

EDUCATION:

At each increasing level of advanced training, the proportion of female science and engineering (S&E) degree recipients declines (Figure 1). Moreover, the decades-long trend of women’s increasing representation among S&E BS and PhD degree holders has stalled in recent years (Figure 3).

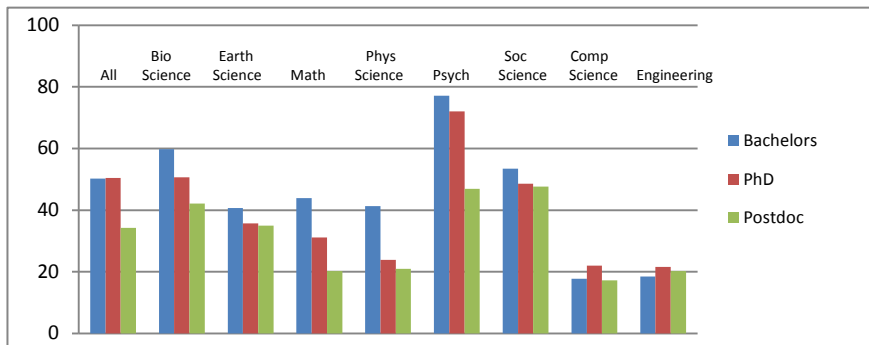


Figure 1: Percent Women among People with Bachelors, PhDs and Postdocs in Science and Engineering Fields¹

SCIENCE & ENGINEERING CAREERS:

Women are increasingly under-represented at each stage of the career ladder in both industry and academia:

Glass ceilings for women in industry:

Women are under-represented in science and engineering management positions, compared with their overall representation in these industries:

- In 2008, women scientists and engineers employed in business or industry held 20% of all management and 15% of non-S&E top-level management positions, compared with their 21% representation in S&E business and industry overall.²
- Women held only 6% of engineering management and 20% of computer and information systems management positions.²

Among S&E doctorate holders in academia (science & engineering, excluding social science and psychology):

- Women obtained 41% of S&E doctorates in 2010 and 33% of postdoc positions.¹
- Women made up a higher percentage of people employed in temporary positions than of those in tenure-track positions in 2006: Women held 36% of S&E adjunct faculty positions, but only 28% of tenure-track and 16% of full professor positions.³
- Women are only 19% of faculty in all S&E fields (and only 9% of all engineering faculty).¹¹

Although social science has more women than S&E, female representation declines at each successively higher academic level:

- Women obtained 47% of social science and 70% of psychology doctorates in 2010 but only held 47% of social science and 54% of psychology postdoc positions.¹
- Women were over-represented among people in temporary academic positions in 2006: Women held 62% of social science and psychology adjunct faculty positions, but only 52% of tenure-track and 30% of full professor positions.³

GENDER PAY GAP:

Women in S&E fields earn average yearly salaries of \$71,845, while men receive \$86,214.¹¹ Overall, women working full-time in S&E professions earn 86% on average, what their male counterparts do.⁴ This is similar to or higher than among lawyers (87%)⁶, physicians and surgeons (79%)⁶, and among working men and women overall (81%)¹², but the momentum of movement toward income equality gained in the 1970s and 1980s has largely stagnated since the mid-1990s.⁷

SCIENCE & ENGINEERING COMPARED TO OTHER OCCUPATIONS:

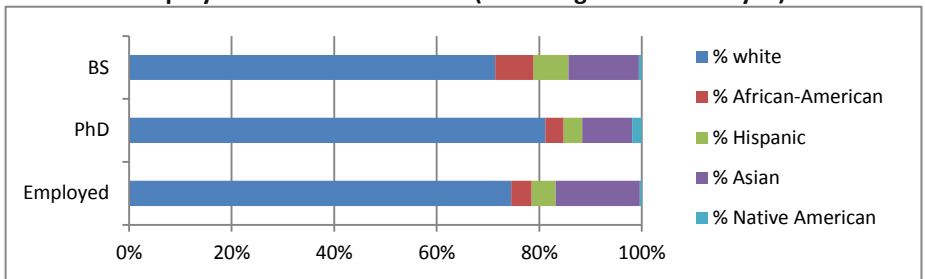
In 2009, women continued to constitute the vast majority of those employed in traditionally female occupations:

- More than three-quarters of registered nurses, therapists, and non-postsecondary teachers were women.⁵
- Women were about half of people employed in all occupations and half of postsecondary teachers, one-third of lawyers and judges, and 32% of physicians.⁵
- In science and engineering occupations, in comparison, women were 49% of biological and life scientists, 25% of mathematical and computer scientists, and only 11% of engineers.⁵

RACIAL AND ETHNIC DIVERSITY:

African-American, Asian-American, Hispanic and Native American science and engineering professionals are under-represented compared to white professionals among those who earn non-social science bachelor's degrees, PhDs, and among those currently employed in science and engineering jobs (see Figure 2).

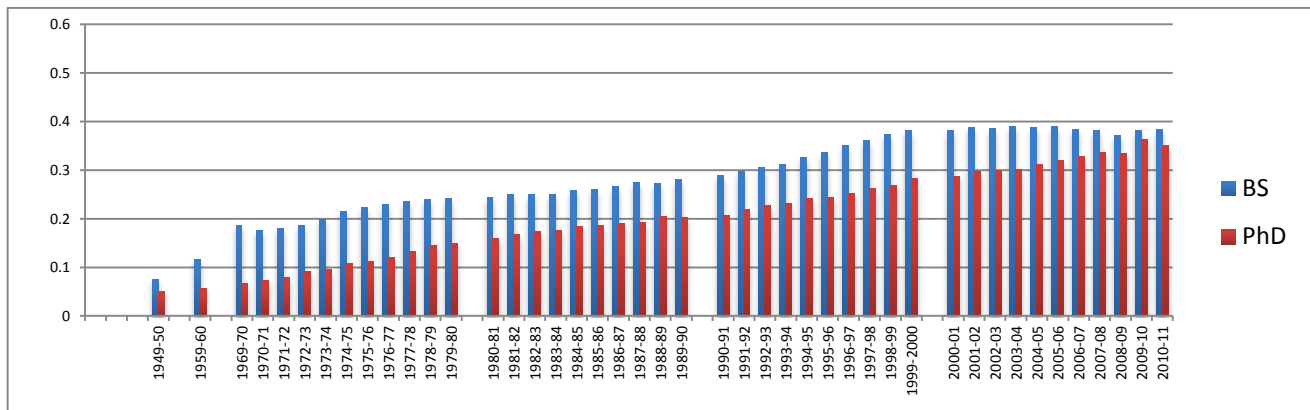
Figure 2: Percent Minority Groups among S&E Bachelor's and PhD Earners,⁸ and those Employed in S&E Jobs¹ in 2008 (Excluding SocSci and Psych)



Note: BS and PhD categories exclude non-U.S. citizens.

HISTORICAL TRENDS:

Figure 3: Representation of Women among S&E Bachelor's and PhD Earners, 1949-2011 (Excluding SocSci and Psych)^{1,8}



Before 1950, women earned less than 10% of all bachelor's degrees in all of the non-social science Science & Engineering (S&E) fields and less than 5% of all PhDs in these fields (see Figure 3). Women's representation among bachelor's and PhD earners gained momentum through the 1970s. Among bachelor's degree earners, this trend leveled off in the early 1980s but picked up again in the 1990s. However, women's representation among S&E bachelor's degree earners has stalled in the 2000s at just below 40%. Women's representation among PhD earners steadily increased from the 1950s through the early 2000s but appears to have leveled off in recent years.

WORK/LIFE BALANCE ISSUES:

- Married women and women with children experience a promotion gap in science and engineering industries compared to married men with children who work in the same types of jobs.⁹
- In academia, married women with children are 35% less likely to enter a tenure-track position post-PhD than married men with children. Among married parents who do have tenure-track positions, women are 27% less likely than men to achieve tenure.¹⁰ Single mothers receive the largest wage penalty among S&E (and non-S&E) faculty.¹¹

* Erin Cech, Laura Pecenco, and Mary Blair-Loy. 2013. "Science and Technology Professions: The Status of Women and Men." Center for Research on Gender in the Professions, UC San Diego. <http://crp.ucsd.edu>.

¹ National Science Foundation. 2012. *Women, Minorities and Persons with Disabilities in Science and Engineering*. Division of Science Resources Statistics. <http://www.nsf.gov/statistics/wmpd/sex.cfm#degrees>.

² National Science Foundation. 2008. *Women, Minorities and Persons with Disabilities in Science and Engineering*. Division of Science Resources Statistics. <http://www.nsf.gov/statistics/wmpd/pdf/tab9-37.pdf>.

³ Burrelli, Joan. 2008. *Thirty-Three Years of Women in S&E Faculty Positions*. National Science Foundation InfoBrief #08-308.

⁴ Costello, Cynthia B. 2012. *Increasing Opportunities for Low-Income Women and Student Parents in SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH At Community Colleges*. Institute for Women's Policy Research Student Parent Success Initiative. IWPR #C388. March. Washington, D.C. (Study of STEM fields)

⁵ National Science Foundation. 2009. *Employed women 16 years and older as a percentage of selected occupations: 2009*. Division of Science Resources Statistics. http://www.nsf.gov/statistics/wmpd/digest/theme4.cfm#employed_women.

⁶ Bureau of Labor Statistics. 2011. "Median weekly earnings of full-time wage and salary workers by detailed occupation and sex." *Household Data Annual Averages*. http://bls.gov/opub/ee/2012/cps/annavg39_2011.pdf.

⁷ Institute for Women's Policy Research. 2012. *The Gender Wage Gap: 2011*. IWPR FactSheet #C350. March. <http://www.iwpr.org/publications/pubs/the-gender-wage-gap-2011>.

⁸ Digest of Education Statistics. 2009. *Institute of Education Sciences, U.S. Dept of Ed*. http://nces.ed.gov/programs/digest/2009menu_tables.asp.

⁹ Xie, Y., & Shauman, K. 2003. *Women in Science*. Cambridge: Harvard University Press.

¹⁰ Goulden, M., Frasch, K., & Mason, M. A. 2009. *Staying Competitive: Patching America's Leaky Pipeline in the Sciences*. UC Berkeley Center on Health, Economic & Family Security and the Center for American Progress.

¹¹ Kelly, K. and L. Grant. 2012. Penalties and premiums: The impact of gender, marriage, and parenthood on faculty salaries in science, engineering, and mathematics (SEM) and non-SEM fields. *Social Studies of Science* 42: 869-896. (Study of SEM fields)

¹² Bureau of Labor Statistics. 2013. "Median weekly earnings of full-time wage and salary workers by selected characteristics." *Household Data Annual Averages*. <http://www.bls.gov/cps/cpsaat37.htm>.