



2017

Women, Minorities, and Persons with Disabilities in Science and Engineering

National Center for Science and Engineering Statistics
Directorate for Social, Behavioral and Economic Sciences

NATIONAL SCIENCE FOUNDATION





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About this report

Women, Minorities, and Persons with Disabilities in Science and Engineering provides statistical information about the participation of these three groups in science and engineering education and employment. Its primary purpose is to serve as a statistical abstract with no endorsement of or recommendations about policies or programs. National Science Foundation reporting on this topic is mandated by the Science and Engineering Equal Opportunities Act (Public Law 96-516).

This digest highlights key statistics drawn from a wide variety of data sources. Data and figures in this digest are organized into five topical areas—enrollment, field of degree, occupation, employment status, and early career doctorate holders.

Surveys conducted by the National Center for Science and Engineering Statistics (NCSES) at the National Science Foundation provided a large portion of the data used in this report. NCSES has a central role in the collection, interpretation, analysis, and dissemination of objective data on the science and engineering enterprise.

Online

Online, the reader is invited to explore trends in greater depth through detailed data tables and interactive graphics (www.nsf.gov/statistics/wmpd/). Technical notes and other online resources are provided to aid in interpretation of the data. The data tables are available in both PDF and Excel files for easy viewing, printing, and downloading.



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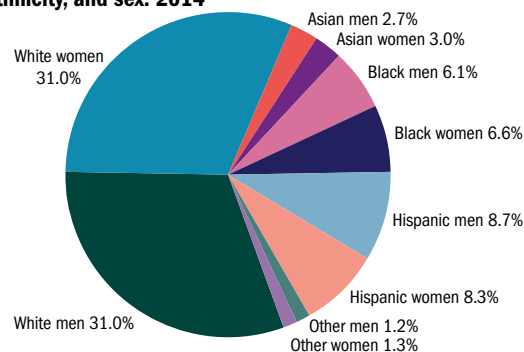
Introduction

The representation of certain groups of people in science and engineering (S&E) education and employment differs from their representation in the U.S. population. Women, persons with disabilities, and three racial and ethnic groups—blacks, Hispanics, and American Indians or Alaska Natives—are underrepresented in S&E. While women have reached parity with men among S&E degree recipients overall, they constitute disproportionately smaller percentages of employed scientists and engineers than they do of the U.S. population. Blacks, Hispanics, and American Indians or Alaska Natives have gradually increased their share of S&E degrees, but they remain underrepresented in educational attainment and the S&E workforce. By contrast, Asians are overrepresented among S&E degree recipients and employed scientists and engineers.

Underrepresentation and overrepresentation of women and racial or ethnic groups vary by field of study and occupation. Variations in the representation of these groups are rooted in differences in precollege course taking, participation in S&E higher education, and overall educational attainment.

Women and underrepresented minorities constituted a substantial portion of the U.S. population ages 18 to 64 years in 2014 (figure A). Women were about 50% of this population; Hispanics, 17%; blacks, 13%; Asians, 6%;

Noninstitutionalized resident population of the United States ages 18–64, by race, ethnicity, and sex: 2014



NOTES: Hispanic may be any race. Other includes individuals not of Hispanic ethnicity who reported more than one race or a race not listed separately.

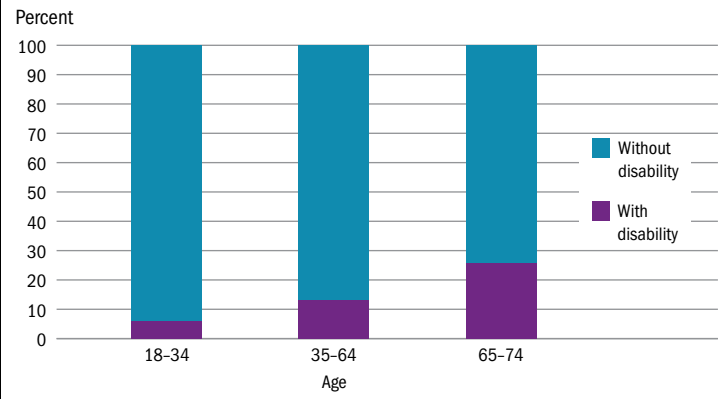
and other racial and ethnic groups combined (American Indians or Alaska Natives, Native Hawaiians or Other Pacific Islanders, and individuals who report more than one race and are not Hispanic), 2%. According to the latest Census Bureau projections, minorities will account for 56% of the U.S. population by 2060. The largest growth is projected in the numbers of Hispanics, Asians, and persons of multiple races. Despite increasing numbers, the proportion of blacks is projected to grow only 1 percentage point by 2060.

Hispanic women were the largest group of minority women ages 18 to 64 years in the United States in 2014, constituting 8% of the overall population in this age group. Black women constituted 7% of this population; Asian women,

3%; women of all other minority racial and ethnic groups combined, 1%; and white women, 31%.

Estimates of the proportion of the population with disabilities vary depending on the definition of the term “disability.” According to the Census Bureau’s 2014 American Community Survey, 13% of the U.S. population has some disability; this population varies by age (figure B). Disabilities do not necessarily limit a person’s ability to participate in educational experiences or to be productive in an occupation. Persons with disabilities may or may not require special accommodation to enable them to succeed in school or at work.

U.S. civilian noninstitutionalized population ages 18-74, by disability status: 2014



1 Enrollment

Recent trends in undergraduate enrollment reflect the increasing diversity of the U.S. college-age population, as Asian and Hispanic shares of the population grow. Most notably, underrepresented minorities, Hispanics in particular, are an increasing fraction of undergraduate students, and whites are a decreasing fraction. In all racial and ethnic groups, more women than men enroll in college.

UNDERGRADUATE ENROLLMENT

Type of school

Enrollment patterns differ among the various racial and ethnic groups. Hispanics, American Indians or Alaska Natives, and Native Hawaiians or Other Pacific Islanders are more likely than other racial or ethnic groups to enroll in public 2-year colleges. Blacks and Native Hawaiians or Other Pacific Islanders are more likely than other racial or ethnic groups to enroll in private, for-profit academic institutions. Whites, Asians, and students reporting two or more races are more likely to enroll in 4-year public institutions. White students are also more likely to enroll in private, nonprofit institutions (figure A).

In each racial and ethnic group, women and men tend to enroll in similar types of schools. However, black women and Native Hawaiian or Other Pacific Islander women are more likely than their male counterparts to enroll in private, for-profit institutions.

Full-time study

The proportion of students enrolled full time is higher in 4-year institutions than in 2-year institutions. At 2-year institutions, women are less likely than their male counterparts to enroll full time. Full-time enrollment at 4-year institutions is less common among blacks and American Indians or Alaska Natives than among whites, Asians, and Hispanics (figure B).

MINORITY-SERVING INSTITUTIONS

Many underrepresented minority undergraduates are the first in their family to go to college, and minority-serving academic institutions enroll a substantial fraction of these students. However, the percentage of blacks earning science and engineering (S&E) bachelor's degrees from historically black colleges or universities (HBCUs) and the percentage of Hispanics earning S&E bachelor's degrees from high-Hispanic-enrollment institutions (HHEs) have both declined over time. Tribal colleges, which mainly offer 2-year degrees, account for a small percentage of S&E bachelor's degrees to American Indians. This proportion has been on a slight upward trend in the past 4 years (figure C).

BACCALAUREATE ORIGINS OF BLACK DOCTORATE RECIPIENTS

Black S&E doctorate recipients from U.S. universities complete their undergraduate degrees at many kinds of institutions. Nearly 30% earned a bachelor's degree from an HBCU, one of the most common types of baccalaureate institutions for black S&E doctorate recipients. HBCUs are especially important baccalaureate-origin institutions of black doctorate recipients in agricultural sciences; earth, atmospheric, and ocean sciences; mathematics; biological sciences; and physical sciences (figure D).

BACCALAUREATE ORIGINS OF HISPANIC DOCTORATE RECIPIENTS

HHEs play an important role in training Hispanic students for doctoral studies in S&E. More than one-third of Hispanic doctorate recipients earned their bachelor's degree from an HHE. These institutions are important baccalaureate origins of Hispanic doctorate recipients in agricultural sciences, physical sciences, psychology, mathematics, and biological sciences (figure E).

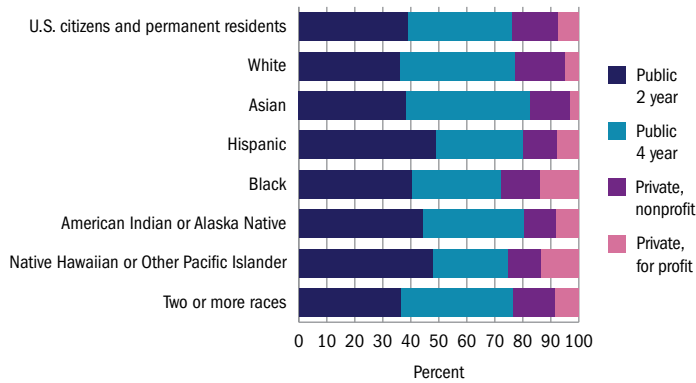
STUDENTS WITH DISABILITIES

In 2012, about 11% of undergraduate students reported a disability. Undergraduates with disabilities are older than those without disabilities and are slightly more likely to attend a 2-year institution (figure F).

In addition, nearly one in four undergraduates with a disability enrolls in an S&E field, a proportion that is similar to those without disabilities. Undergraduates with disabilities are as likely as those without a disability to receive financial aid.

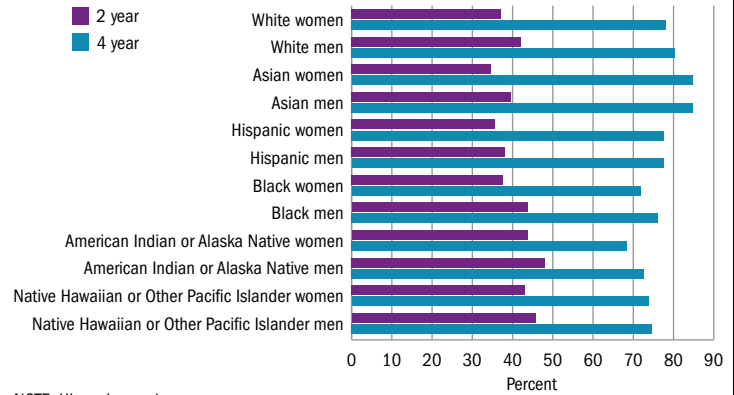
About 7% of graduate students reported a disability in 2012. Graduate students with disabilities are as likely as those without disabilities to enroll in an S&E field (about 20%).

A Undergraduate enrollment, by type of school: 2014



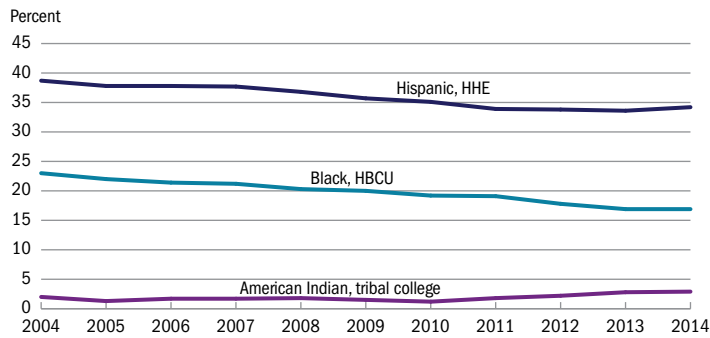
NOTE: Hispanic may be any race.

B Full-time enrollment among undergraduates, by institution type: 2014



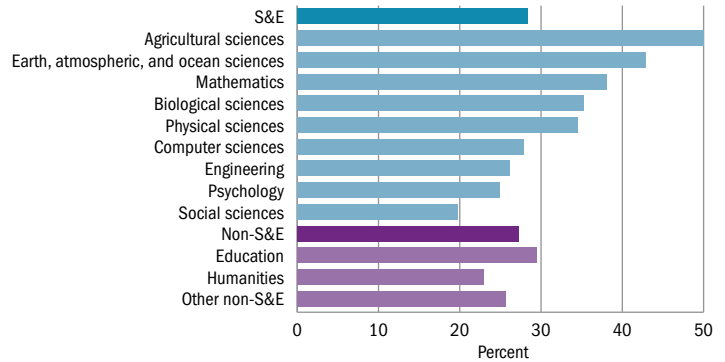
NOTE: Hispanic may be any race.

C Minorities earning science and engineering bachelor's degrees at minority-serving institutions, by institution type: 2004-14



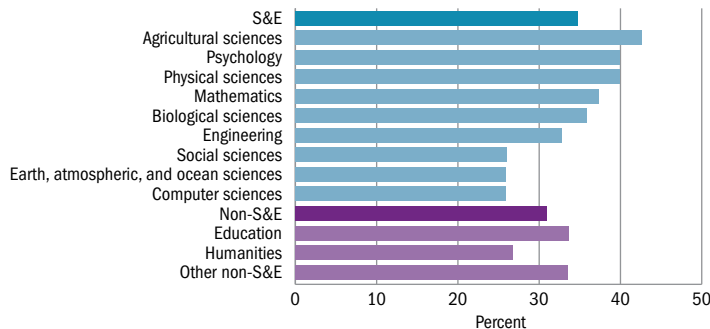
HBCU = historically black college or university; HHE = high-Hispanic-enrollment institution.
NOTE: Hispanic may be any race.

D Black doctorate recipients with HBCU baccalaureate origins, by field: 2010-14, aggregate



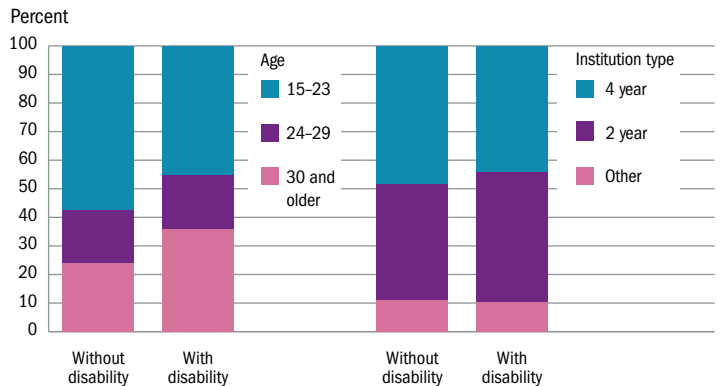
HBCU = historically black college or university.

E Hispanic doctorate recipients with HHE baccalaureate origins, by field: 2010-14, aggregate



HHE = high-Hispanic-enrollment institution.
NOTE: Hispanic may be any race.

F Disability status of undergraduate students, by age and institution type: 2012



2 Field of degree: Women

Women have earned 57% of all bachelor's degrees and about half of all science and engineering (S&E) bachelor's degrees since the late 1990s. However, women's level of participation in S&E fields varies, and within fields it tends to be consistent over every degree level. In most fields, the proportion of degrees awarded to women has risen since 1995. The proportion of women is lowest in engineering, computer sciences, and physics. Women earn just over one-third of the doctorates in economics and slightly more than one-fourth of the doctorates in mathematics and statistics.

PSYCHOLOGY, BIOSCIENCES, AND SOCIAL SCIENCES

Women's participation in S&E fields is highest in psychology, where women account for 70% or more of the graduates at each degree level. Women's participation is also relatively high in biosciences and social sciences (except for economics). In 2014, the proportion of women in biosciences and social sciences ranged between 51% and 58%, depending on the field and degree level (figure A).

ENGINEERING

Although the number of women earning degrees in engineering has increased in the past 20 years, women's participation remains well below that of men at all degree levels and in all fine fields of engineering. Since 1995, the proportion of women earning degrees in engineering has increased at all levels, mostly at the master's and doctoral levels (figure B). In general, women earn larger proportions of degrees in chemical, materials, industrial, and civil engineering than in aerospace, electrical, and mechanical engineering.

COMPUTER SCIENCES

In the past 20 years, the number of women in computer sciences has risen at all degree levels. The proportion of women with degrees in computer sciences has increased slightly at the master's and doctoral level but has declined at the bachelor's level. In the past 10 years, both the number and proportion of computer sciences bachelor's degrees earned by women has declined. The proportion of women in computer sciences is highest at the master's level (figure C).

MATHEMATICS AND STATISTICS

In 2014, women's representation in mathematics and statistics reached more than 40% at the bachelor's and master's levels but remained below 30% at the doctoral level. At all degree levels the percentage of women in mathematics and statistics is higher than the corresponding percentage of women in engineering and computer sciences. Despite increases in the numbers of women earning degrees in mathematics and statistics since 2004, the proportion of women has declined at the bachelor's and master's levels (figure D).

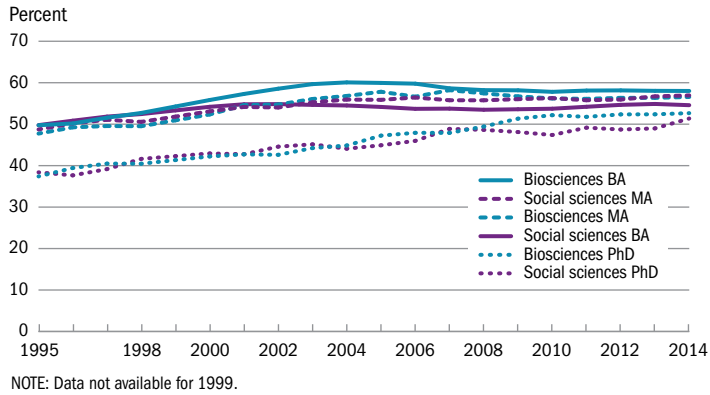
PHYSICS

Despite increases in the number of women earning degrees in physics, the proportion of women in this field, averaging about 20% across all degree levels, is the lowest of all the physical sciences. In the past 20 years, the proportion of women earning degrees in physics has increased more at the master's and doctoral levels than at the bachelor's level, but the numbers of women in this field remain very small (figure E).

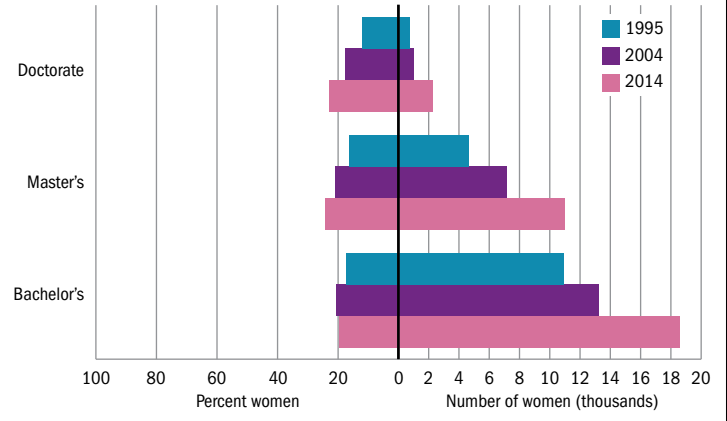
ECONOMICS

Within the social sciences, women's participation is lowest in economics. In the past 2 decades, the number of women earning degrees in economics has increased at all degree levels. Despite the increase in numbers, over the past decade, the proportion of degrees in economics awarded to women has declined at the bachelor's level. Women's share of degrees in economics has increased at the master's and doctoral levels (figure F).

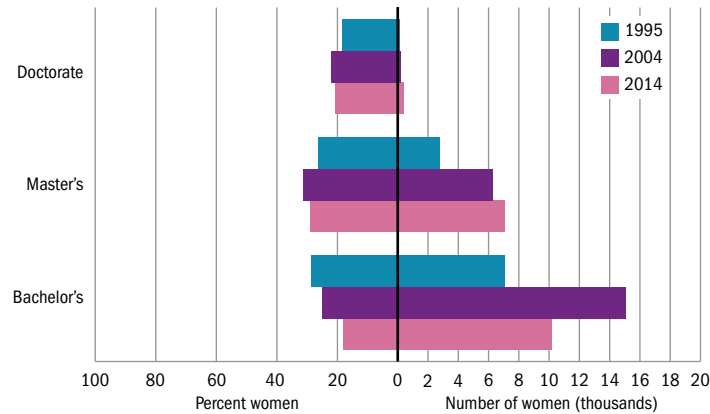
A High participation fields for women: Biosciences and social sciences, 1995-2014



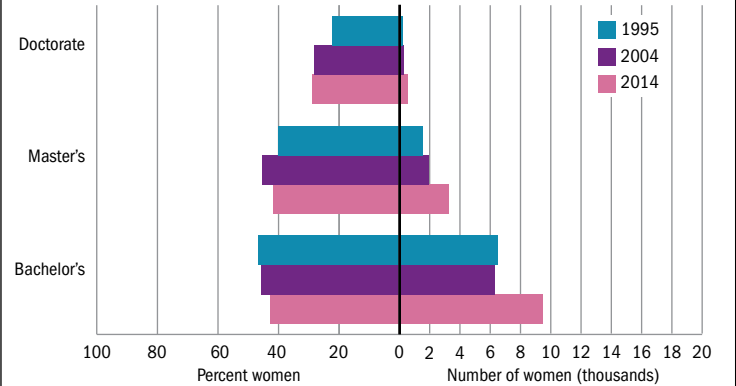
B Low participation field for women: Engineering, 1995, 2004, 2014



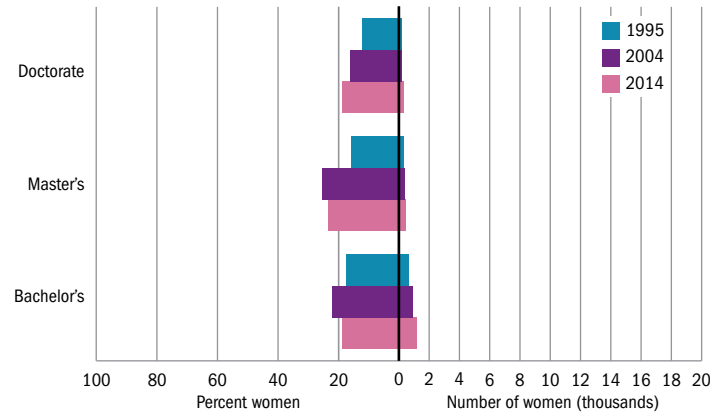
C Low participation field for women: Computer sciences, 1995, 2004, 2014



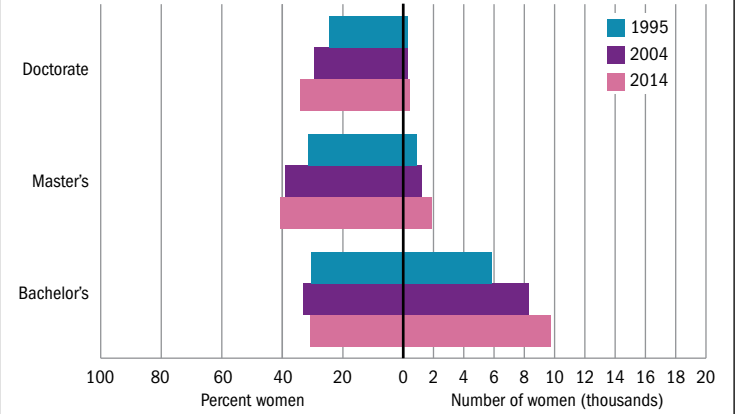
D Low participation field for women: Mathematics and statistics, 1995, 2004, 2014



E Low participation field for women: Physics, 1995, 2004, 2014



F Low participation field for women: Economics, 1995, 2004, 2014



3 Field of degree: Minorities

Despite considerable progress over the past 2 decades, the gap remains wide in educational attainment separating underrepresented minorities from whites and Asians. In general, underrepresented minorities are less likely than whites and Asians to graduate from high school, enroll in college, and earn a college degree. Among underrepresented minorities who do graduate from college, the overall degree patterns are similar to those of whites. Asians are more likely than whites and underrepresented minorities to earn a college degree in a science and engineering (S&E) field. Although whites' share of S&E degrees has declined over the past 2 decades, whites continue to earn a majority of degrees in all broad S&E fields.

DEGREES EARNED BY UNDERREPRESENTED MINORITIES

Overall

In 2014, nearly one in six adults with a bachelor's degree or higher was a member of an underrepresented minority group. Underrepresented minorities, like whites, earn a higher share of non-S&E degrees than of S&E degrees, particularly at the master's and doctoral levels. Underrepresented minorities' share of S&E bachelor's and master's degrees has been rising since 1995. Their share of doctorates in S&E fields was stable at or just under 7% between 2002 and 2010, but it has increased slightly in the past 4 years (figure A).

Bachelor's degrees in science and engineering

Hispanics earn a larger share of bachelor's degrees in psychology and social sciences than in any other S&E field. Since 1995, the greatest increases in the share of S&E bachelor's degrees earned by Hispanics have been in psychology and the social sciences, followed by biological sciences and computer sciences. In the past 20 years, the share of Hispanics in S&E fields has doubled, with the increase accelerating particularly in the past decade (figure B).

Like Hispanics, blacks or African Americans earn larger shares of bachelor's degrees in psychology and social sciences, but they also earn larger shares in computer sciences. In the past

2 decades, their share has increased in psychology, social sciences, and biological sciences but has declined in the other S&E fields, most notably in mathematics and statistics (figure C).

In the past 2 decades, American Indians or Alaska Natives have earned about 1% of the bachelor's degrees in each of the broad science and engineering fields.

DEGREES EARNED BY ASIANS

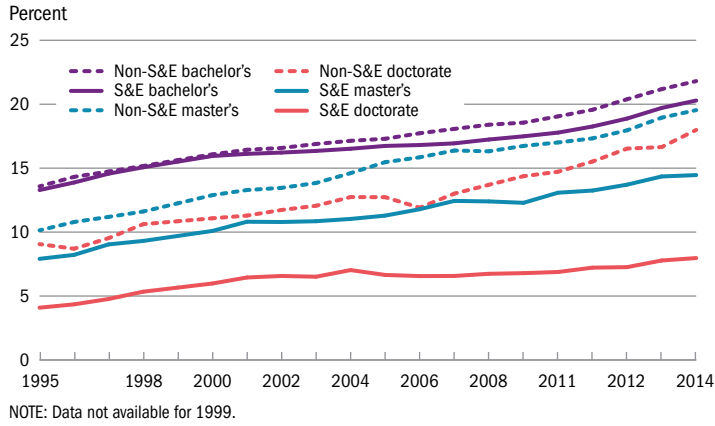
Overall

Unlike underrepresented minorities and whites, Asians earn a higher proportion of S&E degrees than of non-S&E degrees at all degree levels. The share of Asians earning S&E bachelor's degrees rose between 1995 and 2005 and has been relatively steady in the past decade. The share of Asians earning S&E master's and doctoral degrees has been stable between 2000 and 2010 but has declined slightly in recent years (figure D).

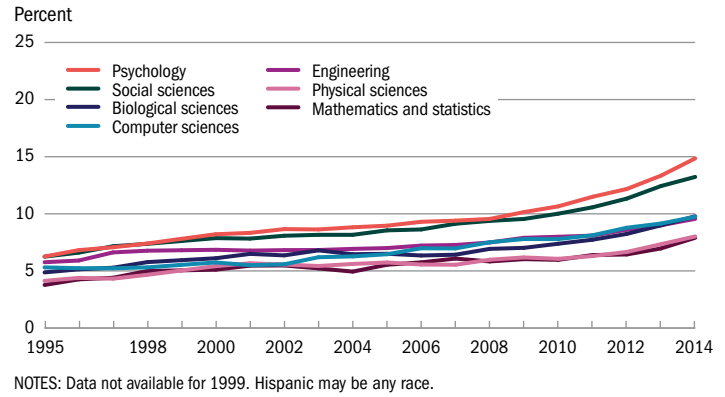
Bachelor's degrees in science and engineering

Although Asians' share of S&E degrees has been fairly steady over the past decade, major shifts by field have occurred in bachelor's degrees: most pronounced are a drop in computer sciences and increases in physical sciences and biological sciences. Asians' share in the other S&E fields has been fairly stable in the past 10 years (figure E).

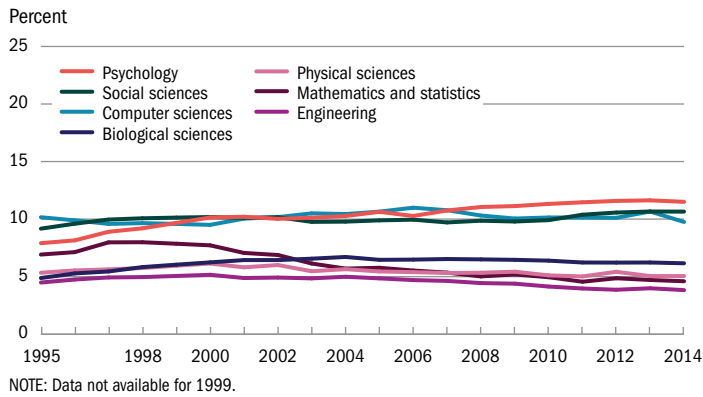
A Degrees earned by underrepresented minorities: 1995-2014



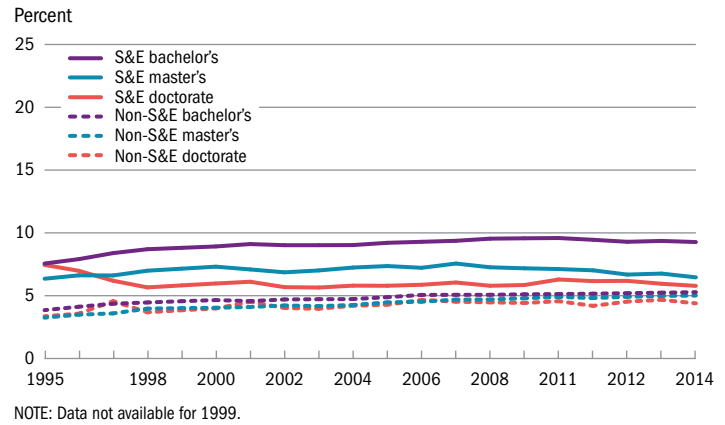
B Science and engineering bachelor's degrees earned by Hispanics, by field: 1995-2014



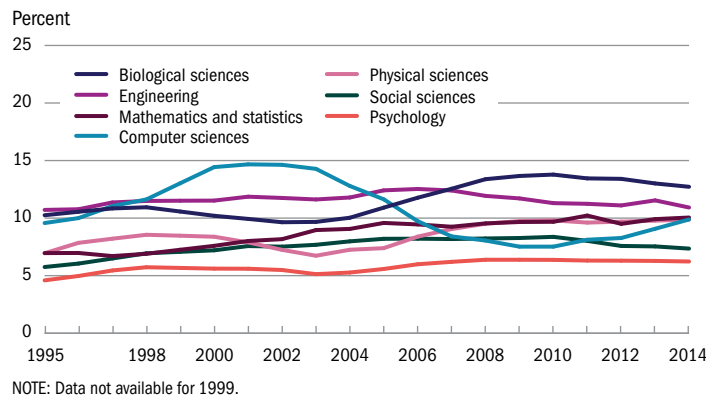
C Science and engineering bachelor's degrees earned by blacks or African Americans, by field: 1995-2014



D Degrees earned by Asians: 1995-2014



E Science and engineering bachelor's degrees earned by Asians, by field: 1995-2014



4

Field of degree: Women, men, and racial and ethnic groups

In 2014, underrepresented minority women earned more than half of the science and engineering (S&E) degrees awarded to their respective racial and ethnic groups. White and Asian women earned nearly half of the S&E degrees awarded to their respective racial and ethnic groups. In most S&E fields of study, the share of bachelor's degrees earned by underrepresented minority women is larger than their shares of master's or doctoral degrees.

DIFFERENCES BETWEEN WOMEN AND MEN

Underrepresented minorities

Underrepresented minority women earn a higher share of S&E degrees than do underrepresented minority men at each degree level, particularly at the bachelor's level. In the past 20 years, the share of underrepresented minority women earning S&E degrees more than doubled at the master's and doctoral degree levels (figure A).

Whites

In contrast to underrepresented minorities, among whites, women earn a lower proportion of S&E degrees than men at all degree levels. The gap is largest at the doctoral level. In 2014, white women earned 19% and white men earned 24% of all S&E doctorates. At all degree levels, white men's share declined steeply from 1995 to 2004, in contrast to white women's share, which declined less steeply at the bachelor's and master's levels and increased slightly at the doctorate level (figure B).

Asians

Among Asians, women and men earn similar proportions of S&E degrees at each degree level. At the bachelor's and master's degree levels, their shares of S&E degrees grew slightly in the late 1990s. In the past 10 years, Asians' share of S&E degrees has remained fairly stable across all degree levels (figure C).

BACHELOR'S DEGREES

Hispanic women

Hispanic women earn a higher share of bachelor's degrees in psychology, social sciences, and biological sciences than in any other S&E field. The share of the bachelor's degrees they

earn in these three broad fields has increased rapidly since 1995. The share of bachelor's degrees Hispanic women earn in engineering is low, but it nearly doubled in the same period. Their share in computer sciences has remained flat at about 2% over the past 20 years (figure D).

Black or African American women

Black or African American women, similar to Hispanic women, earn a higher share of bachelor's degrees in psychology and social sciences than in any other broad S&E field. In the past 20 years, the largest increase in the share of bachelor's degrees black women earn was in psychology, followed by social and biological sciences. Their share of bachelor's degrees has declined in computer sciences, mathematics and statistics, and engineering (figure E).

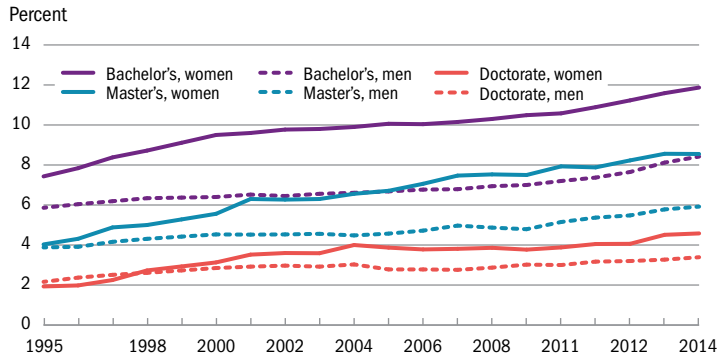
American Indian or Alaska Native women

American Indian or Alaska Native women have earned about 1,800 S&E bachelor's degrees each year over the past decade. They earn larger numbers of bachelor's degrees in the social sciences, psychology, and biological sciences (about 600, 500, and 400, respectively, in each of these broad fields) than in engineering, physical sciences, computer sciences, and mathematics and statistics (between 30 and 80 bachelor's degrees in each of these fields).

Asian women

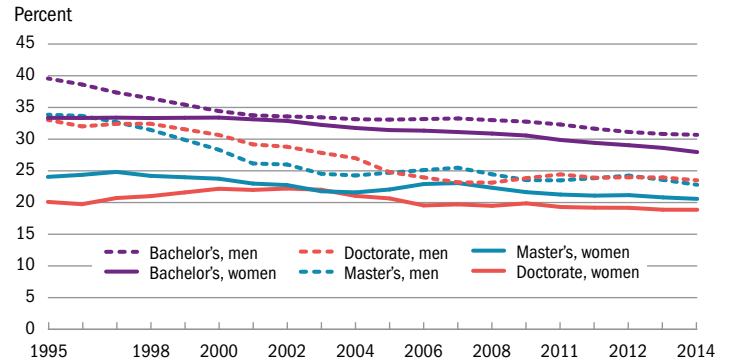
Asian women earn their highest share of bachelor's degrees in biological sciences and their lowest in computer sciences and engineering. Since 1995, the share of bachelor's degrees awarded to Asian women has grown in all broad S&E fields except for computer sciences. The largest increases are in the biological and physical sciences, and the smallest increase is in engineering (figure F).

A Science and engineering degrees earned by underrepresented minority women and men: 1995-2014



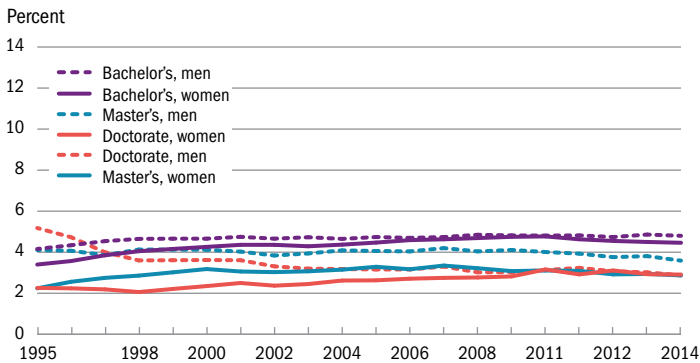
NOTE: Data not available for 1999.

B Science and engineering degrees earned by white women and men: 1995-2014



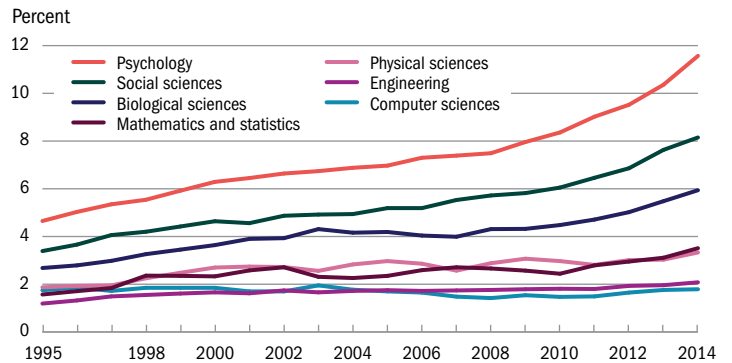
NOTE: Data not available for 1999.

C Science and engineering degrees earned by Asian women and men: 1995-2014



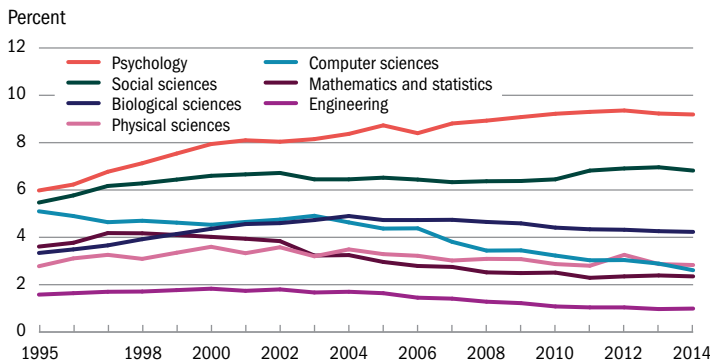
NOTE: Data not available for 1999.

D Science and engineering bachelor's degrees earned by Hispanic women, by field: 1995-2014



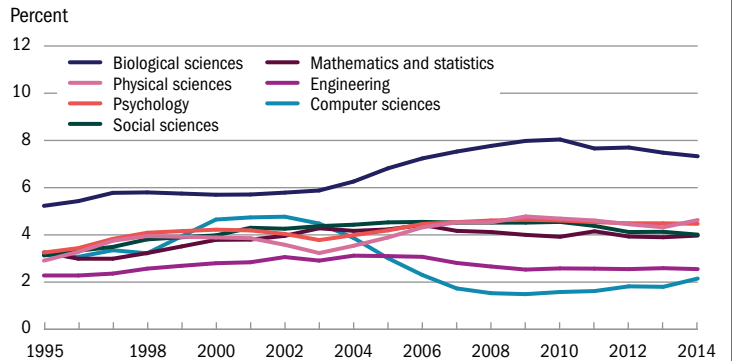
NOTES: Data not available for 1999. Hispanic may be any race.

E Science and engineering bachelor's degrees earned by black or African American women, by field: 1995-2014



NOTE: Data not available for 1999.

F Science and engineering bachelor's degrees earned by Asian women, by field: 1995-2014



NOTE: Data not available for 1999.

5 Occupation

The science and engineering (S&E) workforce is composed largely of people who earned S&E degrees over roughly four decades. Because older cohorts of S&E workers are disproportionately white and male, women and minorities constitute a smaller percentage of the overall S&E workforce than of degree recipients who recently joined the workforce. Persons with disabilities are also underrepresented in the S&E workforce, compared with the college-educated population as a whole.

OVERALL TRENDS

White men constitute about one-half of scientists and engineers employed in S&E occupations. In all racial and ethnic groups, more men than women work in S&E occupations. Together, Asian and underrepresented minority women comprise about 1 in 10 persons employed in S&E occupations (figure A).

EMPLOYMENT SECTOR

The business sector employs the vast majority of S&E workers, regardless of gender, race, ethnicity, or disability status. Within each racial and ethnic group, men are more likely than women to be employed in the business sector and women are more likely than men to work in educational institutions (figure B). Within the business sector, the for-profit sector employs 43% of female and 64% of male scientists and engineers.

Scientists and engineers with disabilities are slightly more likely than those without disabilities to be employed by the government (figure C).

WOMEN

Women's participation in the S&E workforce varies greatly by occupation. Women are more likely than men to be employed as psychologists or as technologists and technicians in the life

sciences. Although women are more likely than men to work in a health-related occupation, they are less likely to work as a health diagnosing and treating practitioner, such as a physician, surgeon, or dentist (figure D).

RACE AND ETHNICITY

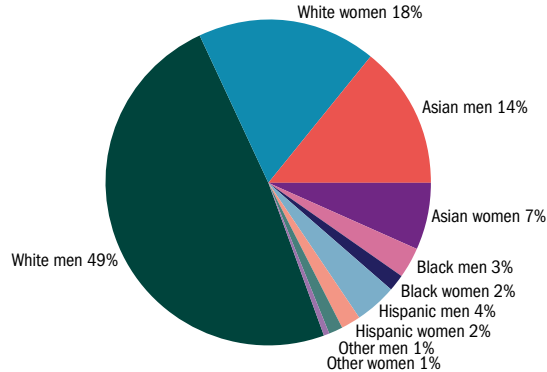
Blacks

Blacks are underrepresented in S&E occupations. That is, a smaller proportion of blacks are in S&E occupations than are in the U.S. workforce as a whole (5% versus 12%). Among S&E occupations, blacks constitute a large share of social scientists and computer system analysts. Among non-S&E occupations, blacks account for a relatively large share of social workers; personnel, training, and labor relations specialists; and counselors (figure E).

Hispanics

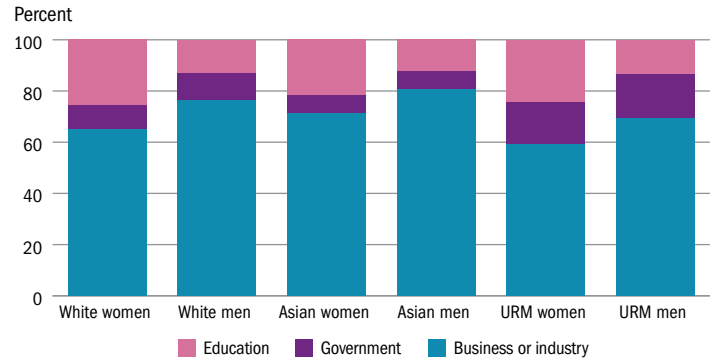
Like blacks, Hispanics make up a smaller proportion of workers in S&E occupations than of the U.S. workforce as a whole (6% versus 16%). Relative to their share of S&E occupations, Hispanic scientists and engineers hold larger shares of S&E-related and non-S&E occupations. Hispanics constitute larger shares of those employed as social workers or health technologists or technicians than they do of computer and math scientists and physical and related scientists (figure F).

A Scientists and engineers working in science and engineering occupations: 2015



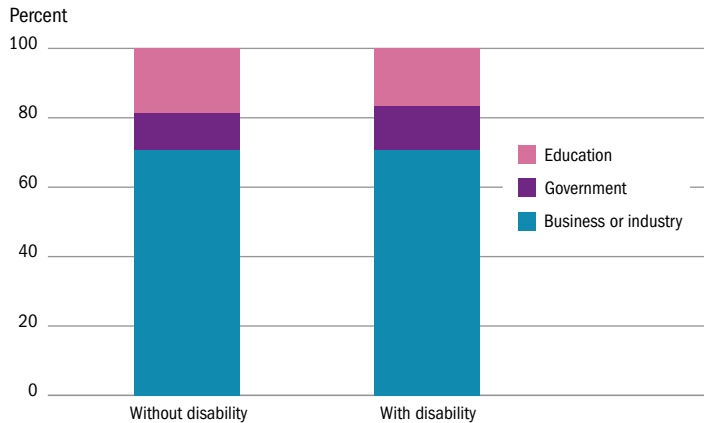
NOTES: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.

B Employment sector of scientists and engineers, by sex, race, and ethnicity: 2015

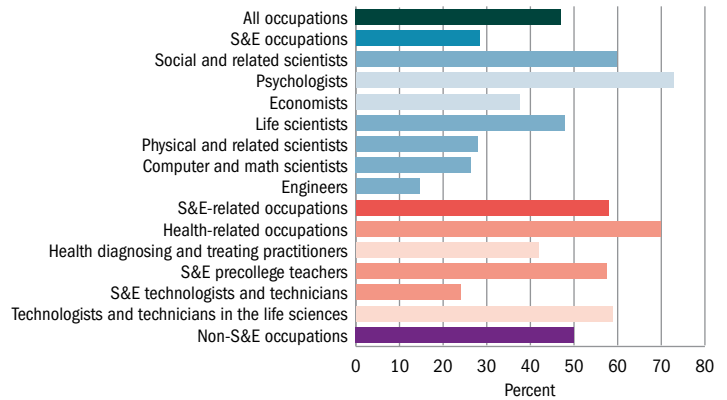


URM = underrepresented minority.

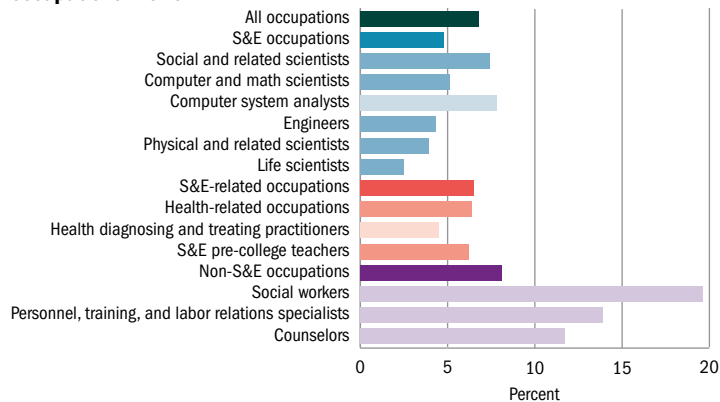
C Employment sector of scientists and engineers, by disability status: 2015



D Employed women scientists and engineers, as a percentage of selected occupations: 2015



E Employed black scientists and engineers, as a percentage of selected occupations: 2015



F Employed Hispanic scientists and engineers, as a percentage of selected occupations: 2015



NOTE: Hispanic may be any race.

6 Employment status

The unemployment rate is lower for scientists and engineers than for the general population. Variations across racial and ethnic groups in the reasons for not working or for working part time reflect differing age distributions of men and women in the science and engineering (S&E) workforce, as well as differing family responsibilities. Rates of unemployment also vary by disability status. Disability can occur throughout one's life. Disabilities acquired at birth or at an early age may influence decisions to pursue S&E studies; those acquired at later ages may influence opportunities to continue or seek employment.

UNEMPLOYMENT RATES

In 2015, unemployment rates were higher for underrepresented minority women than for all the remaining scientists and engineers combined (figure A). Between 2013 and 2015, the unemployment rate declined among Asian women but remained fairly similar for the other racial and ethnic groups. Overall, the rate fell slightly for all scientists and engineers.

REASONS FOR NOT WORKING

Scientists and engineers are more likely to cite retirement than other reasons for not working. Asian women are the one exception, naming family responsibilities as the most frequent reason. Within each racial and ethnic group of scientists and engineers, women are far more likely than men to cite family responsibilities as a reason for not working and less likely than men to cite retirement as a reason. Among both white and Asian scientists and engineers, men are more likely than women to cite having been laid off as a reason for not working (figure B).

REASONS FOR PART-TIME EMPLOYMENT

In 2015, the part-time employment rate was similar for scientists and engineers (16%) and for the general U.S. population (18%). The part-time employment rate for scientists and engineers has remained fairly stable in recent years. Nearly one-quarter of female scientists and engineers work part time, compared with 1 in 10 men.

Within each racial and ethnic group of scientists and engineers who are employed part time, women cite family responsibilities as a reason more frequently than men do, whereas among

whites and underrepresented minorities, men cite retirement as a reason more frequently than women do. Whites are more likely than members of other racial or ethnic groups to indicate that they work part time because they did not need or want to work more hours (figure C).

EFFECT OF DISABILITY

Employment status

About one in nine scientists and engineers ages 75 years and younger has a disability. The majority of scientists and engineers with disabilities are employed, although the proportion employed is smaller among those with disabilities than among those without disabilities. Consequently, those with disabilities are more likely than those without disabilities to be unemployed or not in the labor force (figure D).

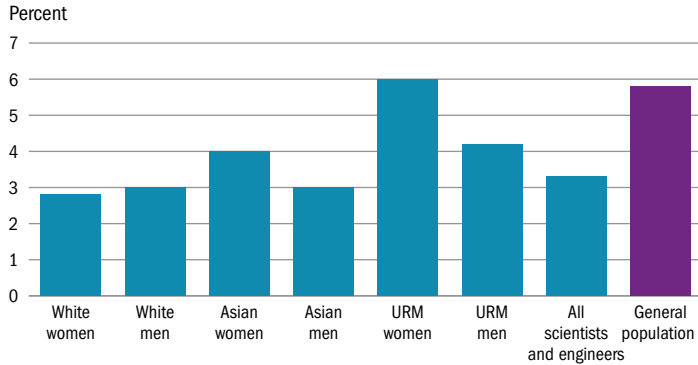
Age at onset of disability

About half of the scientists and engineers reporting a disability say that they became disabled at age 40 years or older. In this group, the majority became disabled between ages 50 and 75 years. Only about 7% of those with disabilities have been disabled since birth (figure E).

Reasons for not working

Retirement is the most frequently cited reason for not working among scientists and engineers, regardless of disability status. But among scientists and engineers with disabilities, chronic illness or permanent disability is also a prevalent reason for not working (figure F). Women are more likely than men with disabilities to cite illness or permanent disability as a reason for not working (41% versus 28%).

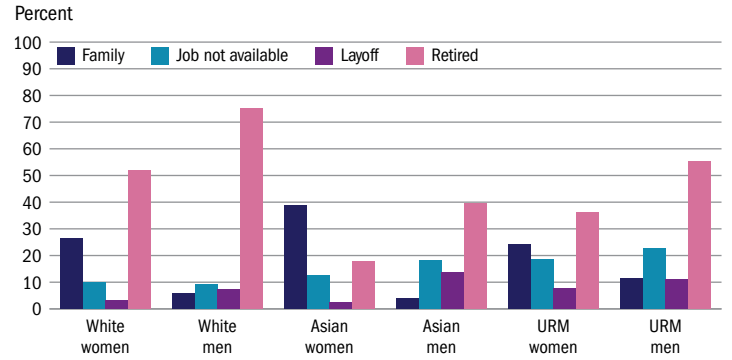
A Unemployment rates among scientists and engineers: 2015



URM = underrepresented minority.

NOTE: The general population consists of the U.S. civilian noninstitutional population 16 years and over.

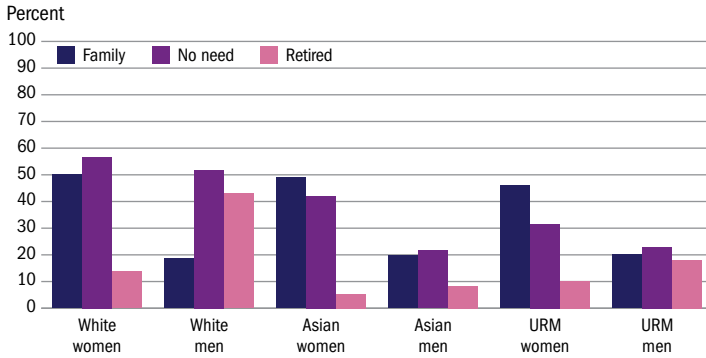
B Reasons for not working among scientists and engineers: 2015



URM = underrepresented minority.

NOTE: Not all reasons are shown; respondents could select more than one reason.

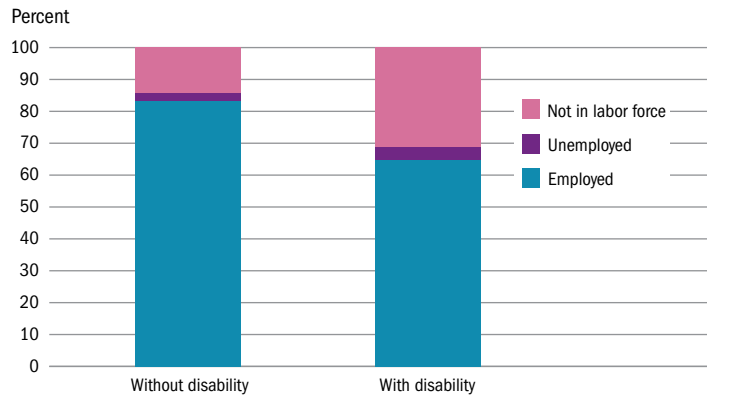
C Reasons for part-time employment among scientists and engineers: 2015



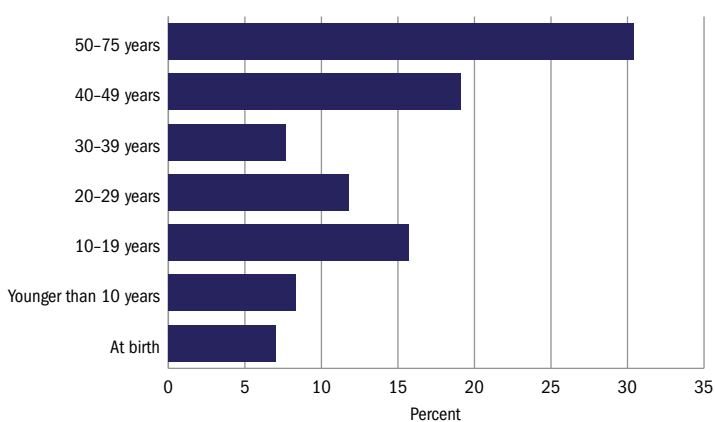
URM = underrepresented minority.

NOTE: Not all reasons are shown; respondents could select more than one reason.

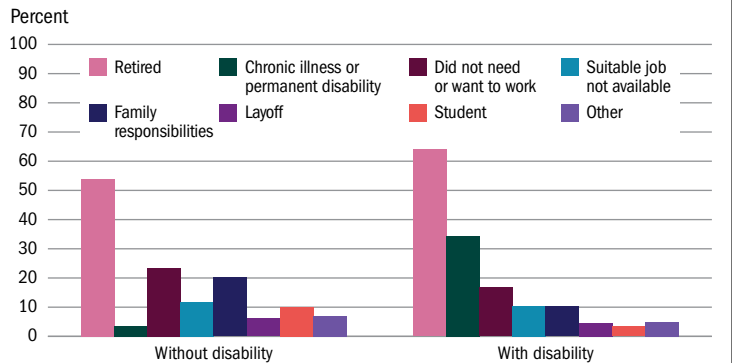
D Employment status among scientists and engineers, by disability status: 2015



E Age at onset of disability among scientists and engineers: 2015



F Scientists and engineers who are unemployed or not in the labor force, by disability status and reason for not working: 2015



NOTE: Respondents could select more than one reason.

7 Early career doctorate holders

Early career doctorate holders—those who received their first doctoral degree within the past 10 years—are a critical component of the U.S. workforce. Trained in the latest research practices, they bring new knowledge and techniques into the workplace. Nearly 230,000 early career doctorate holders are employed in academic institutions, federally funded research and development centers (FFRDCs), and the National Institutes of Health Intramural Research Program (NIH IRP). About 70% of these early career doctorate holders earned their doctorate in the sciences (biological, physical, social, and other sciences, as well as psychology and health), 10% in engineering, and 20% in non-science and engineering (non-S&E) fields, such as the humanities.

CHARACTERISTICS OF EARLY CAREER DOCTORATE HOLDERS

Citizenship status, race, ethnicity, sex, and country of doctorate

Of the approximately 183,000 S&E early career doctorate holders working in an academic institution, an FFRDC, or the NIH IRP, about 6 in 10 are U.S. citizens and permanent residents. The majority of these early career doctorate holders are white (78%). The proportion of black women with an early career doctorate is higher than the proportion of their male counterparts (figure A).

Among S&E early career doctorate holders with a temporary visa, nearly one-quarter earned their doctorate in another country. The top source countries are China, Germany, Canada, England, and India, accounting for about one-half of the non-U.S. degrees.

Sex, citizenship status, and area of doctoral study

Women constitute about 45% of all S&E early career doctorate holders working in an academic institution, an FFRDC, or the NIH IRP. The proportion of women is higher among U.S. citizens and permanent residents than among temporary visa holders. In addition, the proportion of women varies by broad S&E field of study. Among U.S. citizens and permanent residents, roughly similar proportions of women and men hold a doctorate in the sciences. The proportion of women is lower in engineering than in the sciences, particularly among temporary visa holders (figure B).

ACADEMIC POSITIONS

Academic institutions employ the bulk (95%) of S&E early career doctorate holders who work in an academic institution, an FFRDC, or the NIH IRP. Nearly 40% of those who are academically employed are in full-time faculty positions, about 10% are in other faculty positions, and nearly 40% hold postdoctoral appointments (figure C).

POSTDOCTORAL APPOINTMENTS

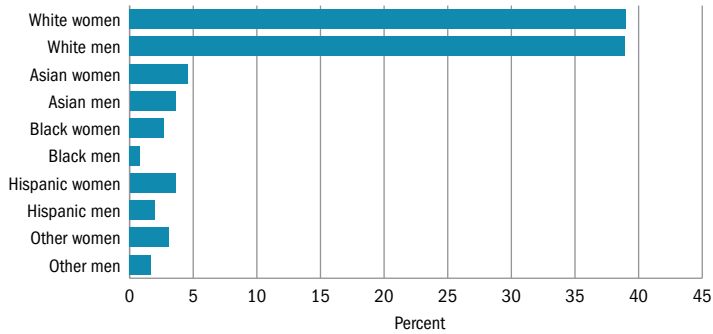
About 70,000 S&E early career doctorate holders are employed in postdoctoral positions at academic institutions, FFRDCs, or the NIH IRP. The vast majority are employed in academic institutions (93%). Just under 60% of postdoctoral appointees are temporary visa holders.

Over 60% of all employed postdoctoral appointees are men. The proportion of men is higher among temporary visa holders than among U.S. citizens and permanent residents (figure D).

MEDIAN SALARIES

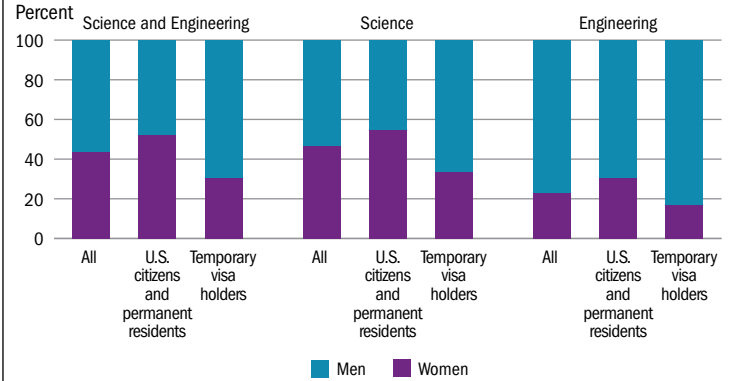
Median salaries of S&E early career doctorate holders vary by type of position and place of employment. Postdoctoral appointees have higher salaries at FFRDCs than at academic institutions or at the NIH IRP. At academic institutions, full-time faculty have higher salaries than other faculty, postdocs, and early career doctorate holders in other nonfaculty positions (figure E).

A Race, ethnicity, and sex of early career doctorate holders with a science and engineering degree: 2014

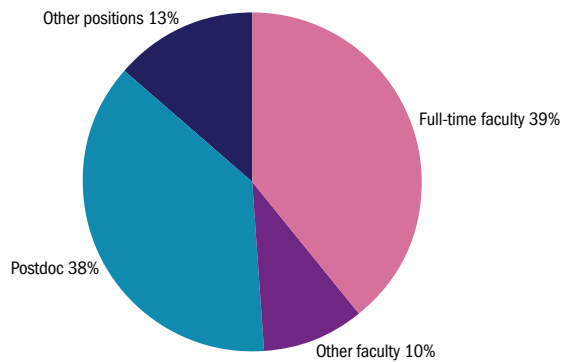


NOTES: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and respondents who selected more than one race.

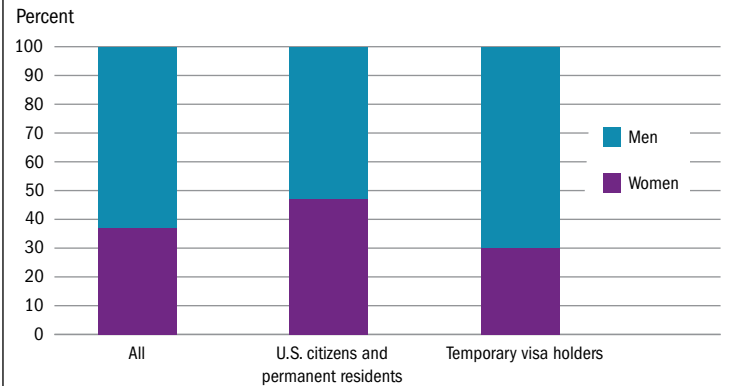
B Broad field of degree among early career doctorate holders with a science and engineering degree: 2014



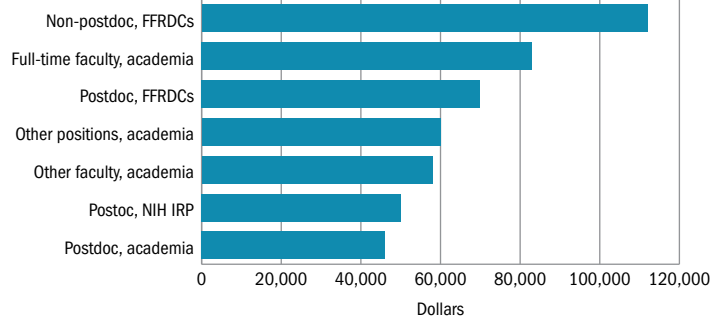
C Academic employment among early career doctorate holders with a science and engineering degree: 2014



D Postdoc positions among early career doctorate holders with a science and engineering degree: 2014



E Median salaries of early career doctorate holders with a science and engineering degree: 2014



FFRDCs = federally funded research and development centers; NIH IRP = National Institutes of Health Intramural Research Program.



Data sources

The data in this report come from surveys conducted by the National Science Foundation (National Center for Science and Engineering Statistics), the Department of Education (National Center for Education Statistics), the Department of Commerce (Census Bureau), and the Department of Labor (Bureau of Labor Statistics). The technical notes for this report, available online at www.nsf.gov/statistics/wmpd/, provide information on specific data sources, including the survey target population and data collection procedures.

The degree award data from the Department of Education cover degrees in the following science and engineering fields: astronomy, chemistry, physics, atmospheric sciences, earth sciences, ocean sciences, mathematics and statistics, computer sciences, agricultural sciences, biological sciences, psychology, social sciences, and engineering. To present data in a condensed form for this digest, several fields were aggregated in figures and in text. The biological sciences field includes agricultural sciences, and the physical sciences field includes earth, atmospheric, and ocean sciences, as well as astronomy, chemistry, and physics. Data on degree awards include bachelor's, master's, and doctoral degrees and do not include professional degrees, such as the MD or JD.

Racial and ethnic categories reported are those mandated by the Office of Management and Budget (OMB) effective

1 January 2003. OMB specified the following categories of racial and ethnic groups: black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, white, Hispanic or Latino regardless of race, and more than one race. In earlier volumes, racial and ethnic groups were identified as white, black, Hispanic, Asian or Pacific Islander, and American Indian or Alaska Native (for more details, see the technical notes for this report). Because of insufficient sample size in some surveys, not all racial or ethnic groups are reported in all tables or figures.

Department of Education enrollment and degree award data by race and ethnicity refer to U.S. citizens and permanent residents only, but the proportions of students by race and ethnicity are calculated based on the total number of students enrolled or earning degrees.

New to this report are pilot data from National Science Foundation's Early Career Doctorates Survey on doctorate recipients who earned this degree within the past 10 years. As with Department of Education data, data by race and ethnicity refer to U.S. citizens and permanent residents only. However, the proportions of early career doctorate holders by race and ethnicity are calculated based on the total number of U.S. citizen or permanent resident early career doctorate holders.

Glossary

Early career doctorate holders. Persons who received their first doctoral degree within the past 10 years and are employed at academic institutions, federally funded research and development centers, and the National Institutes of Health Intramural Research Program.

High-Hispanic-enrollment institution. HHEs are public and private nonprofit academic institutions whose undergraduate, full-time equivalent student enrollment is at least 25% Hispanic. The list of HHEs used in this report is based on data from the Integrated Postsecondary Education Data System Fall 2013 Enrollment Survey conducted by the National Center for Education Statistics.

Historically black college or university. HBCUs are academic institutions on a list maintained by the White House Initiative on Historically Black Colleges or Universities. The Higher Education Act of 1965, as amended, defines an HBCU as “...any historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of black Americans, and that is accredited by a nationally recognized accrediting agency or association determined by the Secretary [of Education] to be a reliable authority as to the quality of training offered or is, according to such an agency or association, making reasonable progress toward accreditation.” See <http://www.ed.gov/edblogs/whhbcu/one-hundred-and-five-historically-black-colleges-and-universities/>.

Minority. A minority is a racial or ethnic group that is a small percentage of the U.S. population. Blacks, Hispanics, American Indians or Alaska Natives, Native Hawaiians or Other Pacific Islanders, Asians, and persons reporting more than one race are minority groups.

Postdoctoral appointment. A postdoctoral appointment is a temporary position awarded in academia, industry, government, or a nonprofit organization primarily for gaining additional education and training in research.

Scientists and engineers. In this report, persons classified as scientists and engineers are residents of the United States who have a baccalaureate degree or higher and are either educated as or are working as a scientist or engineer. A baccalaureate or higher degree is a bachelor’s, master’s, doctoral, or professional degree.

Tribal college. Tribal colleges are fully accredited academic institutions on a list maintained by the White House Initiative on Tribal Colleges and Universities. These institutions are included in the Tribal Colleges category in the basic classification scheme of the 2010 Carnegie Classification of Institutions of Higher Education. See <http://carnegieclassifications.iu.edu/>.

Underrepresented minority. This category comprises three racial or ethnic minority groups (blacks, Hispanics, and American Indians or Alaska Natives) whose representation in S&E education or employment is smaller than their representation in the U.S. population.

Key to acronyms

FFRDC: Federally funded research and development center

HBCU: Historically black college or university

HHE: High-Hispanic-enrollment institution

NIH IRP: National Institutes of Health Intramural Research Program

S&E: Science and engineering

URM: Underrepresented minority



Online resources

A rich set of resources that supplement this digest are available online at www.nsf.gov/statistics/wmpd/.

Data tables. Detailed data tables, organized by topic, allow the reader to explore the data in more depth. Data tables are updated as new information become available and are available for download, either as Excel or PDF files.

Figures. Presentation graphics, accompanied by their supporting data in Excel format, are provided for each of the figures that illustrate the topics in this digest.

Technical notes. Technical notes provide information on reporting categories, sources of data, and sampling errors.

Resource links. Links are provided to additional sources of data on these topics and to related reports from the National Science Foundation (NSF) and from external sources, such as the National Center for Education Statistics and the American Council on Education.



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Available at www.nsf.gov/statistics/wmpd/.

The complete *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017* report, including detailed data tables, interactive graphics, technical notes, and other online resources, is available on the Web at www.nsf.gov/statistics/wmpd/.

To obtain printed copies of the *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017* digest (NSF 17-310), use NSF's online publication request form, www.nsf.gov/publications/orderpub.jsp, or call 703-292-7827.

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