in, 0.9, 2.40, 2.42–2.43
    - government R&D support, by socioeconomic objectives, 4.39
    - high-skill emigrants in, 3.58
    - information and communication technology in, 6.15, 6.17
    - investment in clean energy technologies, 6.51
    - KTI economic activity in, 0.4, 6.13–6.14
    - multinational companies based in, R&D performed by affiliates of, 4.26–4.29
    - public attitudes
      - about nanotechnology, 7.44
      - about nuclear energy, 7.43
    - public interest in S&T, 7.11–7.12
    - public views on cause of climate change, 7.41
    - public's general attitudes about science in, 7.30
    - R&D in, 0.5, 0.7, 4.17–4.18, 4.20–4.21
    - R&D intensity, 4.4, 4.20
    - recipients of U.S. S&E doctorates from, 2.34–2.35
    - research article output/production, 5.37, 5.42, 5.44
    - sources of S&T information used by public in, 7.17
    - U.S. students in, as foreign students, 2.44
  - United Nations Educational, Scientific and Cultural Organization (UNESCO), R&D data, 4.16
  - United States
    - basic research in, 4.21–4.22
    - business R&D in, distribution by industry, 4.29–4.30
    - commercial knowledge-intensive services, 6.21–6.25
    - currency exchange rate, 6.24
    - defense R&D in, 4.5, 4.30, 4.32
    - as destination for foreign students, 2.6
    - doctoral degrees awarded in, 2.6, 2.41
    - expenditures on higher education, 2.37–2.38
    - first university degrees in S&E, 0.8, 2.6, 2.39
    - foreign students in, 0.9, 2.6, 2.42–2.44
    - GDP per capita in, 6.20
    - as global provider of knowledge-intensive services, 6.5
    - government R&D support, by socioeconomic objectives, 4.39
    - high-skill migration to, 3.58
    - high-technology manufacturing in, 6.5, 6.26–6.29
      - employment in, 6.26–6.28
      - R&D funding, 6.26
      - skilled workers in, 6.26
    - information and communication technology in, 6.15–6.17
    - intellectual property trade, 0.12–0.13, 6.45
    - investment in clean energy technologies, 6.6, 6.51
    - knowledge-intensive services exports, 6.5
    - KTI share of economy, 0.3–0.4, 6.5, 6.13–6.14
    - labor productivity growth in, 6.5, 6.18–6.20
    - in non-knowledge-intensive services industries, 6.8–6.9
    - in nonmanufacturing and nonservices industries, 6.9
    - number of researchers in, 0.7–0.8
    - patenting activity, 0.11–0.12
      - in clean energy and pollution control, 6.53–6.55
      - by technology area, 6.42–6.44
    - R&D funding, 0.19–0.20, 4.6–4.9, 4.21–4.22
    - R&D intensity, 4.4, 4.6–4.9, 4.18–4.20
    - R&D performance, 0.5–0.6, 4.4, 4.17–4.18
    - R&D performers, 4.20–4.21
    - RD&D investment for clean energy technologies, 6.6, 6.52–6.53
    - research article output/production, 0.10, 5.6, 5.35–5.40, 5.42–5.44
    - researchers in, 3.6, 3.60
    - students from
      - as foreign students, 2.44
      - in study-abroad programs, 2.44
    - tertiary education attainment in, 2.38
    - trade
      - in advanced technology products, 6.6, 6.34–6.36
      - in business services, 6.30–6.31
      - in commercial knowledge-intensive services, 6.30–6.31
      - in high-technology goods, 6.6, 6.32–6.33
      - KTI, 6.29
      - in R&D services, 6.31–6.32
      - in royalties and fees, 0.12–0.13, 6.45
      - in value-added indicators, 6.34
    - value added for manufacturing industries, 6.9
  - University(ies). *See also* Academia; Higher education
    - Carnegie classification of, 2.8
    - institutional funding for S&E academic R&D, 5.11
    - international, branch campuses, 2.42
    - patents granted to, 5.54–5.55
    - private
      - revenues and expenditures, 2.13
      - support for academic R&D, 5.16
    - public
      - revenues and expenditures, 2.4, 2.13
      - support for academic R&D, 5.16
    - research-intensive
      - doctorate granting by, 0.15, 2.4
      - NRC recommendations for strengthening, 5.12
      - R&D performance, 0.16
      - revenues and expenditures, 0.15–0.16, 2.4, 2.13, 5.5
  - USDA. *See* Agriculture, Department of (USDA)
  - USPTO. *See* Patent and Trademark Office (USPTO)
  - Utah. *See* State Indicators (Chapter 8)
  - Utility(ies), in global marketplace, 6.8–6.9
- ## V
- VA. *See* Veterans Affairs
  - Value added, 6.12
    - of high-technology manufacturing, 6.25
    - indicators, trade measured in, 6.34
    - in knowledge-intensive services, 6.5
    - for manufacturing industries, 6.9
    - metrics, 6.12
    - for selected industries, 6.8–6.9
    - for service industries, by region/country/economy, 6.21–6.23
  - Venture capital investment
    - in clean energy technologies, 6.6, 6.51–6.52
    - in U.S. small business, 6.47–6.48
  - Vermont. *See* State Indicators (Chapter 8)
  - Veterans Affairs, R&D expenditures, 4.36
  - Veterans benefits, R&D, federal funding for, 4.32–4.33
  - Vietnam
    - foreign students from, 2.44
    - trade, in high-technology goods, 6.33
  - Virginia. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13
  - Visa(s)
    - H1-B, 3.54–3.55

- J-1, 3.54
  - L-1, 3.54
  - SEVIS, 2.29
  - student (temporary). *See also* Foreign students
    - and doctorates earned, 2.5, 2.33–2.34
    - and undergraduate degrees earned, 2.27
  - work (temporary), trends in, 3.6, 3.54–3.55
- W**
- Washington. *See also* State Indicators (Chapter 8)
    - R&D performance in, 4.12–4.13
  - West Virginia. *See* State Indicators (Chapter 8)
  - White(s)
    - doctoral degrees awarded, 2.33
    - graduate enrollment, 2.28
    - K–12 students' performance in mathematics and science, 1.4
    - master's degrees earned, 2.30
    - ninth graders, math coursetaking, 1.21–1.22
    - on-time graduation from high school, 1.6, 1.38
    - and performance gaps in grades 4 and 8, 1.15–1.16
    - in S&E labor force, 3.6, 3.45–3.47
  - Wind energy
    - investment in, 6.49–6.51
    - patenting activity, 6.53–6.55
    - patents potentially applicable to, identification of, 5.52–5.54
    - public attitudes about, U.S. patterns and trends, 7.42–7.43
    - public RD&D expenditures in, 6.52–6.53
  - Wisconsin. *See* State Indicators (Chapter 8)
  - Women
    - academic rank of, 5.6, 5.26–5.27
    - in academic S&E workforce, 5.6, 5.26–5.27
    - age distribution in labor force, 3.41
    - doctoral degrees awarded to, 2.6, 2.32, 2.41
    - as doctoral S&E faculty, 5.6, 5.26–5.27
    - as employed S&E highest degree holders, 3.44–3.45
    - field of work, 5.27
    - foreign-trained, 5.27
    - graduate enrollment, 2.5
    - as high-skill migrants, 3.58
    - labor force nonparticipation rates, 3.45
    - master's degrees earned, 2.5, 2.29
    - occupations of, 3.43–3.44
    - out of field employment, 3.45
    - as postdocs in academic employment, 5.31
    - as researchers, international comparisons, 3.61
    - salaries for, 3.49–3.51
    - and S&E degrees, O.16–O.17, 2.4
    - in S&E labor force, O.17, 3.6, 3.41, 3.43–3.45, 3.49–3.51
    - work-related training of, 3.27
  - Workforce. *See also* Labor force, S&E; Science and Engineering Labor Force (Chapter 3)
    - S&E, definition of, 3.7–3.10
  - World Bank, economic classification of countries, 6.10
  - World Trade Organization (WTO), estimate of trade in value-added terms, 6.34
  - Wyoming. *See* State Indicators (Chapter 8)