Status of Women of Color in Science, Engineering, and Medicine

The figures and tables below are based upon the latest publicly available data from AAMC, NSF, Department of Education and the US Census Bureau. The first section captures the number of women of color graduates in the science and engineering fields, and examines all degree levels (Bachelors, Masters, and Doctorates). The second section takes a closer look at the status of women of color in the engineering field. The third section focuses on the status of women of color in medicine. Finally, the fourth section looks at women of color in the science & engineering workforce.

Data sources:

- Association of American Medical Colleges (AAMC) Report on Current Trends in Medical Education, 2015
- National Center for Science and Engineering Statistics (NCSES)
    - National Survey of College Graduates 2015 (NSCG 2015)
- Integrated Postsecondary Education Data System
    - Completions Survey 2015
- US Census Bureau Report on Labor Force Characteristics by Race and Ethnicity, 2016

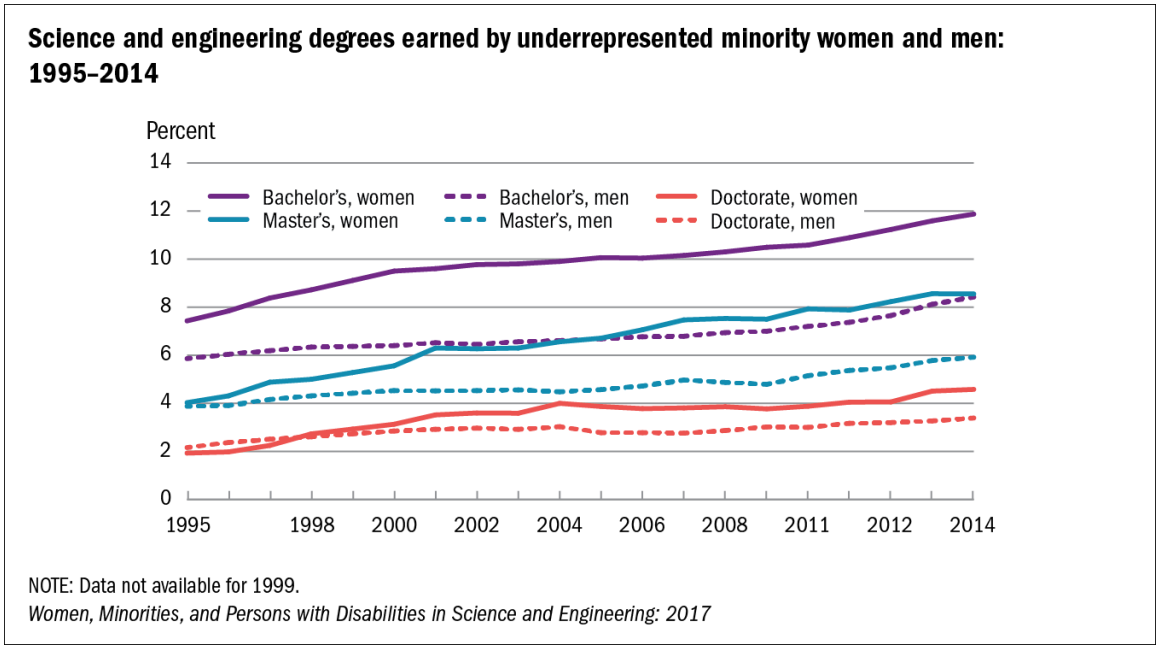
Definitions:

- Throughout the document Underrepresented Minorities (URM) will only refer to African Americans, American Indians or Alaskan Natives, Native Hawaiians and other Pacific Islanders. Asian Americans and persons with disabilities are not included in the URM category.
- Data taken from the National Survey of College Graduates includes graduates from all institution types. The survey distinguishes between public and private institution but does not distinguish between private for-profit or private non-profit.
- The NSCG 2015 definition of the sciences: computer and mathematical scientists, life and related scientists, physical and related scientists, social and related scientists, and engineers. Postsecondary teachers are included within each of these groups.
- The NSCG 2015 definition of S&E-related occupations: health and related occupations; S&E managers; S&E precollege teachers; S&E technicians and technologists, including computer programmers; and other S&E-related occupations, such as architects and actuaries.

I. Status of Women of Color in Science, Engineering, and Medicine

- In the past 20 years the share of science and engineering (S&E) degrees earned by underrepresented minorities (URMs)—African Americans, Hispanics, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders—has more than doubled at all levels of education (Bachelor's, Master's, and Doctorate). See figure 1
- URM women have earned degrees in S&E in greater numbers compared to URM men. This is true at all degree levels. See figure 1
- African Americans, Hispanics, and American Indians or Alaska Natives have gradually increased their share of S&E degrees, but they remain significantly underrepresented in educational attainments at all levels.

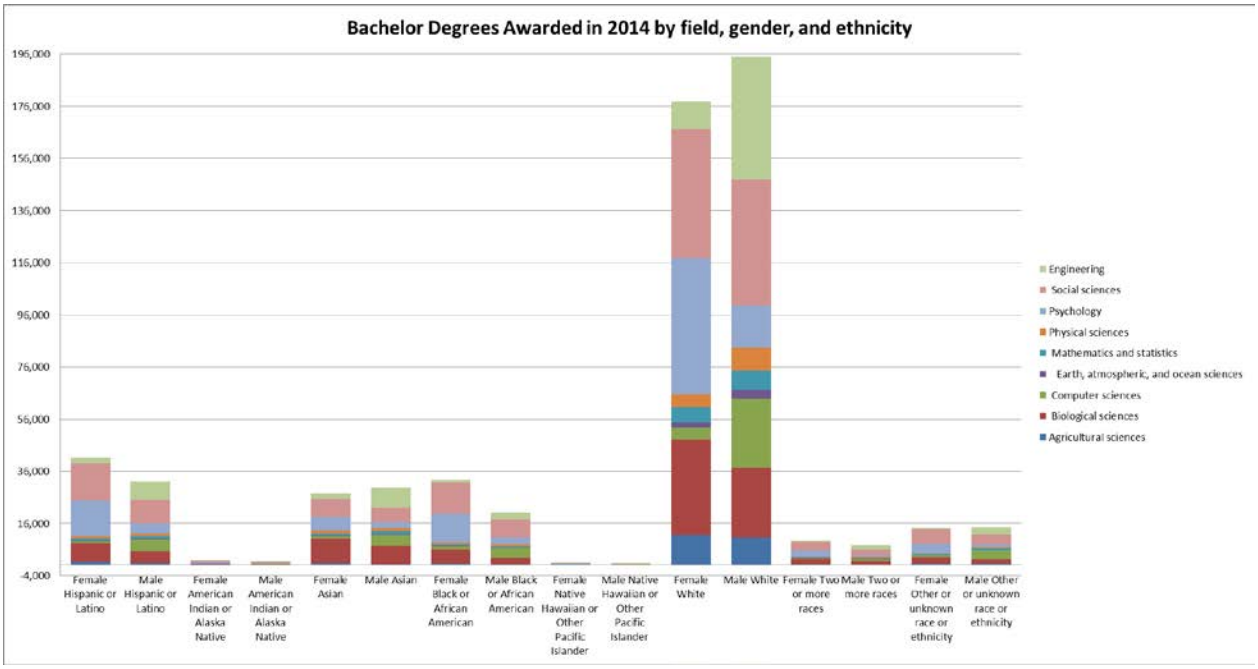
Figure 1. Science and engineering degrees earned by underrepresented minority women and men: 1995-204



Note: Underrepresented minority women and men surveyed above include: African American, Hispanic/Latino, American Indian or Alaskan Native, and Native Hawaiian or Other Pacific Islander.

- While the share of S&E degrees earned by URM women has more than doubled at all levels of education, the numbers are still dwarfed by the number of S&E degrees earned by White women. See figure 2 and table 2 (2014 data) below
    - The highest number of Bachelor's degrees awarded to Hispanic Women/Latina, American Indian, and Native Hawaiian in 2014 was in the field of Social Sciences
    - The highest number of Bachelor's degrees awarded to African American women in 2014 was in the field of Psychology

Figure 2. Bachelor's Degrees Awarded to Women in 2014 by field and race/ethnicity



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

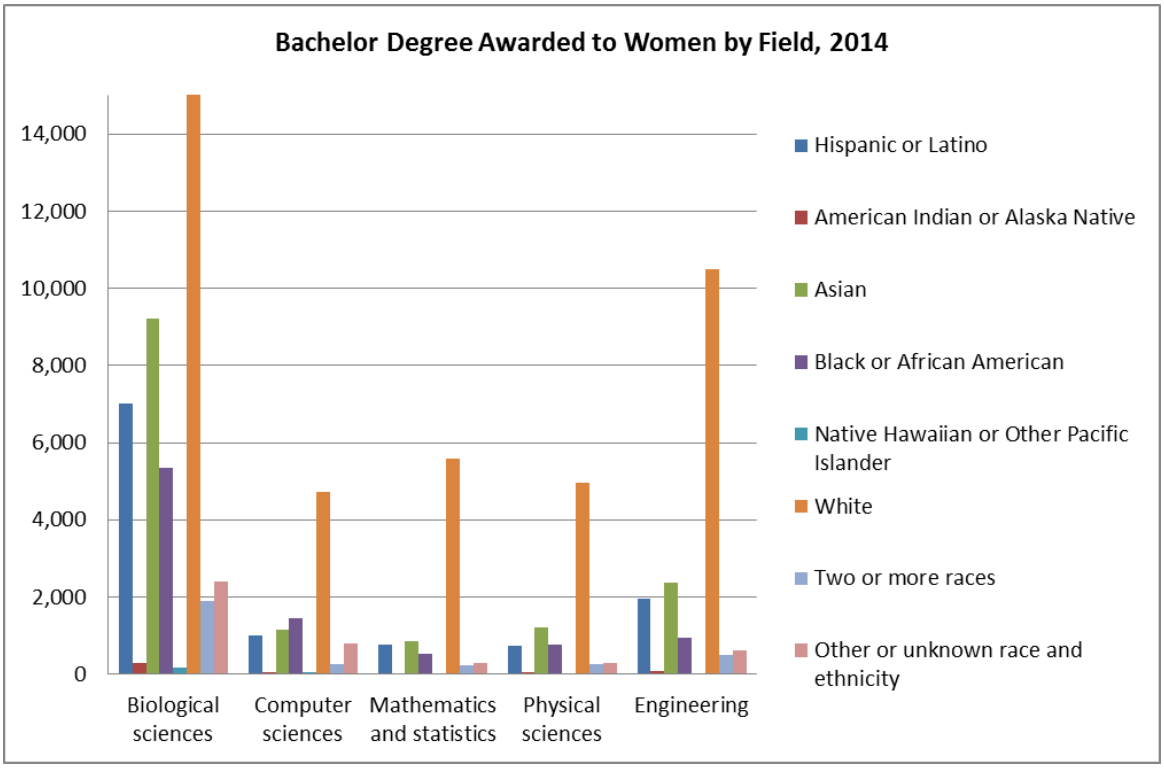
Note: The table below represents the data in figure 2.

Table 2. Bachelor's Degrees Awarded to Women in 2014 by field and race/ethnicity

	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Mathematics and statistics	Physical sciences	Psychology	Social sciences	Engineering
Female Hispanic or Latino	1,195	7,026	1,007	214	780	750	13,704	14,502	1,954
Male Hispanic or Latino	788	4,516	4,462	281	975	1,078	3,876	9,041	7,030
Female American Indian or Alaska Native	106	304	57	21	27	53	493	620	82
Male American Indian or Alaska Native	87	189	221	22	34	56	167	415	238
Female Asian	696	9,217	1,167	100	864	1,217	5,089	6,875	2,360
Male Asian	427	6,908	4,197	113	1,336	1,382	2,010	5,698	7,718
Female African American	519	5,337	1,463	62	522	757	10,878	12,127	933
Male African American	333	2,326	4,009	81	500	563	2,739	6,832	2,666
Female Native Hawaiian or Pacific Islander	51	168	37	2	18	21	207	264	36
Male Native Hawaiian or Pacific Islander	25	101	142	8	16	15	68	242	147
Female White	11,550	36,615	4,727	1,927	5,593	4,972	52,384	49,530	10,508
Male White	10,595	26,705	26,479	3,284	7,545	8,795	16,181	48,189	47,303
Female Two or more races	470	1,884	262	86	217	256	2,561	3,122	510
Male Two or more races	252	1,146	976	76	290	355	758	2,129	1,606
Female Other or unknown race or ethnicity	596	2,394	788	90	297	299	3,698	5,602	604
Male Other or unknown race or ethnicity	537	1,765	3,317	137	509	516	1,132	3,833	2,699

Highlights in yellow denote highest number of degees awarded and blue denotes lowest number of degrees awarded

Figure 3. Bachelor's Degrees Awarded to Women by Field, 2014



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table 3. **Bachelor's Degrees Awarded to Women by Field, 2014**

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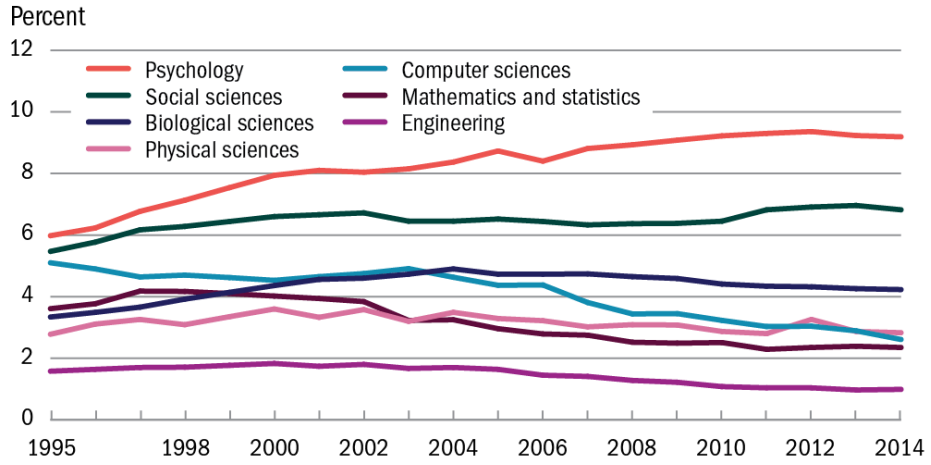
Race/Ethnicity	Biological sciences	Computer sciences	Mathematics and statistics	Physical sciences	Engineering
Hispanic or Latino[a]	7,026	1,007	780	750	1,954
American Indian or Alaska Native	304	57	27	53	82
Asian	9,217	1,167	864	1,217	2,360
African American	5,337	1,463	522	757	933
Native Hawaiian or Other Pacific Islander	168	37	18	21	36
White	36,615	4,727	5,593	4,972	10,508
Two or more races[c]	1,884	262	217	256	510
Other or unknown race and ethnicity	2,394	788	297	299	604
Highlights in yellow denote highest number of degees awarded and blue denotes lowest number of degrees awarded					

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

- All URM women earn more Bachelor's degrees in Biological sciences than in any other S&E field, as do Hispanic women and all other underrepresented minority group.
- URM women are better represented in the biological sciences than in other science and engineering fields.
- Mathematics and statistics award the least number of doctoral degrees to URM women
- The fields of computer science, engineering, and physical sciences also award a low number of doctoral degrees to URM women.

Figure 4. Science and Engineering Bachelor's Degrees Earned by African American Women, by field 1995-2014

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

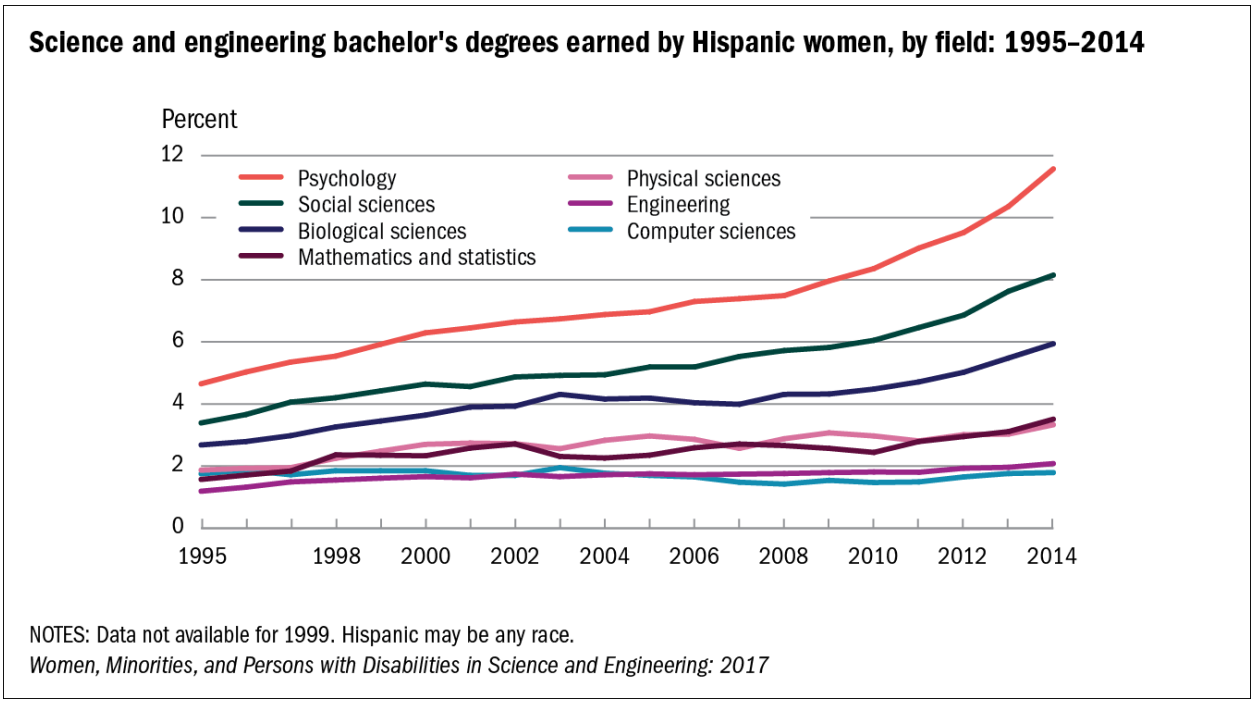


NOTE: Data not available for 1999.

Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017

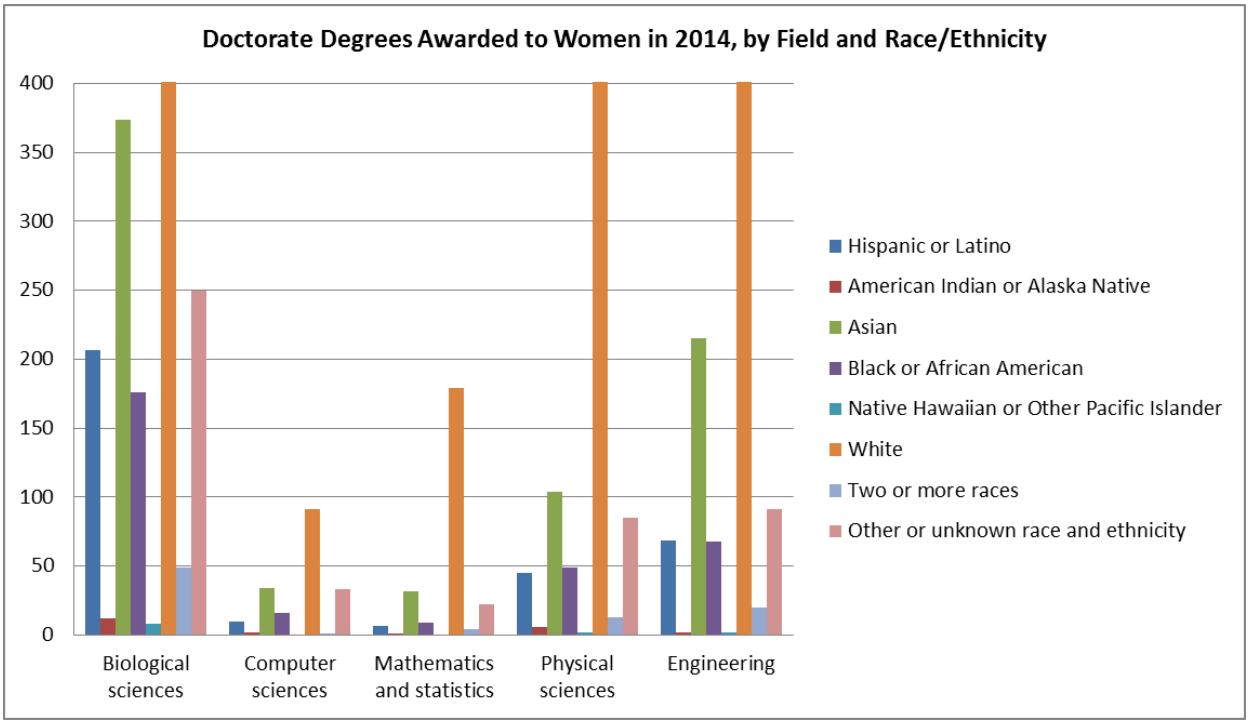
- African American women, similar to Hispanic women, earn a higher share of bachelor's degrees in psychology and social sciences than in any other broad S&E field.
- In the past 20 years, the largest increase in the share of bachelor's degrees African American women earn was in psychology, followed by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

Figure 5. Science and Engineering Bachelor's Degrees Earned by Hispanic Women, by Field 1995-2014



- 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 6. Doctorate Degrees Awarded to Women in 2014, by Field and Race/Ethnicity



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table 6. Doctorate Degrees Awarded to Women in 2014, by Field and Race/Ethnicity

Race/Ethnicity	Biological sciences		Computer sciences		Mathematics and statistics	
		%*		%*		%*
Hispanic or Latino	207	3.5%	10	5.3%	7	2.8%
American Indian or Alaska Native	12	0.2%	2	1.1%	1	0.4%
Asian	374	6.3%	34	18.2%	32	12.6%
African American	176	3.0%	16	8.6%	9	3.5%
Native Hawaiian or Other Pacific Islander	8	0.1%	0	0.0%	0	0.0%
White	2,114	35.5%	91	48.7%	179	70.5%
Two or more races	49	0.8%	1	0.5%	4	1.6%
Other or unknown race and ethnicity	250	4.2%	33	17.6%	22	8.7%

Highlights in yellow denote highest number of degees awarded and blue denotes lowest number of degrees awarded
* Percentages calculated from total number of all women awarded doctorates in 2014 in each field

Physical sciences		Engineering		Race/Ethnicity
	%*		%*	
45	5.0%	69	6.3%	Hispanic or Latino
6	0.7%	2	0.2%	American Indian or Alaska Native
104	11.5%	215	19.5%	Asian
49	5.4%	68	6.2%	African American
2	0.2%	2	0.2%	Native Hawaiian or Other Pacific Islander

602	66.4%	635	57.6%	White
13	1.4%	20	1.8%	Two or more races
85	9.4%	91	8.3%	Other or unknown race and ethnicity

Highlights in yellow denote highest number of degees awarded and blue denotes lowest number of degrees awarded

* Percentages calculated from total number of all women awarded doctorates in 2014 in each field

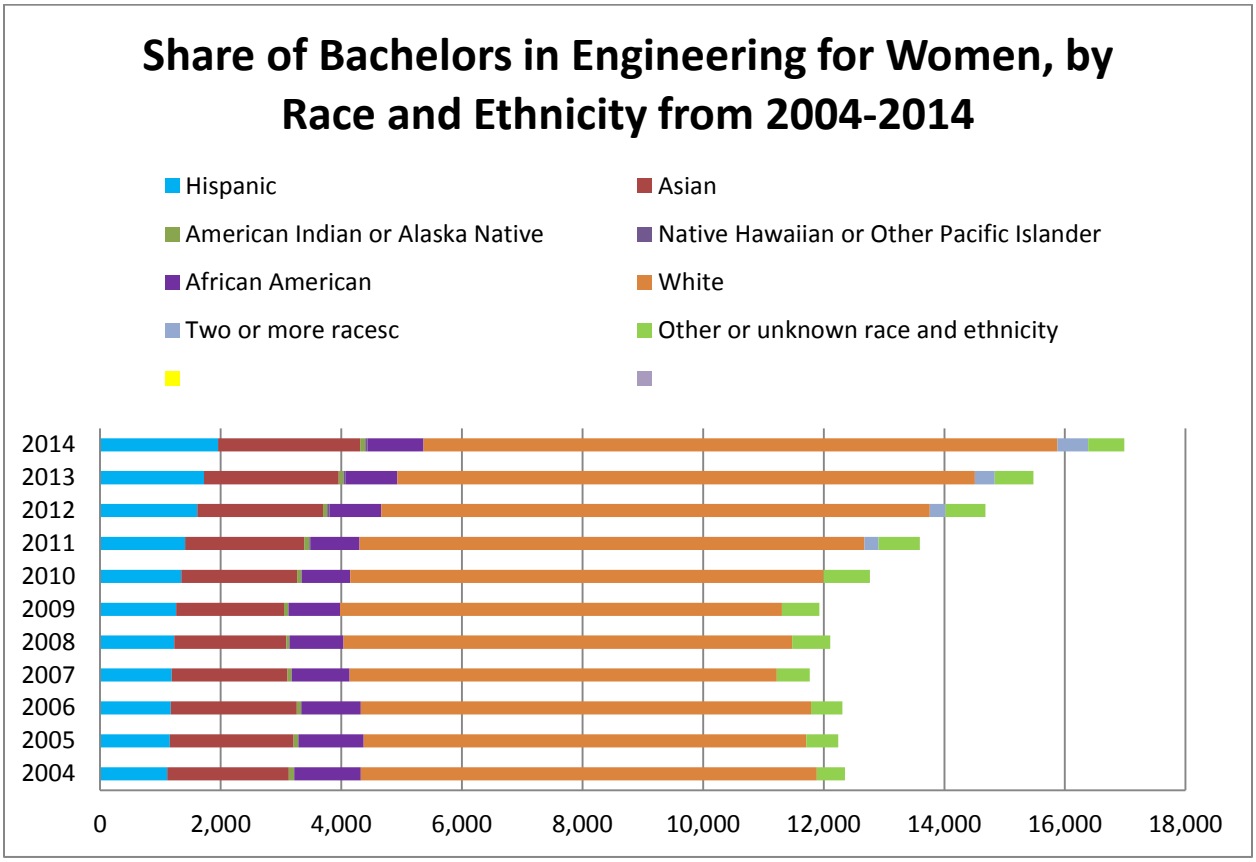
SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

At the doctorate level, biological sciences continues to be the area that produces the highest number of women of color, compared to any other S&E field (excluding Psychology and Social Sciences).

- At the doctorate level there are higher numbers of Hispanic/Latino and African American graduating from Engineering fields compared to the Computer Sciences.
- Mathematics and statistics award the lowest number of doctoral degrees to URM women.
- Other low participation fields include: computer science, engineering, mathematics, physical sciences

II. ***Women of Color in Engineering***

Figure 7. Share of Bachelors in Engineering for Women, by Race and Ethnicity from 2004-2015

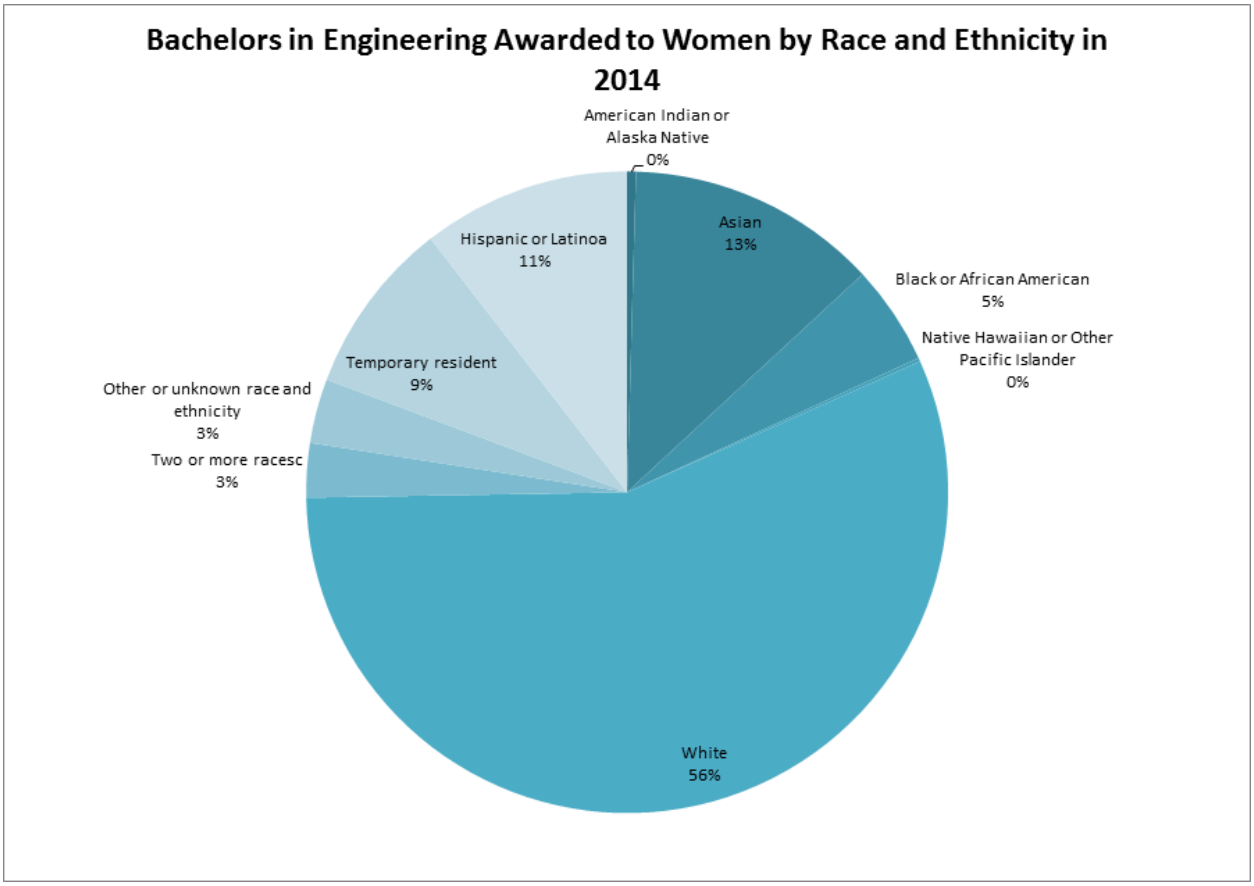


SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

- Only 20% of Bachelor in engineering In 2014 were awarded to women.
- A complete breakdown of bachelors in engineering awarded to women in engineering by race and ethnicity from 2004-2014 can be seen in the figure above.
    - The survey showed that 18,626 women were awarded a Bachelors degree in Engineering--this is 20% of the share of Bachelors of Engineering in the US[1].
    - Of the 18,626 sample of women who graduated with a Bachelors in Engineering, 20% graduated with a degree in Civil Engineering, 17% in Mechanical Engineering, 16% in Chemical Engineering, 12% in Electrical Engineering, 8% in Industrial Engineering, 3% in Aerospace Engineering, and 2% in Materials Engineering.

[1] The total share includes bachelors in engineering awarded to international students/temporary residents.

Figure 8. Bachelors in Engineering Awarded to Women by Race and Ethnicity in 2014



- Of all the Bachelors in Engineering awarded to women in 2014, 11% went to Hispanic or Latina women (1,954), 5% went to African American women (933), and <1% went to American Indian or Alaskan Native and Native Hawaiian or Other Pacific Islander.

III. Status of Women of Color in Medicine

Figure 9 displays the percentage of race and ethnic subgroup for 2015 graduates. Similar to matriculants (Figure 15), White (58.8%), Asian (19.8%), and Multiple Race and Ethnicity (7.1%) individuals represent the largest proportion of medical school graduates. African Americans and Hispanics or Latinos represent 5.7% and 4.6% of graduates, respectively. Only 20 American Indian or Alaska Natives and 5 Native Hawaiian or Other Pacific Islander are 2015 medical school graduates.

Figure 9. Percentage of US Medical School Graduates by Race and Ethnicity, 2015

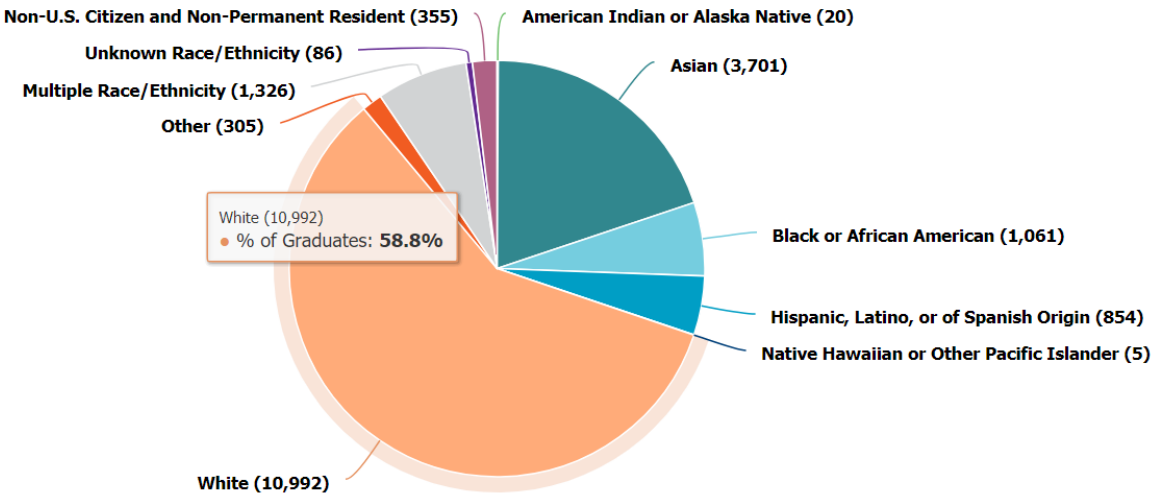
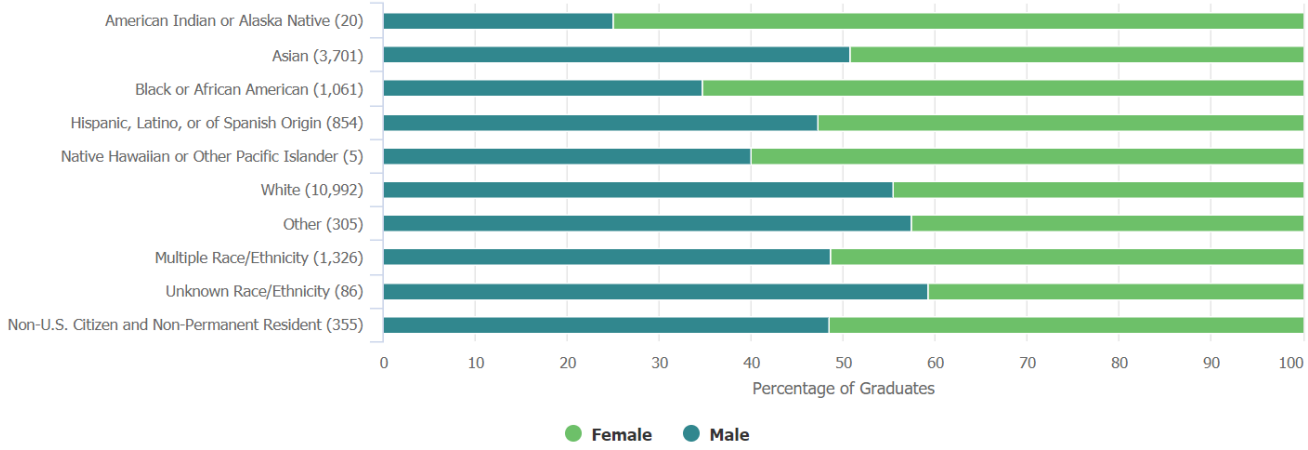


Figure 10. Percentage of US Medical School Graduates by sex, race, and ethnicity, 2015



Source: AAMC Diversity Facts and Figures 2016

- African American, Hispanic and Latin American, American Indian or Alaska Native, and Native Hawaiian women continue to be underrepresented in medicine.
- African American women have exceeded African American men in the attainment of medical degrees. The same goes for Hispanic and Latina women who have gradually reached parity with their male peers and now have exceeded in the attainment of medical degrees.

Figure 11A. Percentage of US Medical School African American Graduates by Sex, 1986-2015

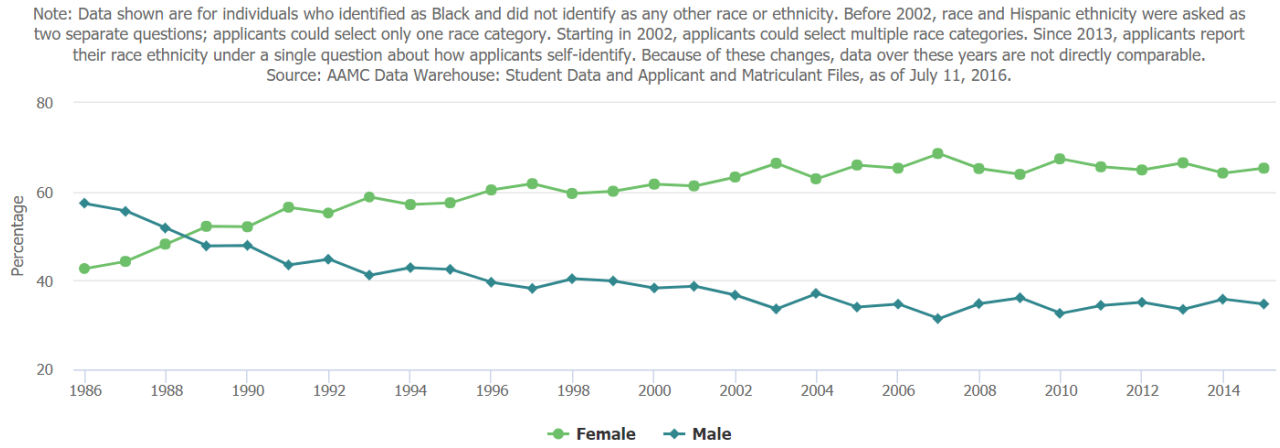
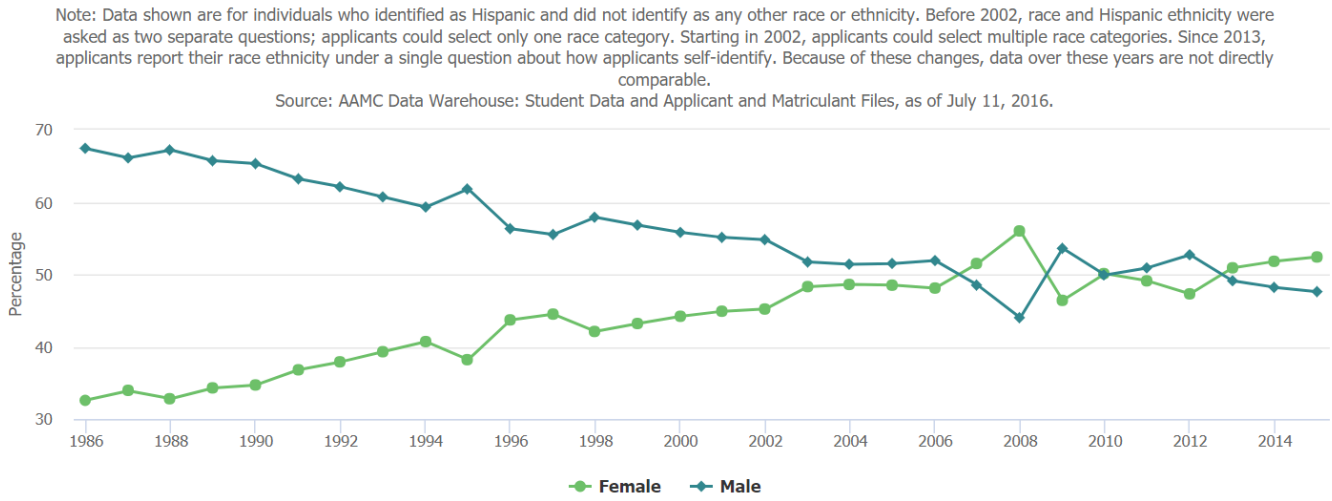


Figure 11A displays the percentage of African American graduates by gender from 1986 to 2015. There is a well-documented trend of growth among African American female graduates. Since 1986, female graduates have increased 53% and male graduates have declined 39.4%. In 2015, the gender gap between African American men and women graduates is at 30.6%.

Figure 11B. Percentage of US Medical School Hispanic or Latino Graduates by Sex, 1986-2015



Source: AAMC Diversity Facts and Figures 2016

Figure 11B displays the percentage of Hispanic or Latino graduates by gender from 1986 to 2015. Male graduates have declined by 28.3%, and female graduates have increased 57.6% since 1986. Female Hispanic or Latino graduates surpassed male Hispanic or Latino graduates for the first time in 2007. Since 2007, Hispanic or Latino graduate trends have reflected gender parity with neither male nor female graduates substantially outpacing the other. Females represent 52.4% of Latino or Hispanic 2015 graduates.

IV. The United States S&E Workforce

- Composition of the labor force by race: Whites made up the majority of the labor force (78 percent). African Americans and Asians constituted an additional 12 percent and 6 percent, respectively. American Indians and Alaska Natives made up 1 percent of the labor force, while Native Hawaiians and Other Pacific Islanders consisted of less than 1 percent. People of Two or More Races made up about 2 percent of the labor force (as computed from table 1)
  Source: https://www.bls.gov/opub/reports/race-and-ethnicity/2016/pdf/home.pdf

- Figure 12 captures the US S&E workforce profile based on data collected by the National Science Foundation's National Center for Science and Engineering Statistics. This data is based on NCSES' **National Survey of College Graduates 2015**[2].

Figure 12.

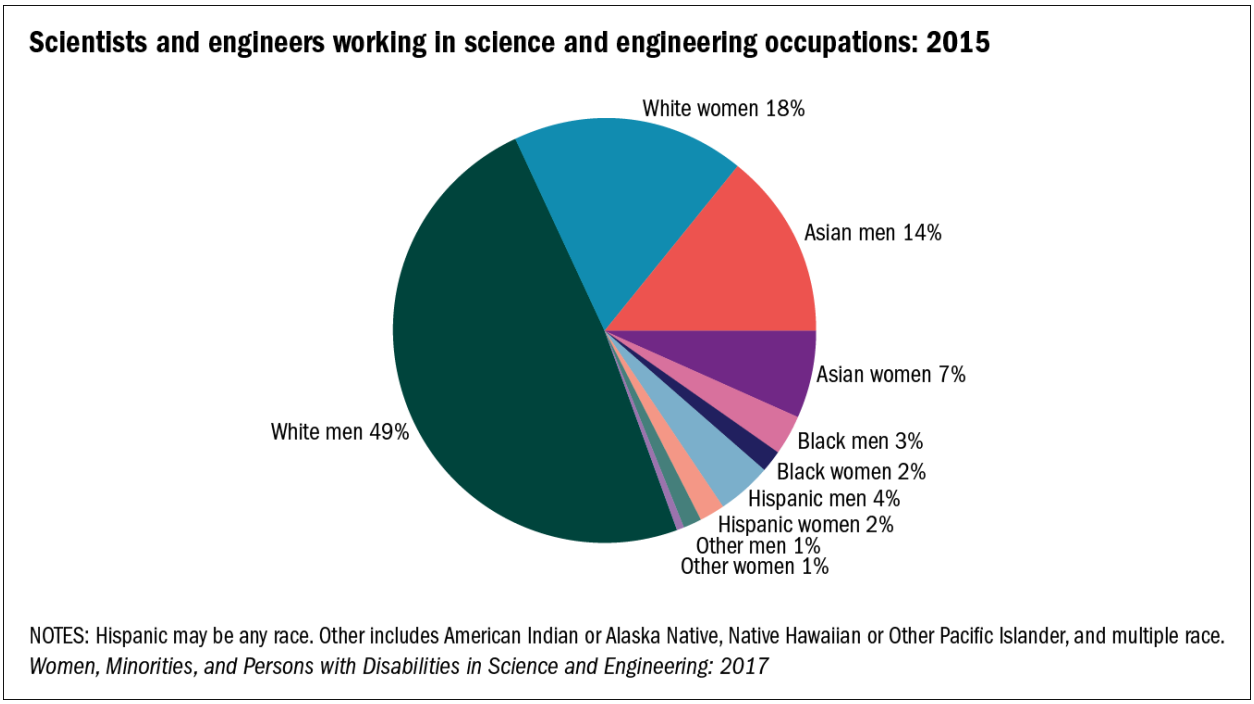
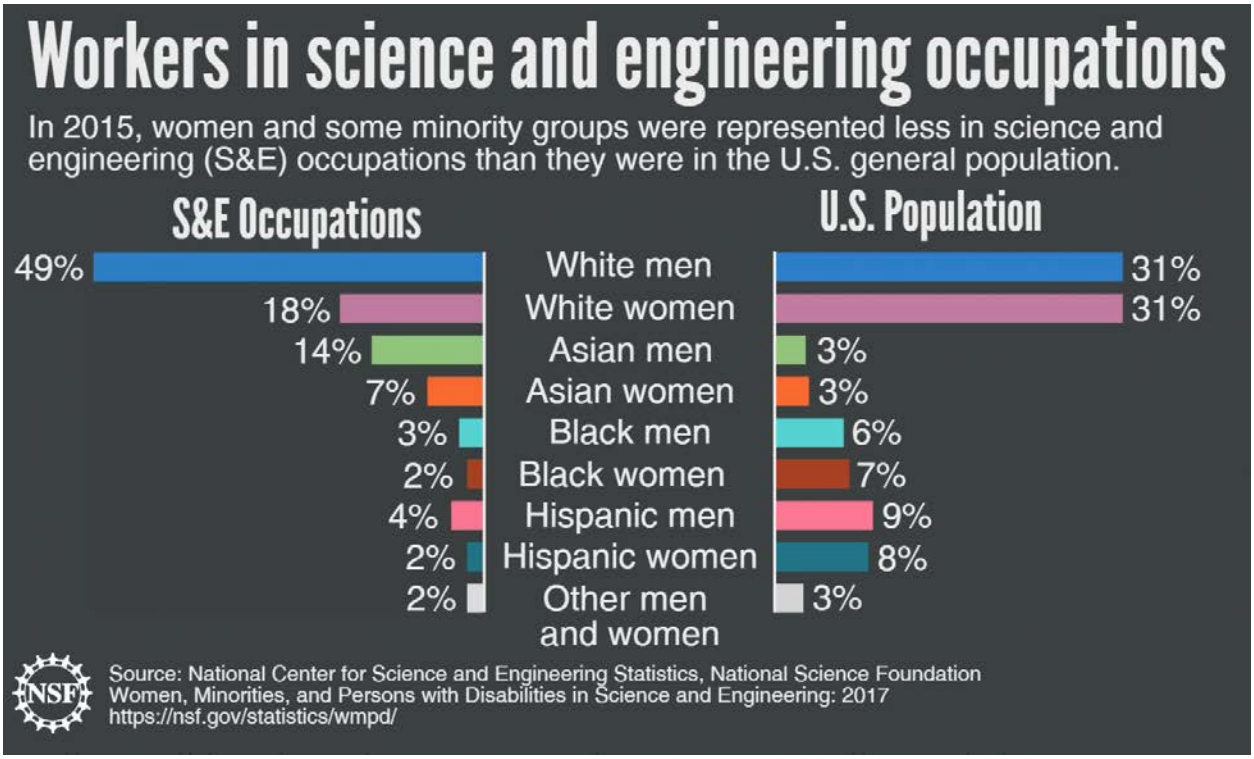


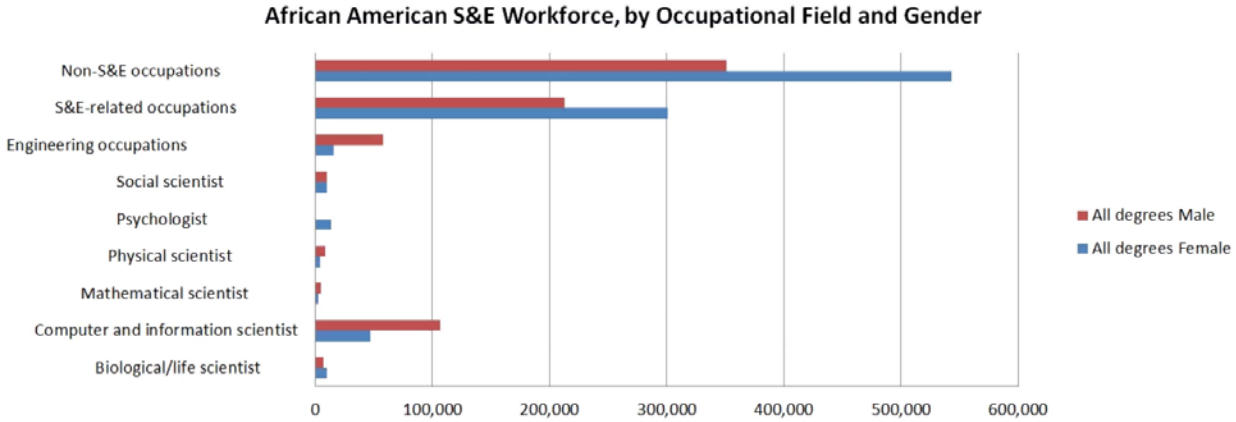
Figure 13.

[2] The National Survey of College Graduates is a longitudinal biennial survey conducted since the 1970s that provides data on the nation's college graduates, with particular focus on those in the science and engineering workforce. The survey samples individuals who are living in the United States during the survey reference period have at least a bachelor's degree, and are under the age of 76. This survey is a unique source for examining the relationship of degree field and occupation in addition to other characteristics of college-educated individuals, including occupation, work activities, salary, and demographic information.



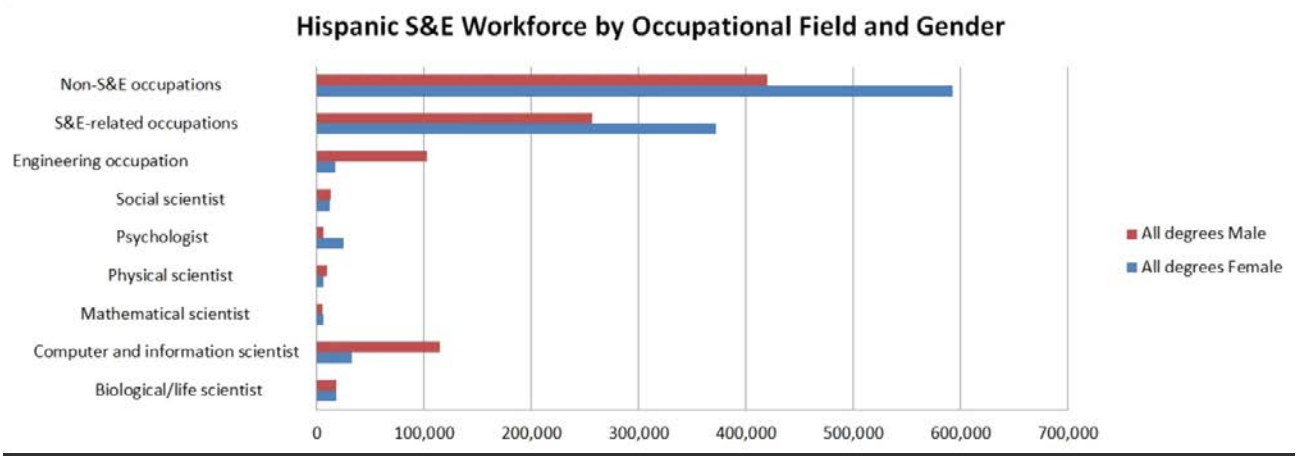
- While women have reached parity with men relative to their representation in the U.S. population among S&E degree recipients overall, they constitute disproportionately smaller percentages of employed scientists and engineers than they do of the U.S. population.

Figure 14.



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates, 2015.

Figure 15



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates, 2015.

Figure 16

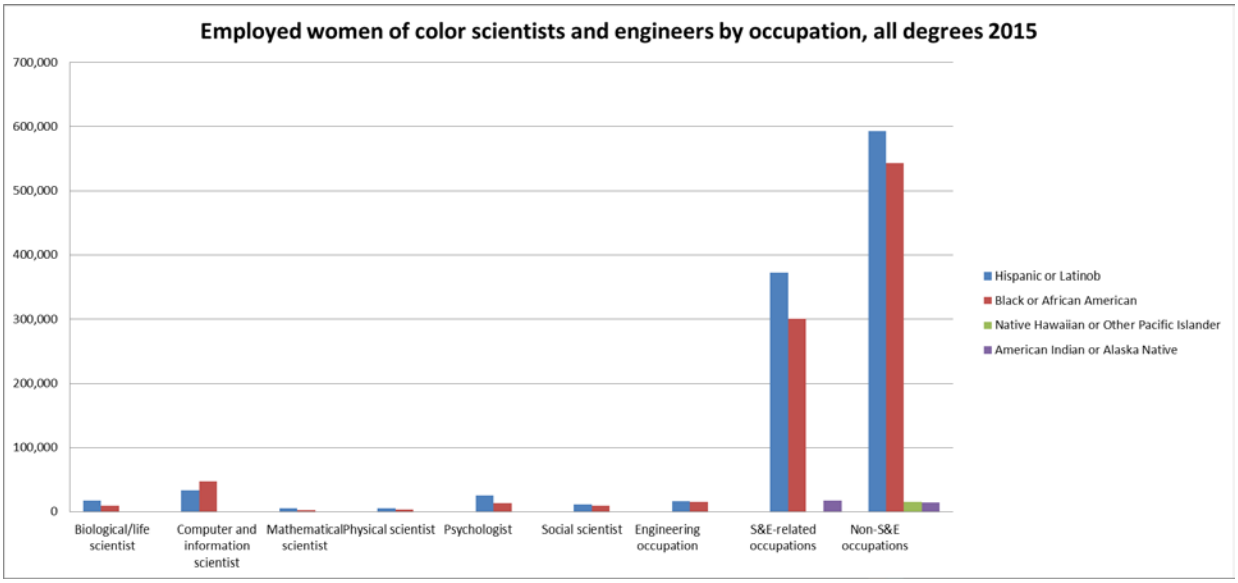


Table 16. Employed women of color scientists and engineers by occupation, all degrees 2015

	Hispanic or Latino[b]	African American	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native
Biological/life scientist	18,000	10,000	1,000	0
Computer and information scientist	33,000	47,000	0	0
Mathematical scientist	6,000	3,000	0	0
Physical scientist	6,000	4,000	0	0
Psychologist	25,000	14,000	0	0
Social scientist	12,000	10,000	0	0

Engineering occupation	17,000	16,000	0	0
S&E-related occupations	372,000	301,000	0	18,000
Non-S&E occupations	593,000	543,000	16,000	15,000

- Figures 14, 15, and 15 and Table 16 show that most women with S&E degrees work in non-S&E occupation or S&E related fields.