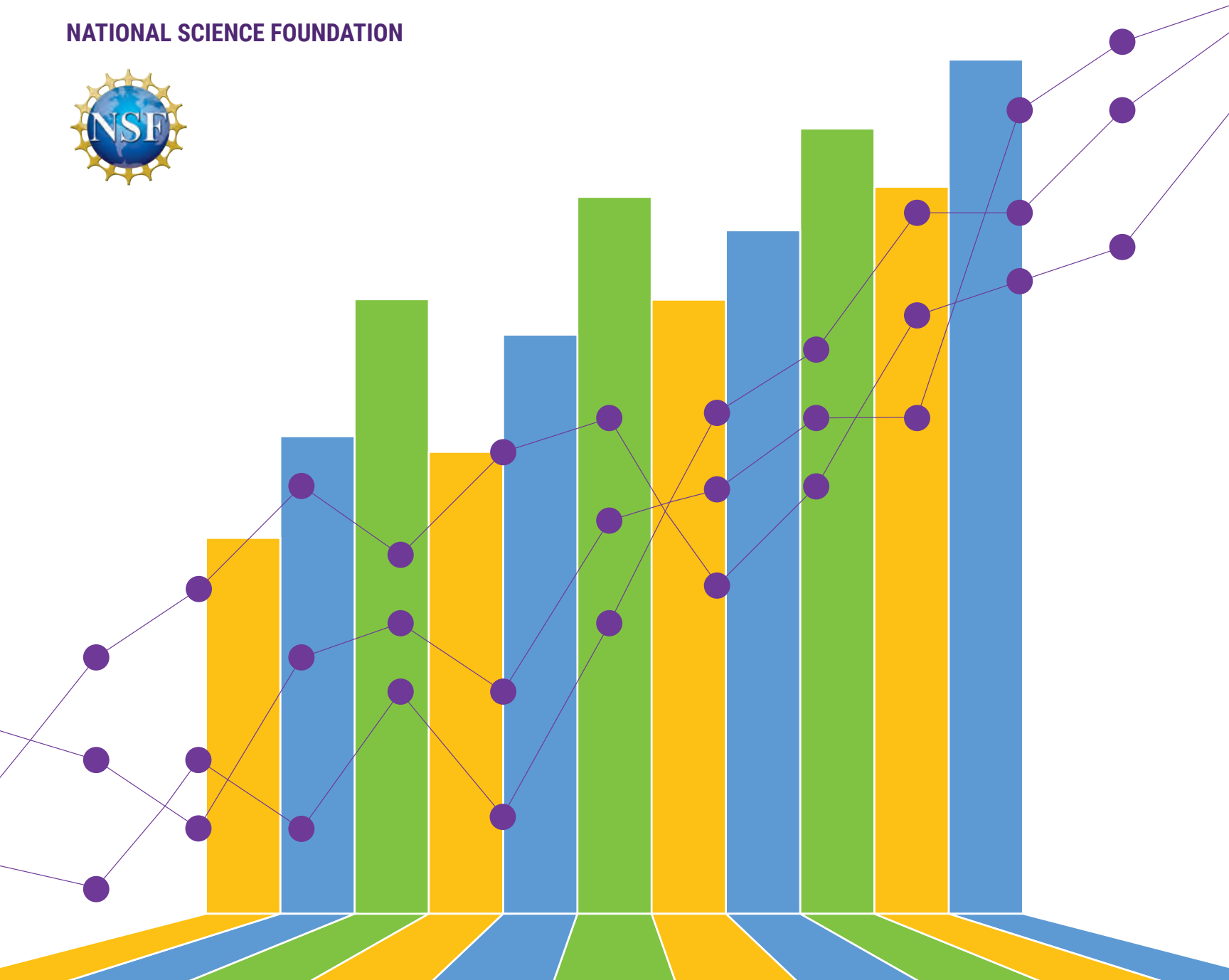


# 2019

## 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

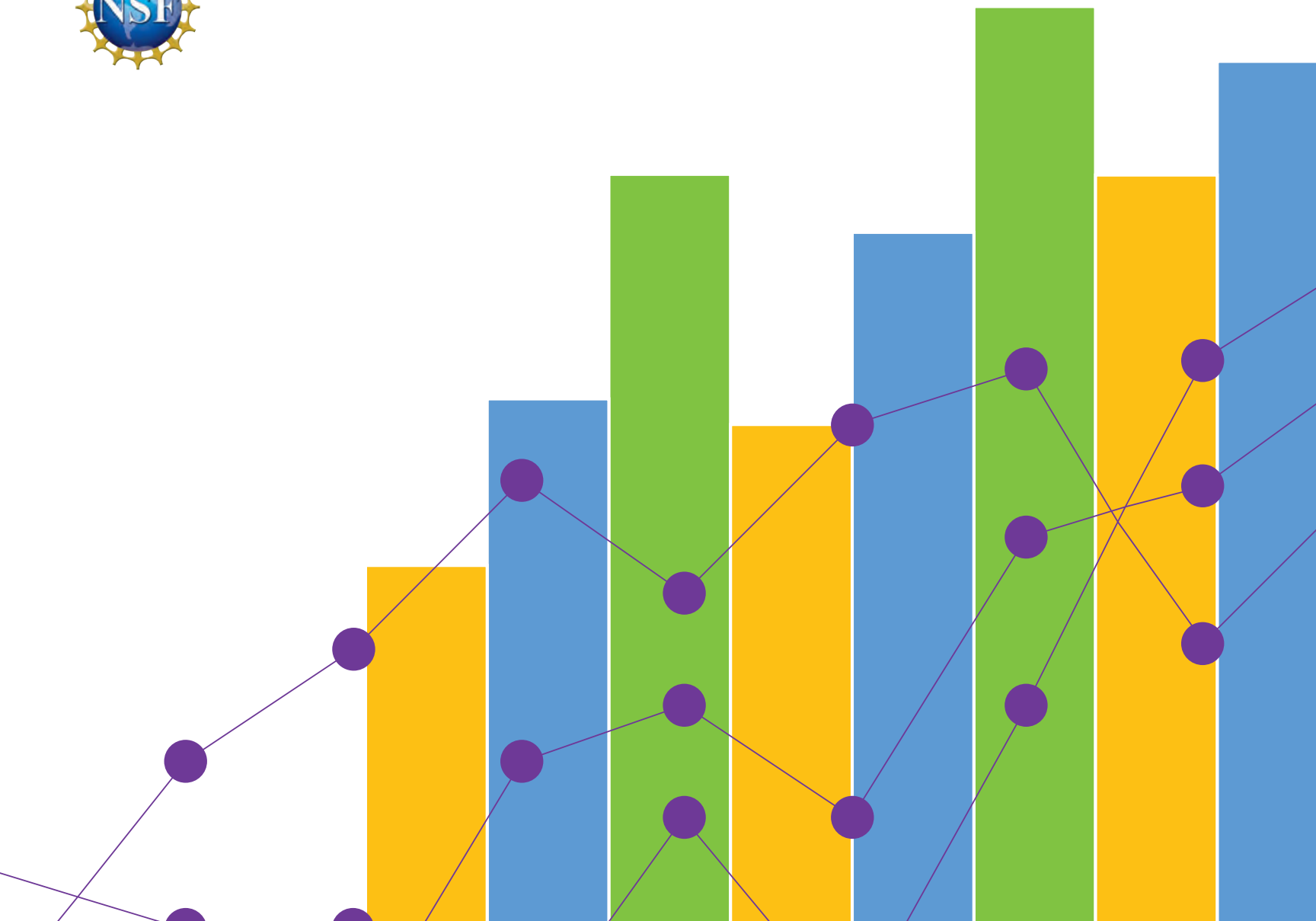




# 2019 | WOMEN, MINORITIES, AND PERSONS WITH DISABILITIES IN SCIENCE AND ENGINEERING

NATIONAL CENTER FOR SCIENCE AND ENGINEERING STATISTICS  
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NATIONAL SCIENCE FOUNDATION • NSF 19-304





## 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 variety of data sources. Data and figures in this digest are organized into the following topical areas: enrollment, field of degree, employment status, and occupation, including academic careers.

Surveys conducted by the National Center for Science and Engineering Statistics (NCSES) within 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/](http://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

Women, persons with disabilities, and underrepresented minority groups—blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are underrepresented in science and engineering (S&E). That is, their representation in S&E education and S&E employment is smaller than their representation in the U.S. population.

Although women have reached parity with men among S&E bachelor's degree recipients—half of S&E bachelor's degrees were awarded to women in 2016—they are still underrepresented in S&E occupations. Blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives have gradually increased their share of S&E degrees, but they remain underrepresented in S&E educational attainment and in the S&E workforce. By contrast, Asians are overrepresented among S&E degree recipients and among employed scientists and engineers.

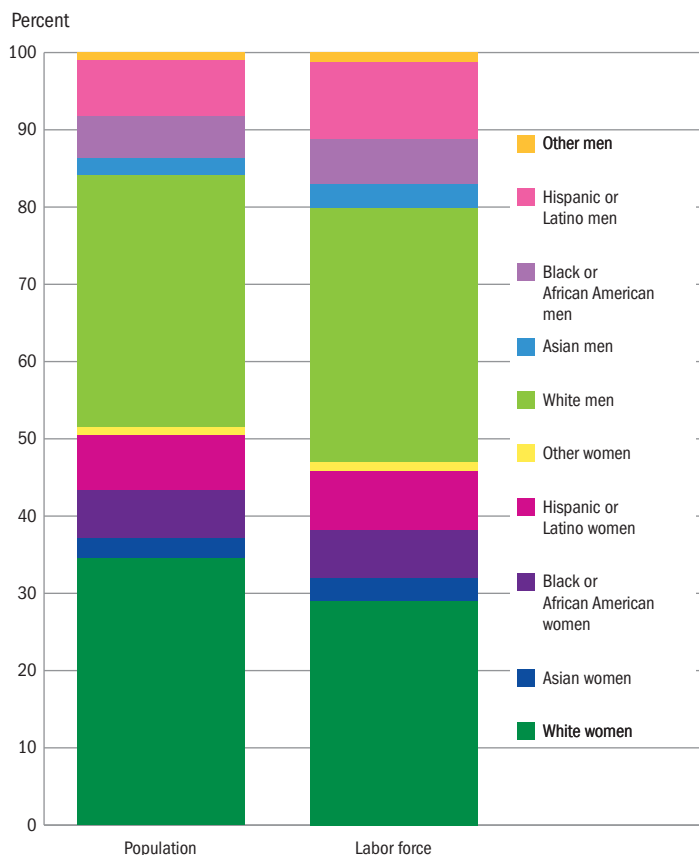
Underrepresentation and overrepresentation of women and racial or ethnic groups vary by field of study and occupation. Variations in the representation of these groups may be rooted in differences in precollege course taking, participation in S&E higher education, and overall educational attainment.

Women and underrepresented minorities constituted a substantial portion of the U.S. population ages 18–64 years old in 2017. Women were 51.5% of the population; Hispanics or Latinos, 14%; blacks or African Americans, 12%; Asians, 5%; and other racial and ethnic groups combined, 2% (figure A).

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 a projected increase of 41% in the number of black or African American individuals, the proportion is expected to increase by only 2 percentage points between 2016 and 2060, from 13% to 15% of the U.S. population.

**Noninstitutionalized resident population of the United States and civilian labor force of the United States, ages 18–64, by ethnicity, race, and sex: 2017**

A



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

Although women were over half the population ages 18–64 years old in 2017, they constituted 47% of the labor force—individuals who are employed or unemployed (not employed and actively looking for a job). This difference in the shares of population and labor force is due mainly to white women, who make up 34.5% of the population, but only 29% of the labor force. By contrast, Asian men and Hispanic or Latino men make up slightly larger shares of the labor force (3% and 10%, respectively) than of the population (2% and 7%).

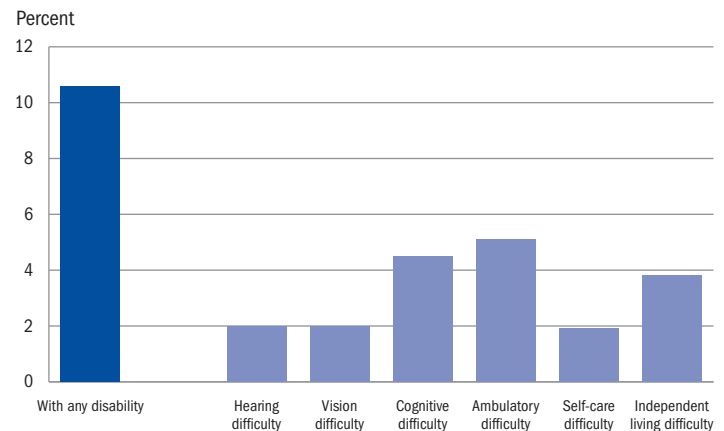
As an example of the underrepresentation of women in S&E fields, the share of S&E research doctorates awarded to women in 2017 was 41% versus their 51.5% of the population and 47% of the labor force. Underrepresented minorities were awarded 11% of S&E research doctorates despite comprising 27% of the population and about 30% of the labor force. Conversely, Asians were awarded 31% of S&E research doctorates while being 5% of the population and 6% of the labor force. These trends will be examined in more detail in this digest.

Estimates of the proportion of the population with one or more disabilities vary depending on the definition of the term “disability.” Also, trends across time are difficult to determine because some surveys recently changed the wording of disability questions, leading to increases in the reporting and measurement of disability. According to the Census Bureau’s American Community Survey, 11% of the working-age population reported some type of disability in 2016, with men and women reporting about the same percentages for having any disability and for each type of disability. The most frequently reported disabilities are ambulatory difficulty (5% of the working-age population) and cognitive difficulty (4.5%) (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 one or more disabilities may or may not require special accommodation to enable them to succeed in school or at work.

**U.S. population 18–64 years old with a disability and type of disability: 2016**

**B**



NOTE: Respondents can report more than one disability.

# Enrollment

Recent trends in undergraduate and graduate enrollment reflect the increasing diversity of the U.S. college and graduate-school population. Most notably, underrepresented minorities, Hispanics in particular, are an increasing share of students, whereas whites are a decreasing share. Among all racial and ethnic groups, more women than men enroll in college.

## Undergraduate enrollment

### Type of school

The large majority of undergraduate U.S. citizens and permanent residents are enrolled in public colleges. However, this proportion varies across racial and ethnic groups. Students who are black or African American, Native Hawaiian or Other Pacific Islander, or more than one race, unknown, or other have the largest share enrolled in private for-profit institutions. Asian, Hispanic or Latino, and American Indian or Alaska Native students have the largest share of enrollees in public institutions. White enrollees and those of more than one race, unknown, or other have the largest share of students in private nonprofit institutions (figure A).

### Full-time study

Full-time enrollment is more prevalent in 4-year institutions than in 2-year institutions for all racial and ethnic groups. However, enrollment patterns differ somewhat among these groups. At 2-year institutions, only American Indian or Alaska Native and black or African American students had more than 40% enrolled as full-time students. At 4-year institutions, all groups had at least 70% enrolled full time, but Asian students had the highest full-time rate (82%) (figure B).

Among those enrolled full time in undergraduate institutions, women are more likely than men to be full-time students across most racial and ethnic groups, both in 2-year and in 4-year institutions. The one exception is for Asian women, who make up slightly less than half of Asians in 2-year institutions (figure C).

### Students with one or more disabilities

In 2016, 19.5% of undergraduate students reported a disability. Undergraduates with one or more disabilities are more likely to be age 30 or older than those without a disability and are slightly more likely to attend a 2-year institution than are those without a disability (figure D). Note that comparing the share of students with one or more disabilities over time is complicated by changes in survey questions that have resulted in an increase in the share of students with reported disabilities.

In addition, 28% of undergraduate students with one or more disabilities were enrolled in a science and engineering (S&E) field, the same proportion as those without disabilities. Compared with undergraduates without disabilities, those with one or more disabilities were less likely to receive financial aid (73% versus 71%) and were less likely to be enrolled full time for a full year at one institution (34% versus 30%).

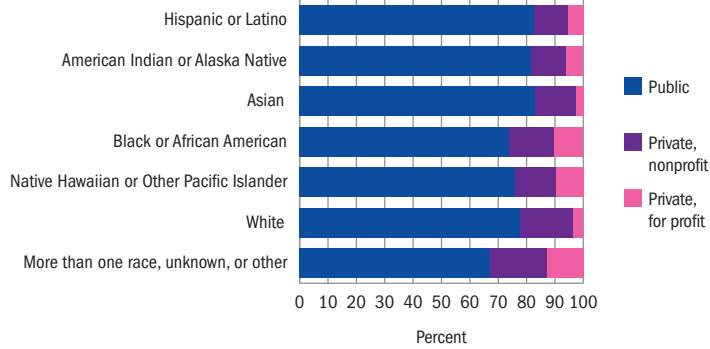
## Graduate enrollment

Among students enrolled in graduate school in S&E fields in 2016, whites are the largest group. Among blacks or African Americans, both the share (7%) and the number (17,630) of female students are larger than those for male students (4%, 12,970). Among Asians, male students have a larger number and about the same share. Six percent of female S&E graduate students and 5% of male S&E graduate students are more than one race, unknown, or other. About 241,000 graduate students enrolled in S&E fields in 2016 were temporary visa holders and are not included in the race and ethnicity breakouts. Temporary visa holders make up 32% of women and 44% of men enrolled in graduate school in S&E fields (figure E).

Women and men reported similar primary sources of support among the S&E full-time graduate students enrolled in 2016. The main sources were support from their institution and self-support (including loans). Federal support was the third most reported source of primary support for graduate school (figure F).

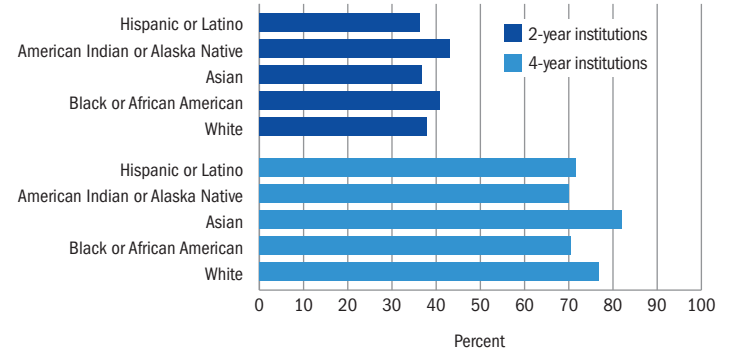


**A Undergraduate enrollment (2 and 4 year, full and part time), by type of school, ethnicity, and race: 2016**



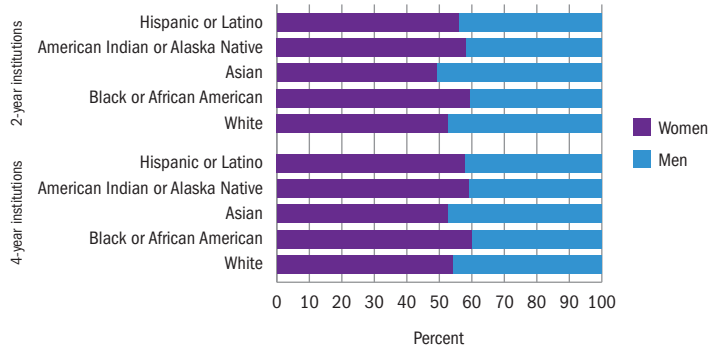
NOTE: Hispanic or Latino may be any race.

**B Full-time undergraduate enrollment, by institution type, ethnicity, and race: 2016**



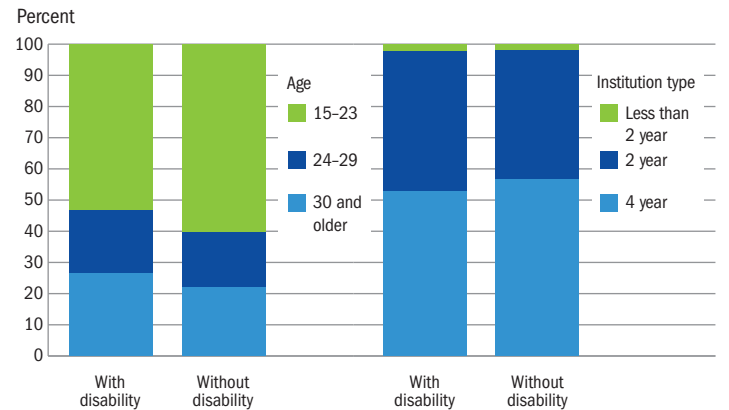
NOTE: Hispanic or Latino may be any race.

**C Full-time undergraduate enrollment, by institution type, ethnicity, race, and sex: 2016**

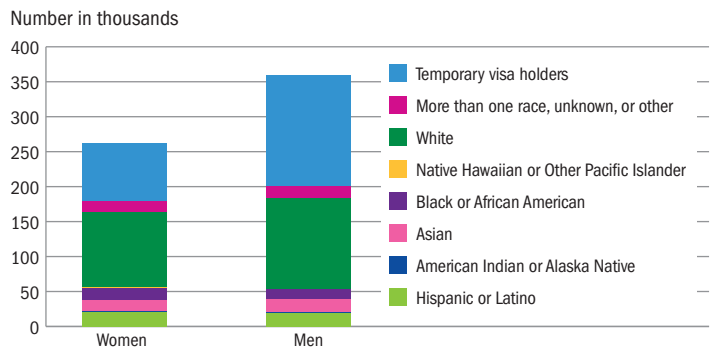


NOTE: Hispanic or Latino may be any race.

**D Disability status of undergraduate students, by age and institution type: 2016**

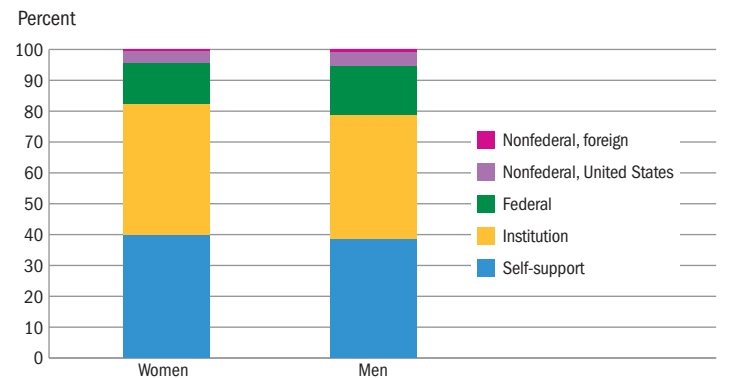


**E Graduate students in science and engineering, by ethnicity, race, citizenship, and sex: 2016**



NOTES: Hispanic or Latino may be any race. Graduate students includes both master's and doctoral students.

**F Primary source of support for full-time science and engineering graduate students, by sex: 2016**



NOTE: Graduate students includes both master's and doctoral students.

# Field of degree: Women

Of all science and engineering (S&E) degrees awarded in 2016, women earned about half of bachelor's degrees, 44% of master's degrees, and 41% of doctorate degrees, about the same as in 2006. However, the proportion of degrees awarded to women in S&E fields varies across and within broad fields of study. Women's highest degree shares are in psychology and biosciences; the lowest, in computer sciences and engineering.

## Psychology, biological sciences, and social sciences

### Overall

In 2016, women held a majority of the degrees in psychology and biological sciences at all degree levels—bachelor's, master's and doctorate degrees.

In psychology, women received around 75% of degrees at each level. In biological sciences, women received over half of degrees at each level. These were the highest rates among the S&E fields.

In the fields of social sciences, women earned a majority of bachelor's degrees (55%) and master's degrees (57%) but just under half of doctorate degrees. The number of female graduates in social sciences and their share in this field has increased over time (figure A).

### Economics

In the social science fields, women earned near or over half of all degrees in 2016, except in the field of economics. Women's share of economics degrees at all degree levels continues to be the lowest within the social sciences, with little change in the share at the bachelor's degree level over the past two decades. The lack of movement at the bachelor's level may constrain future increases at the master's and doctorate levels (figure B).

## Computer sciences

Computer sciences has one of the lowest shares of women degree recipients among the broad fields of S&E, despite an increase in the number of women receiving computer sciences degrees over the past two decades. In addition, the share of women receiving bachelor's and doctorate degrees has declined over time. At the bachelor's level, only 19% of the computer science degrees in 2016 were awarded to women, down from 27% in 1997 (figure C).

## Engineering

Engineering is another S&E field with one of the lowest shares of female degree recipients. Although the number of women receiving engineering degrees, at all levels, has increased over the past two decades, women's

share of degrees has increased only slightly at the bachelor's and master's levels, from 18% to 21% and 18% to 25% respectively, over the past two decades. Although the number of women receiving engineering doctoral degrees is small, 2,400 in 2016, this represents an increase in share from 12% to 24% since 1997 (figure D).

## Mathematics and statistics

Less than half of mathematics and statistics degrees are earned by women, although the share for women is over 40% at both the bachelor's and master's levels. However, at the doctorate level, the share drops to under 30%. Over the past two decades, the share of women receiving bachelor's degrees in mathematics and statistics has declined and the share of women receiving master's degrees has been stagnant. At the doctorate level, women's share increased between 1997 and 2006, although the share then declined to 28% in 2016, when slightly over 500 doctoral degrees were awarded to women (figure E).

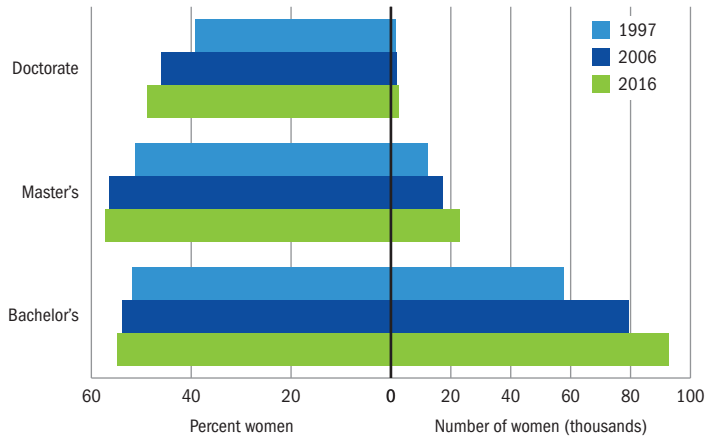
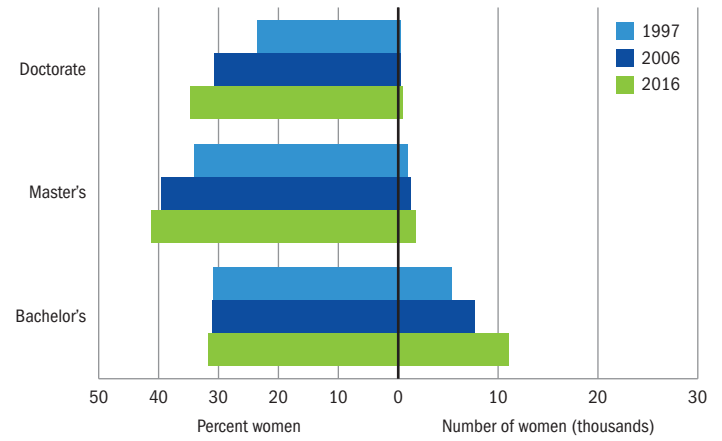
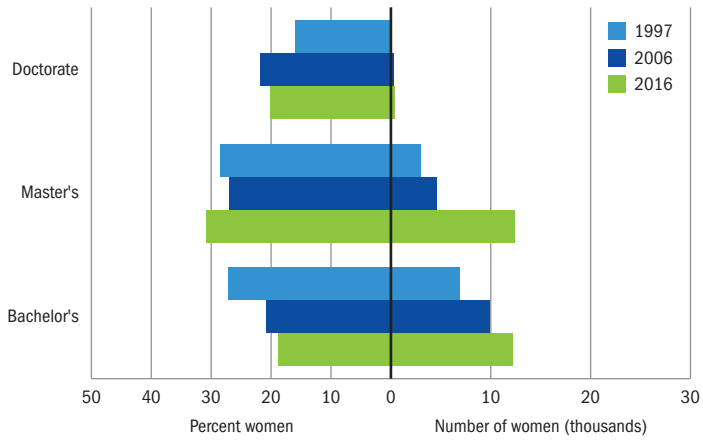
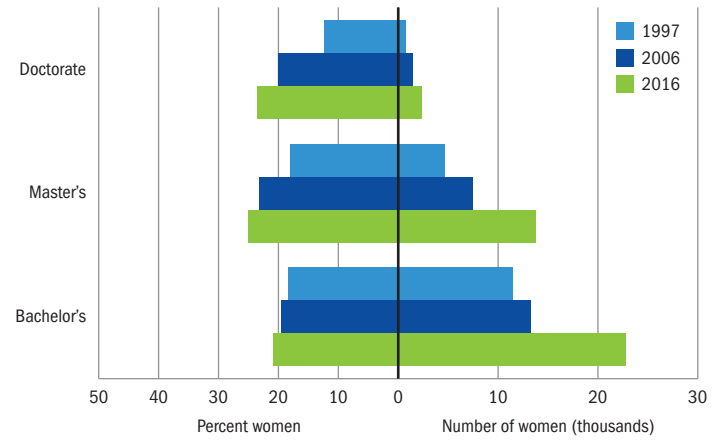
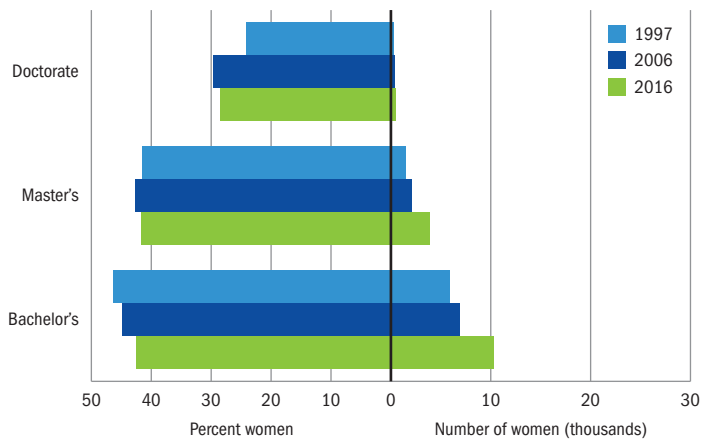
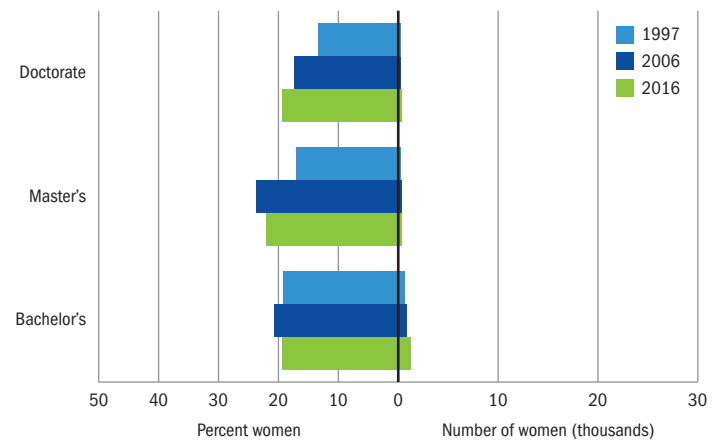
## Physical sciences

### Overall

Women earned fewer than half of the degrees in the broad field of physical sciences. In 2016, women's share of bachelor's, master's, and doctorate degrees was 39%, 36%, and 31%, respectively. At the bachelor's and master's levels, the share of women degree holders decreased over the previous decade, while the share of doctorate degrees awarded to women increased slightly over the same period. Among the physical sciences, chemistry has the highest shares of degrees awarded to women: over 45% at the bachelor's and master's levels and 38% at the doctorate level in 2016.

### Physics

Physics has the lowest share of women degree recipients within the broad field of physical sciences. Although the number of physics degrees awarded to women increased over the past two decades at both the bachelor's and doctorate level, it remained flat at the master's level. At all degree levels, the number of women in this field remains very small (figure F).

**A** Degrees awarded to women: Social sciences, 1997, 2006, 2016**B** Degrees awarded to women: Economics, 1997, 2006, 2016**C** Degrees awarded to women: Computer sciences, 1997, 2006, 2016**D** Degrees awarded to women: Engineering, 1997, 2006, 2016**E** Degrees awarded to women: Mathematics and statistics, 1997, 2006, 2016**F** Degrees awarded to women: Physics, 1997, 2006, 2016

# Field of degree: Minorities

The share of science and engineering (S&E) bachelor's and doctorate degrees awarded to underrepresented minorities—Hispanics or Latinos, blacks or African Americans, and American Indians or Alaska Natives—has increased over the past two decades. Minority-serving institutions—historically black colleges or universities (HBCUs) and high-Hispanic-enrollment institutions (HHEs)—have played an important role in awarding bachelor's degrees to students who later earn doctorate degrees in S&E fields, helping to advance representation in these fields by minorities. Despite this progress, these groups continue to be underrepresented among S&E degree recipients relative to their representation in the overall population.

## Degrees earned by underrepresented minorities

### Overall

In 2016, underrepresented minority students received 22% of all S&E bachelor's degrees and 9% of all S&E doctorate degrees. Their share of master's degrees has increased between 1996 and 2016, although there has been a slight decline over the past couple of years (figure A). It should be noted that the decline in the share of master's degrees was also seen among almost all racial and ethnic groups, as the number and share of temporary visa holders receiving a master's degree increased.

### Bachelor's degrees in science and engineering

About 56% of bachelor's degrees in S&E fields were awarded to whites in 2016, and an additional 9% were awarded to Asians. The share of S&E degrees earned by Asians has been steady over the past 10 years. Temporary visa holders were awarded 5% of science and 9% of engineering bachelor's degrees.

All three groups of underrepresented minorities earned a larger share of bachelor's degrees in science than in engineering in 2016. Hispanics or Latinos earned 13.5% of science and 10% of engineering bachelor's degrees; black or African American students, 9% and 4%; and American Indians or Alaska Natives, 0.5% and 0.3% (figure B).

## Hispanic or Latino graduates

### Overall

The share of S&E bachelor's degrees awarded to Hispanics or Latinos has increased over the past 20 years. In 2016, the S&E fields with the largest Hispanic or Latino representation were psychology (17%), social sciences (15%), and biological sciences (11.5%) (figure C).

### Baccalaureate origins of Hispanic or Latino doctorate recipients

HHEs play an important role in educating Hispanic or Latino students. In 2016, 46% of Hispanic or Latino bachelor's degree recipients earned their

degree from an HHE. These institutions also are important in training Hispanic students for doctoral studies—37% of Hispanics or Latinos who received an S&E doctorate between 2013 and 2017 received their bachelor's degree from an HHE institution. These institutions are the baccalaureate origins of an even larger share of Hispanic doctorate recipients in agricultural sciences, biological sciences, physical sciences, and psychology (figure D). (See appendix table A-1 for the top baccalaureate institutions of Hispanic or Latino S&E doctorate recipients.)

## Blacks or African Americans

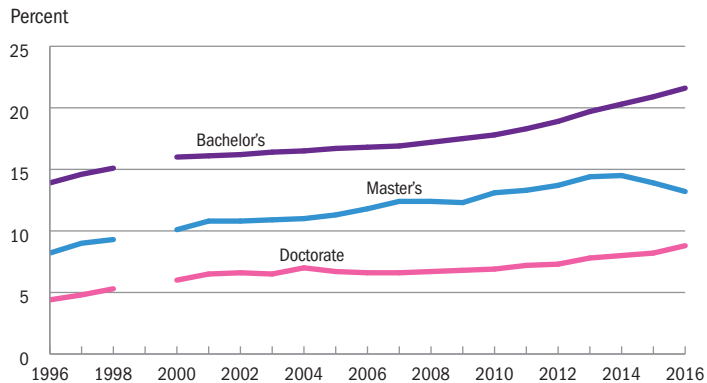
### Overall

Like Hispanics or Latinos, blacks or African Americans have larger representation in psychology and social sciences than in other S&E fields. In addition, blacks or African Americans earn a larger share of bachelor's degrees in computer science than in the other S&E fields. Over the past two decades, blacks or African Americans have seen increased shares of bachelor's degrees in psychology, social sciences, and biological sciences, but their degree shares have declined slightly in the other fields. Most notably, the share of bachelor's degrees in mathematics and statistics earned by blacks or African Americans declined from 7% to 4% (figure E).

### Baccalaureate origins of black doctorate recipients

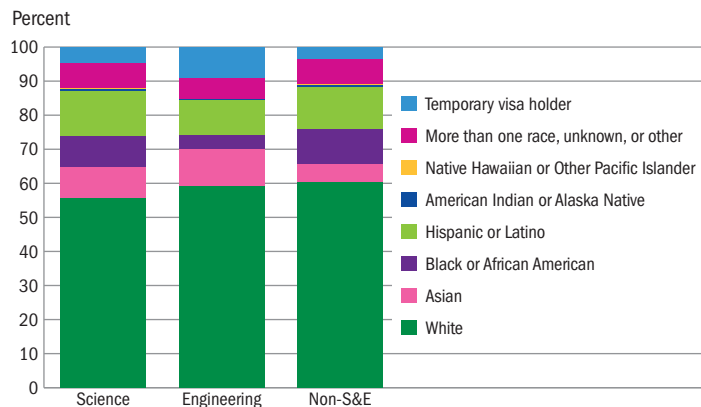
Black or African American S&E doctorate recipients from U.S. universities complete their undergraduate degrees at many types of institutions. HBCUs have an outsized impact on preparing students for S&E doctoral programs. Although 15% of blacks or African Americans who received a bachelor's degree in 2016 did so from an HBCU, 25% of graduates who earned an S&E doctorate degree between 2013 and 2017 earned a bachelor's degree from an HBCU. HBCUs produced large shares of baccalaureate recipients who later earned doctorate degrees in agricultural sciences; earth, atmospheric, and related sciences; and mathematics and statistics (figure F). (See appendix table A-1 for the top baccalaureate institutions of black or African American S&E doctorate recipients.)

**A Science and engineering degrees earned by underrepresented minorities, as a percentage of degree type: 1996–2016**



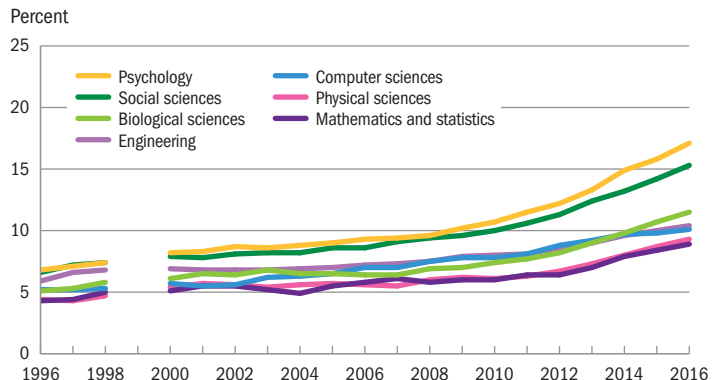
NOTE: Data not available for 1999.

**Bachelor's degrees earned, by ethnicity, race, and citizenship: 2016**



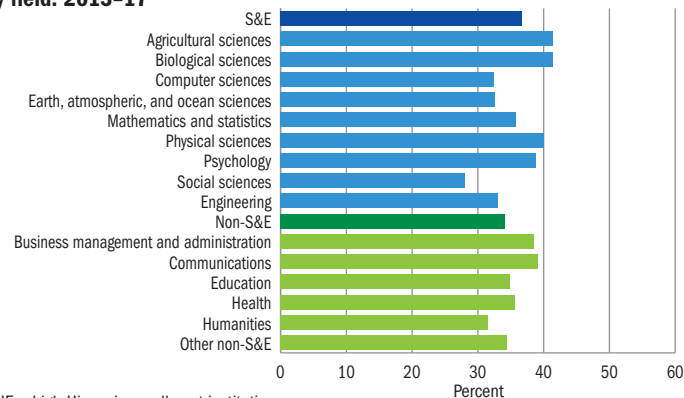
NOTE: Hispanic or Latino may be any race.

**C Science and engineering bachelor's degrees earned by Hispanics or Latinos, as a percentage of degree field, by field: 1996–2016**



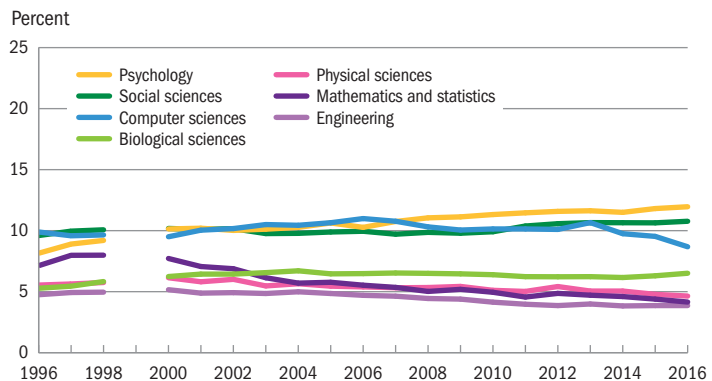
NOTES: Data not available for 1999. Hispanic or Latino may be any race.

**Hispanic or Latino doctorate recipients with HHE baccalaureate origins, by field: 2013–17**



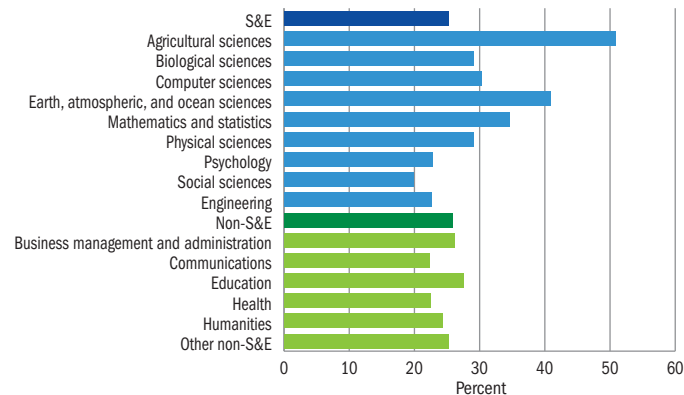
HHE = high-Hispanic-enrollment institution. NOTE: Hispanic or Latino may be any race.

**E Science and engineering bachelor's degrees earned by blacks or African Americans, as a percentage of degree field, by field: 1996–2016**



NOTE: Data not available for 1999.

**Black or African American doctorate recipients with HBCU baccalaureate origins, by field: 2013–17**



HBCU = historically black college or university.

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

In 2016, women from underrepresented minority groups earned more than half of the science and engineering (S&E) degrees awarded to their respective racial and ethnic groups at all degree levels—bachelor's, master's, and doctorate. Underrepresented minority women have increasing and strong shares of bachelor's degrees in psychology, social sciences, and biological sciences. Representation in these fields by underrepresented minority women is increasing and is near or above their representation in the labor force. In addition, they also received more than half of the associate's degrees in the S&E technology fields that prepare students for skilled technical careers.

## Differences between women and men

### Underrepresented minorities

In 2016, underrepresented minority women received more associate's degrees in science and in S&E technologies than did their male counterparts. Men, however, received more associate's degrees in engineering. S&E technologies—science, engineering, health, and other technologies that prepare students for skilled technical jobs—are an important part of the science, technology, engineering, and mathematics (STEM) workforce (figure A).

At each degree level, underrepresented minority women earned a higher share of S&E degrees than did underrepresented minority men in 2016. Over the past two decades, the share of both underrepresented minority women and men receiving S&E degrees has steadily increased at all degree levels. The share of both underrepresented minority women and men receiving S&E master's degrees declined slightly in 2015 and 2016 because of an increase in master's degrees earned by temporary visa holders. However, despite this share decrease, the number of master's degrees earned by underrepresented minorities increased over this period (figure B).

### American Indians or Alaska Natives and Native Hawaiians or Other Pacific Islanders

Two smaller minority groups that are not always presented in detail are American Indians or Alaska Natives as well as Native Hawaiians or Other Pacific Islanders. A total of 4,366 bachelor's degrees in S&E fields were awarded to individuals in these two groups in 2016. Social sciences, psychology, and biological sciences had the most female bachelor's degree recipients, while men most frequently studied social sciences, biological sciences, engineering, and computer sciences. In 2016, more American Indian or Alaska Native women received bachelor's degrees than did men in this group, as did Native Hawaiian or Other Pacific Islander women, who received slightly more bachelor's degrees than their male counterparts (figure C).

## Bachelor's degrees

### Hispanic or Latino women

Hispanic or Latino women earn a higher share of bachelor's degrees in psychology, social sciences, and biological sciences than in other S&E fields. The share of the bachelor's degrees they earn in these three broad fields has increased rapidly since 1996. The share of Hispanic or Latino women receiving a bachelor's degree in engineering has increased only slightly over time, whereas the share for computer sciences has been fairly steady over the past two decades (figure D). Nevertheless, these shares represent over 2,500 Hispanic or Latino women receiving bachelor's degrees in engineering in 2016, and over 1,200 in computer sciences.

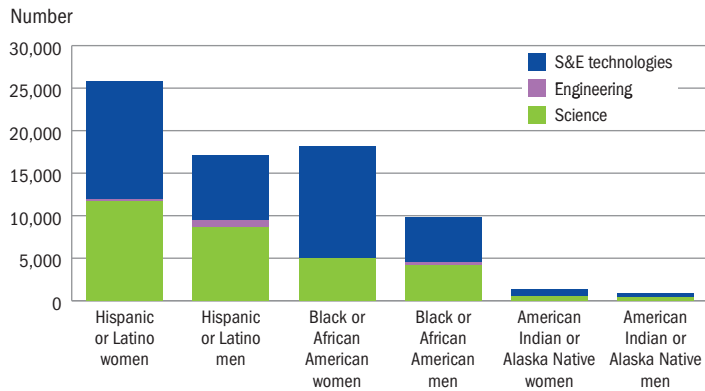
### Black or African American women

Black or African American women, similar to Hispanic or Latino women, earn a higher share of bachelor's degrees in psychology, social sciences, and biological sciences than in any other broad S&E field, and they have increased their shares in these fields over the past two decades. Their shares of bachelor's degrees in the other S&E fields have declined since 1996. For engineering and for mathematics and statistics, the fields with the lowest shares, this represents over 1,000 black or African American women who received bachelor's degrees in engineering in 2016, and over 500 who received such degrees in mathematics and statistics (figure E).

### Asian women

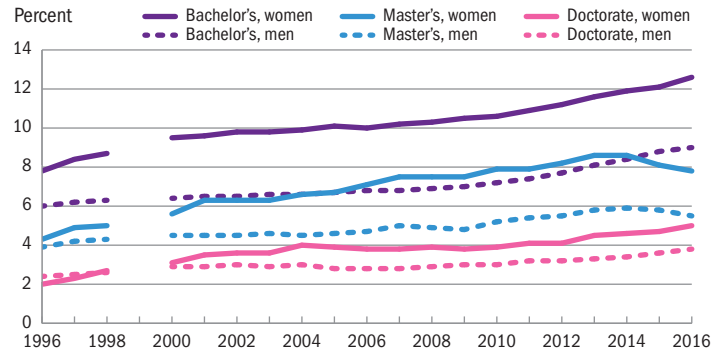
Asian women earn their highest share of S&E bachelor's degrees in biological sciences (7% in 2016, or over 10,600 graduates). For most S&E fields, Asian women's shares have seen slow increases over the past two decades. Despite small shares, over 1,000 Asian women received bachelor's degrees in mathematics and statistics and an additional 1,200 received bachelor's degrees in physical sciences in 2016 (figure F).

**A Associate's degrees in science, engineering, and S&E technologies, by sex, ethnicity, and selected race: 2016**



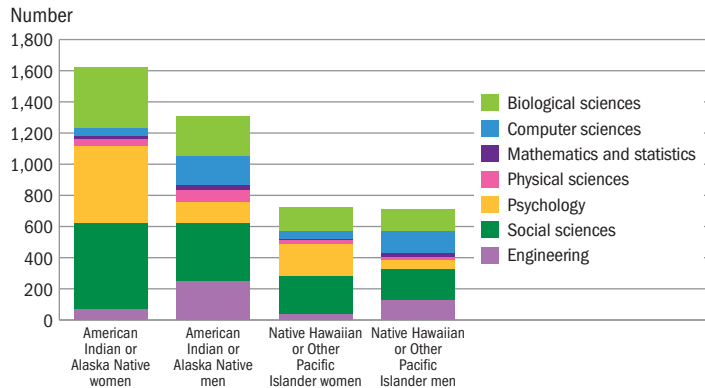
NOTE: Hispanic or Latino may be any race.

**B Science and engineering degrees earned by underrepresented minority women and men, as a percentage of all S&E degrees awarded of each degree, by degree type: 1996-2016**

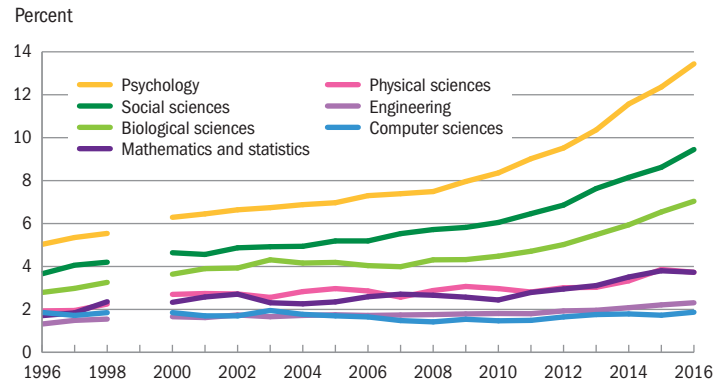


NOTE: Data not available for 1999.

**C Bachelor's degrees in science and engineering earned by American Indians or Alaska Natives and by Native Hawaiians or Other Pacific Islanders, by sex and field: 2016**

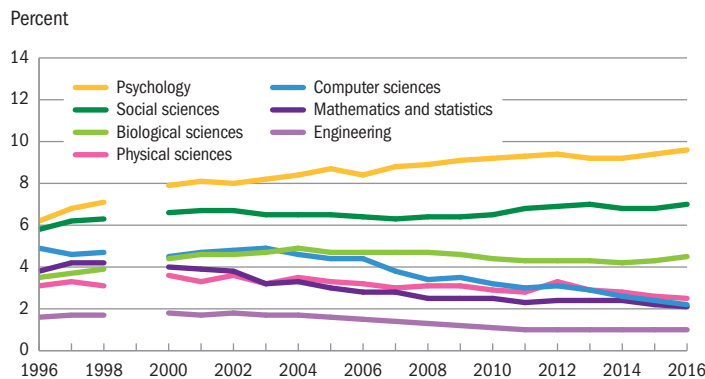


**D Science and engineering bachelor's degrees earned by Hispanic or Latino women, as a percentage of degree field, by field: 1996-2016**



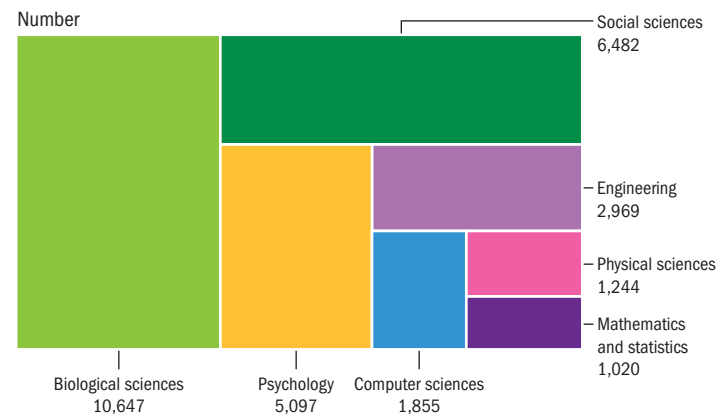
NOTES: Data not available for 1999. Hispanic or Latino may be any race.

**E Science and engineering bachelor's degrees earned by black or African American women, as a percentage of degree field, by field: 1996-2016**



NOTE: Data not available for 1999.

**F Science and engineering bachelor's degrees earned by Asian women, by field: 2016**



B

D

F

# Employment

Science and engineering (S&E) education is a large investment of time and resources for both the individual and the economy. Underutilization of this S&E expertise because of unemployment or underemployment affects the S&E enterprise in the United States. The unemployment rate is lower overall for scientists and engineers—those with at least a bachelor's degree in a S&E field or who are working in S&E occupations—than for the U.S. labor force. However, a larger share of scientists and engineers working part time want a full-time job, compared with the corresponding share of all U.S. part-time workers.

## Employment status

### Women and men

Among scientists and engineers, more men than women were employed full time in 2017 (12.8 million men versus 10.1 million women) and about twice as many women were employed part time (2.9 million women versus 1.5 million men) (figure A).

Among those working part time, the share wanting to work full time was about the same for men and women. However, the reasons for working part time varied. Women were much more likely than men to report that family responsibilities resulted in their part-time work schedules, whereas men were more likely than woman to report that they were retired from another job. Men and women working part time were equally as likely to report that a full-time job was not available, which is an indicator of overall economic conditions rather than of an individual's situation. In 2017, this category of part-time workers, part time for economic reasons, was only 15% of the U.S. part-time employed, less than the 25% of scientists and engineers who reported full-time work was not available among their reasons for working part time (figure B).

Unemployed men and women—those who are not working but are looking for work—are close in number, about 400,000 each. Almost three times as many women as men report that they are not employed, not looking for work, and not retired.

Looking at reasons for not working, women are much more likely than men to report family responsibilities (27% versus 6%). Women are also about as likely as men to report that a suitable job is not available. Men are much more likely than women to report being retired, perhaps because a majority of older cohorts of scientists and engineers are male (figure C).

### Race and ethnicity

Almost 70% of scientists and engineers employed full time are white. White scientists and engineers are a larger share of those not employed and not looking for work because of retirement (84%). This may be because older cohorts of scientists and engineers are more likely to be white than are the recent waves of graduates (figure D).

### Disability status

About 10% of employed scientists and engineers report one or more disabilities, that is, difficulties in hearing, vision, cognitive ability, ambulatory, self-care, or independent living. Men have a higher disability rate than do women, likely because reported disabilities increase with age and a larger share of male than female scientists and engineers are over age 50 (40% versus 32%). Asians have a lower disability rate (7%) than do the other racial and ethnic groups, perhaps because of Asian scientists and engineers' younger age distribution (figure E).

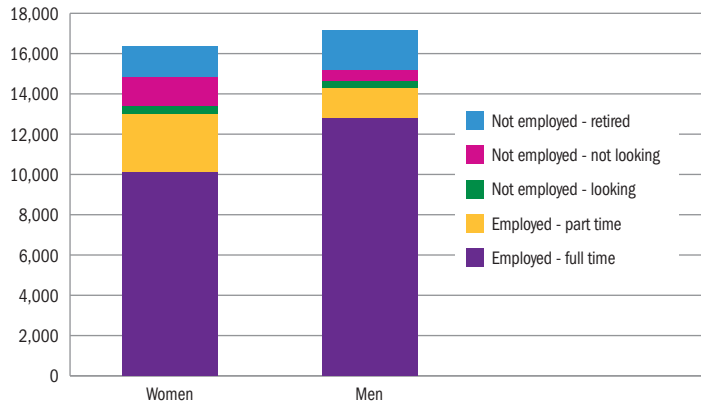
### Unemployment rate

Looking at the unemployment rates of scientists and engineers in 2017, the rates for both women (2.9%) and men (2.6%) were lower than that of the U.S. labor force (4.4%), indicating a strong demand for those with S&E expertise. Hispanic or Latino scientists and engineers had an unemployment rate of 4.6%; blacks or African Americans, 4.3%; and those with one or more disabilities, 5.0%—all about the same as the unemployment rate of the U.S. labor force (figure F).



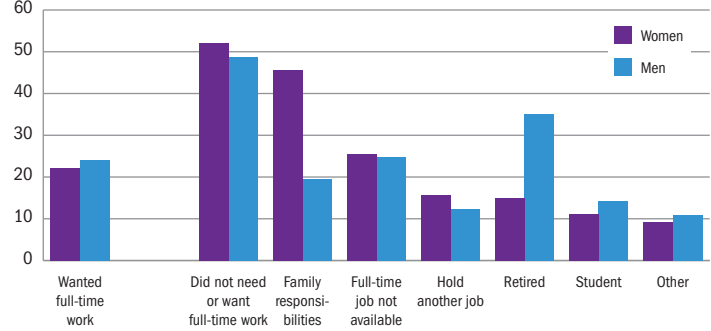
**A Employment status of scientists and engineers, by sex: 2017**

Number in thousands



**B Part-time employed scientists and engineers who want full-time work, and reason for working part time: 2017**

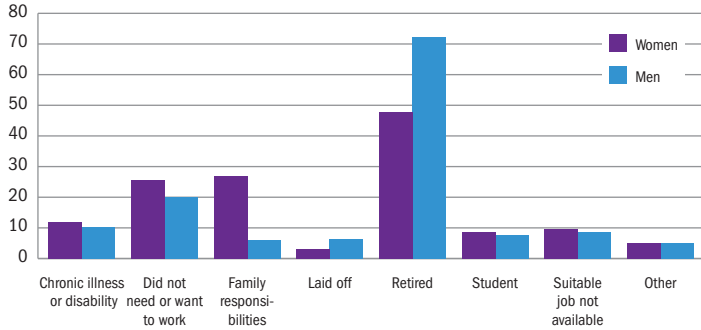
Percent



NOTE: More than one reason may be reported.

**C Scientists and engineers' reasons for being unemployed or not in the labor force, by sex: 2017**

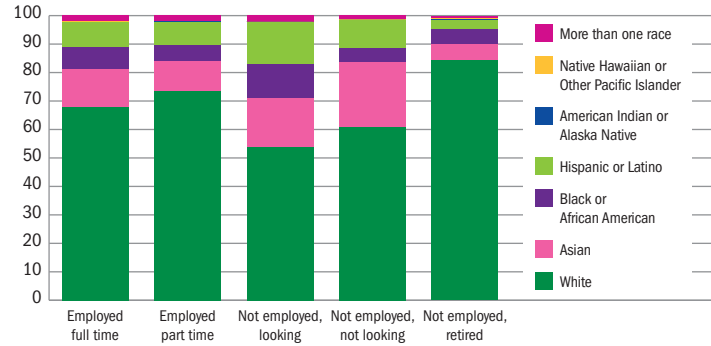
Percent



NOTE: More than one reason may be reported.

**D Employment status of scientists and engineers, by ethnicity and race: 2017**

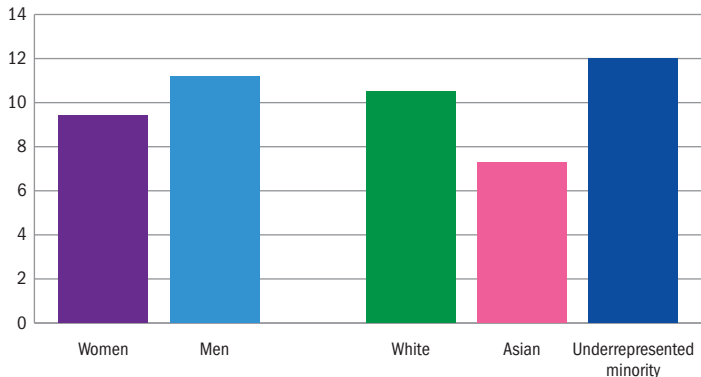
Percent



NOTES: Hispanic or Latino may be any race. Data for American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander suppressed in some categories for reasons of confidentiality and/or reliability.

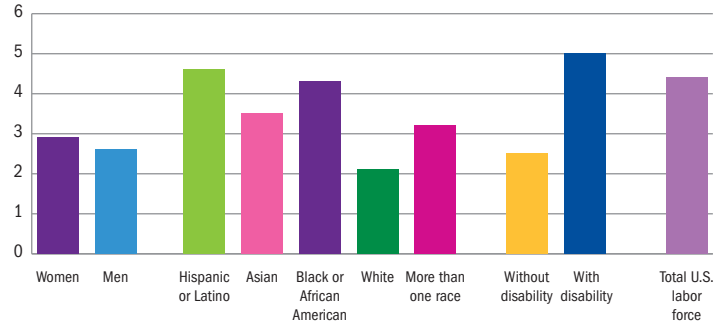
**E Employed scientists and engineers with disability, by sex, ethnicity, and race: 2017**

Percent



**F Unemployment rates of scientists and engineers, by sex, ethnicity, race, and disability status, and of the U.S. civilian labor force: 2017**

Percent



NOTES: Hispanic or Latino may be any race. Unemployment rate calculated as the percentage of the labor force not working and looking for work.

# Occupation

Scientists and engineers—those with at least a bachelor's degree in a science or engineering (S&E) field or who are working in S&E occupations—generally have higher salaries when working in S&E occupations than in other occupations. However, women have lower median salaries than do men in most occupations. The share of academic doctoral positions held by women has increased, and although underrepresented minorities have also gained ground, their share of these positions remains small.

## Science and engineering occupations

Among scientists and engineers, men were more likely than women to work in an S&E occupation in 2017. However, women were more likely than men to work in an S&E-related occupation, which includes health occupations. The net result is that female scientists and engineers were more likely than male scientists and engineers to work in a non-S&E occupation (48% versus 42%). Compared with other racial and ethnic groups, Asian scientists and engineers and white scientists and engineers were more likely to work in S&E or S&E-related occupations, with over half of Asians and whites working in these occupations in 2017.

For underrepresented minorities—Hispanics or Latinos, blacks or African Americans, and American Indians or Alaska Natives—and for those with one or more disabilities, about half of scientists and engineers work in either S&E or S&E-related occupations (figure A).

## Median salary

### Women and men

Among scientists and engineers working full time in 2017, women generally made less than men in each broad occupational group. Overall, women's median annual salary was \$66,000, whereas the median salary for men was \$90,000. Even for those employed in the relatively high-paying computer and information scientist occupations, women's median salary was considerably lower than that of their male counterparts. In addition, female psychologists' median salary was less than that of male psychologists, even though the field is majority female. However, for biological and life sciences occupations and social sciences occupations, the median salaries for women and men were about the same (figure B).

### Race and ethnicity

Salaries of scientists and engineers vary considerably across racial and ethnic groups and also across occupations. Asian scientists and engineers had the highest median salary in S&E occupations (\$100,000), whites had the second highest (\$90,000), and underrepresented minorities had a lower median salary (\$78,000). In S&E-related occupations, Asians and whites had higher median salaries than did underrepresented minorities (figure C).

## Disability status

Scientists and engineers with one or more disabilities had a slightly lower median salary than did those without a disability for those working in S&E-related and non-S&E occupations. For both science occupations and engineering occupations, the median annual salaries were about the same for those with and without disability. Regardless of disability status, scientists and engineers working in S&E-related and non-S&E occupations had lower median salaries than those in either science or engineering occupations (figure D).

## Academic careers

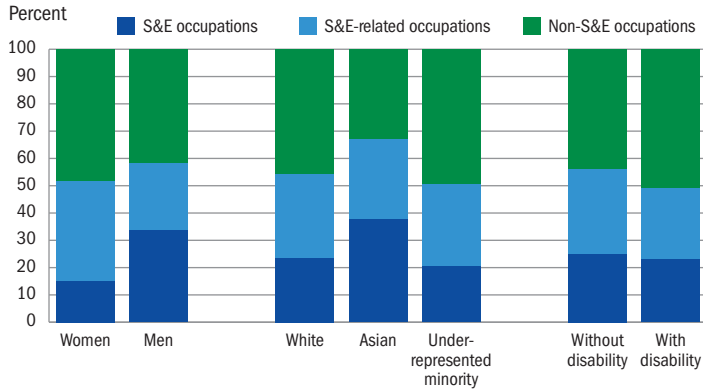
Universities play a key role in the nation's S&E enterprise by educating and training students in research practices and by performing a large share of the nation's basic research. The structure of academic employment of science, engineering, and health (SEH) doctorate holders has changed substantially over the past several decades. Full-time faculty positions in the professoriate are less available than they were a generation ago, and a workforce once dominated by white males is now much more diverse.

The share of academic doctoral positions held by women with SEH doctoral degrees has increased, from 25% in 1997 to 38% in 2017. Underrepresented minorities also hold a larger share of academic positions than they did in 1997, although their share remains small (9%), considerably less than their share of the population. The share of those with one or more disabilities has increased to about 9%, about the same as their share in the population (figure E).

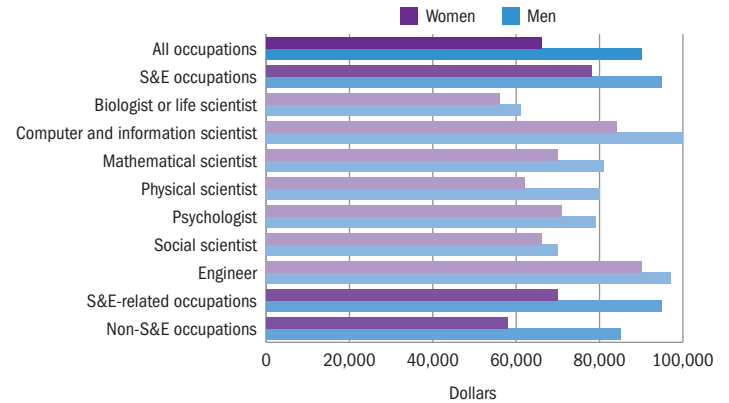
One goal of an academic career is to achieve tenure. Of all SEH doctorate holders employed in either universities or 4-year colleges in 2017, 45% were tenured, with an additional 15% in tenure-track positions.

Among SEH doctorate holders in academia, a larger share of men than women had tenure in 2017. Whites had the highest rates of tenure, followed by underrepresented minorities and Asians. Asians may have a lower rate of tenure because of their younger age distribution than the other racial and ethnic groups. Employed SEH doctoral holders who reported at least one disability were tenured at a higher rate than those without a disability. However, that is perhaps because those who are older are more likely to report a disability, and older academics are more likely to be tenured (figure F and appendix table A-2).

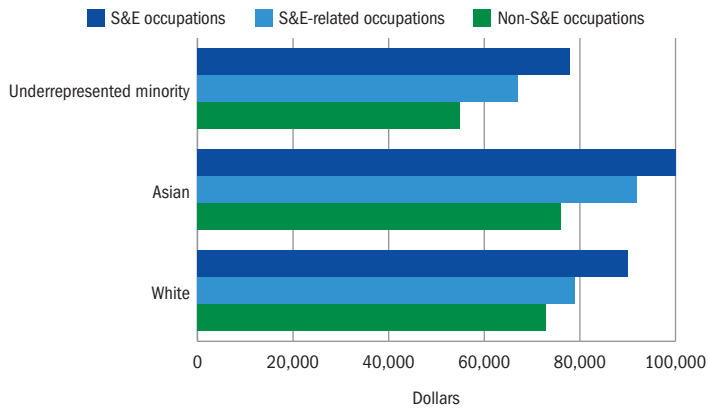
**A** Employed scientists and engineers, by occupational group, sex, ethnicity, race, and disability status: 2017



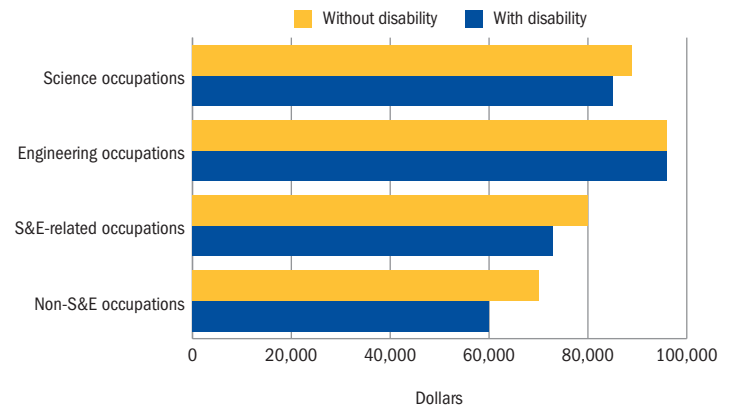
**B** Median annual salary of scientists and engineers employed full time, by sex and broad occupation: 2017



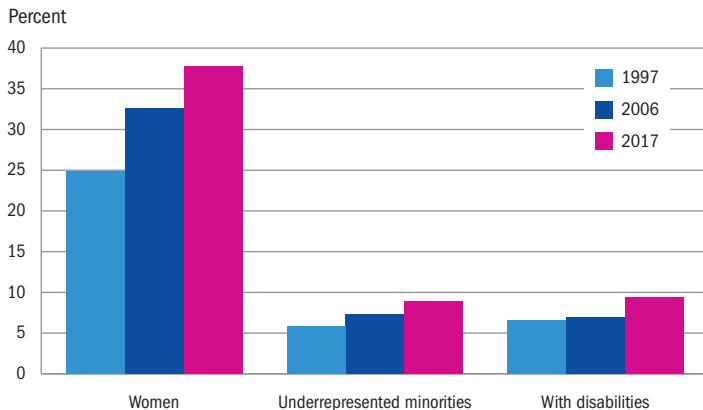
**C** Median annual salary of scientists and engineers employed full time, by ethnicity, race, and broad occupation: 2017



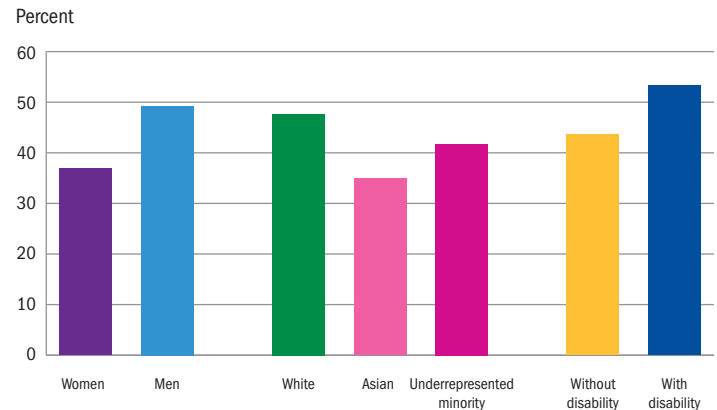
**D** Median annual salary of scientists and engineers employed full time, by occupation groups and disability status: 2017



**E** Women, underrepresented minorities, and those with disabilities as a percentage of the academic doctoral workforce: 1997, 2006, 2017



**F** Doctoral scientists and engineers employed in universities and 4-year colleges who are tenured: 2017



# Appendix

**TABLE A-1**

**Top U.S. baccalaureate institutions of science and engineering doctorate recipients from various groups: 2013–17**

(Number)

| Group and institution                                   | Doctorate recipients |
|---|----------------------|
| <b>Women</b>  |                      |
| U. California, Berkeley                                 | 892                  |
| Cornell U.  | 637                  |
| U. Michigan, Ann Arbor                                  | 546                  |
| <b>Black or African American</b>                        |                      |
| Howard U.   | 130                  |
| Spelman C.  | 102                  |
| Florida A&M U.  | 86                   |
| <b>Hispanic or Latino</b>                               |                      |
| U. Puerto Rico, Mayaguez                                | 307                  |
| U. Puerto Rico, Rio Piedras                             | 270                  |
| U. Texas, El Paso                                       | 186                  |
| <b>American Indian or Alaska Native</b>                 |                      |
| U. Oklahoma, Norman                                     | 12                   |
| U. Arizona  | 10                   |
| Oklahoma State U., Stillwater                           | 9                    |
| <b>Asian</b>  |                      |
| U. California, Berkeley                                 | 756                  |
| U. California, Los Angeles                              | 307                  |
| Massachusetts Institute of Technology                   | 291                  |
| U. California, San Diego                                | 291                  |
| <b>Persons with disabilities</b>                        |                      |
| U. California, Berkeley                                 | 31                   |
| U. Florida  | 27                   |
| Texas A&M U., College Station and Health Science Center | 22                   |

NOTES: Hispanic or Latino may be any race. Includes all doctorate recipients except those who reported that they did not receive a baccalaureate degree. Institutions with the same number of doctorate recipients are listed alphabetically. Data in this table refer to research doctorates only.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates. Related detailed data: WMPD table 7-9 through table 7-20.

**TABLE A-2**

**Doctoral scientists and engineers employed in universities and 4-year colleges according to type of academic position, by sex: 2017**

(Number)

| Academic position              | Total          | Women          | Men            |
|--------------------------------|----------------|----------------|----------------|
| <b>All academic positions</b>  | <b>319,400</b> | <b>120,650</b> | <b>198,750</b> |
| President, provost, chancellor | 3,850          | 1,350          | 2,500          |
| Dean, department head, chair   | 33,350         | 11,750         | 21,650         |
| Research faculty               | 158,650        | 56,700         | 101,950        |
| Teaching faculty               | 192,900        | 69,800         | 123,100        |
| Adjunct faculty                | 19,800         | 8,150          | 11,650         |
| Postdoc                        | 19,500         | 7,900          | 11,550         |
| Research assistant             | 2,100          | 700            | 1,400          |
| Teaching assistant             | 550            | 200            | 400            |
| Other                          | 24,000         | 12,100         | 11,900         |

NOTES: Numbers rounded to nearest 50. Detail may not add to total because of rounding and suppression. Doctoral scientists and engineers includes those who received research doctorates in science, engineering, and health fields from U.S. higher education institutions.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2017. Related detailed data: WMPD table 9-22.

# Glossary and key to acronyms

## Glossary

**High-Hispanic-enrollment institutions.** HHEs are public and private nonprofit academic institutions whose undergraduate, full-time equivalent student enrollment is at least 25% Hispanic. The list of HHEs included in this report is based on data from the Integrated Postsecondary Education Data System Fall 2016 Enrollment Survey conducted by the National Center for Education Statistics.

**Historically black colleges or universities.** 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 <https://sites.ed.gov/whhbcu/>.

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

**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 working as a scientist or engineer. A baccalaureate or higher degree is a bachelor's, master's, doctoral, or professional degree.

**S&E technologies.** A group of fields that includes science, engineering, health, and other technologies that prepare students for skilled technical jobs.

**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 2015 Carnegie Classification of Institutions of Higher Education. See <http://carnegieclassifications.iu.edu/>.

**Underrepresented minority.** This category comprises three racial or ethnic minority groups (blacks or African Americans, Hispanics or Latinos, 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

**HBCU:** historically black college or university

**HHE:** high-Hispanic-enrollment institution

**S&E:** science and engineering

## Data sources

The data in this report come from surveys conducted by the National Center for Science and Engineering Statistics (NCSES), National Science Foundation; National Center for Education Statistics (NCES), Department of Education; Census Bureau, Department of Commerce; and Bureau of Labor Statistics, Department of Labor. In addition, administrative data come from the Office of Personal Management. The technical notes for this report, available online at [www.nsf.gov/statistics/wmpd/](http://www.nsf.gov/statistics/wmpd/), provide detailed information on specific data sources.

The degree award data from NCES 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, in some cases fields were aggregated in figures and in the text. Data on degree awards include associate's, bachelor's, master's, and doctoral degrees and do not include professional degrees, such as the MD or JD.

Data on population projections are from the U.S. Census Bureau, 2017 National Population Projections Tables (<https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html>). Statistics on part-time workers are from the Bureau of Labor Statistics, Current Population Survey, 2017, table 8, cpsaat08 (<https://www.bls.gov/cps/cpsaat08.htm>).

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.

Information on race and ethnicity is available only for U.S. citizens and permanent residents in NCSES's Survey of Graduate Students and Postdoctorates in Science and Engineering enrollment data and in NCES's enrollment and degree award data. However, the proportions of students by race and ethnicity are calculated based on the total number of students enrolled or earning degrees, including those who have temporary visas.

Percentages in this report were rounded to whole numbers except in the case of X.5, where the precision is shown to one decimal place. All percentages in the online source tables for the figures are rounded to one decimal place.

## Online resources

A rich set of resources that supplement this digest are available online at [www.nsf.gov/statistics/wmpd/](http://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 available for download, either as Excel or PDF files.

**Figures.** Presentation graphics, accompanied by their supporting data, 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.

**Additional resources links.** Links are provided to additional sources of data on these topics and to related reports from the National Center for Science and Engineering Statistics and from external sources, such as the National Center for Education Statistics and the Census Bureau.

# Acknowledgments and citation

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The report was edited and produced by Christine Hamel and Tanya Gore, with guidance from Catherine Corlies, all at NCSES. Drew Mitchell and staff at OmniStudio, Inc., designed the cover and layout. Development of the Web version was guided by Rajinder Raut, NCSES, with technical assistance from staff of Penobscot Bay Media.

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