

California's Gender Gap in STEM Education and Employment

A highly-skilled workforce with training in science, technology, engineering and mathematics (STEM) is key to maintaining America's economic prosperity and standard of living. California's leadership in both STEM education and employment makes the state a direct beneficiary of this focus. However, one area of concern is the STEM gender gap seen both in educational attainment of STEM degrees as well as employment in STEM occupations. This Short Subject provides a first look at the difference between men and women in STEM educational attainment and employment in California.

STEM FIELDS AND EDUCATION

Figure 1 uses data from the American Community Survey (ACS) to compare the undergraduate majors of college-educated Californians.² In general, women outnumber men among college-degree holders in California. This pattern is reversed, however, in STEM fields, where more men hold STEM degrees than do women across all major STEM categories. The largest

gender disparity is in engineering, where 85 percent of degree holders are men and only 15 percent are women. The smallest gap is in life and physical sciences. Here the gap is only 8 percent with men holding 54 percent of the bachelor's degrees in the field in California, and women holding the other 46 percent. Interestingly, this is the only category for which the gap is dependent on age. For all other STEM degrees the gap between men and women is consistent regardless of age cohort. For the sciences, however, women actually outnumber men among those under 50, 53 percent to 47 percent.

STEM FIELDS AND EMPLOYMENT

Figure 2 shows employment by occupation based on the same 2011 ACS data.³ Overall, women are employed at a lower rate than are men in California. In non-STEM jobs this gap is relatively small—47 percent for women versus 53 percent for men. Among the roughly 1 million Californians employed in STEM occupations, this gap tends to be much worse.

Figure 1. Bachelor's Degrees in STEM Fields, 2011¹

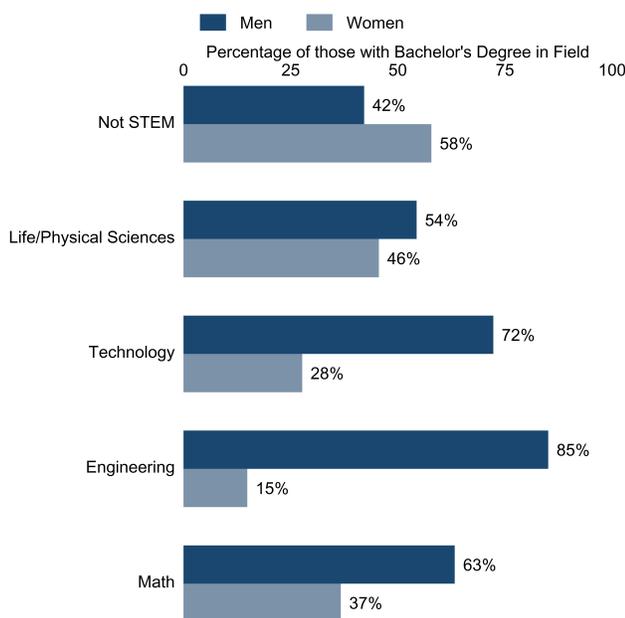
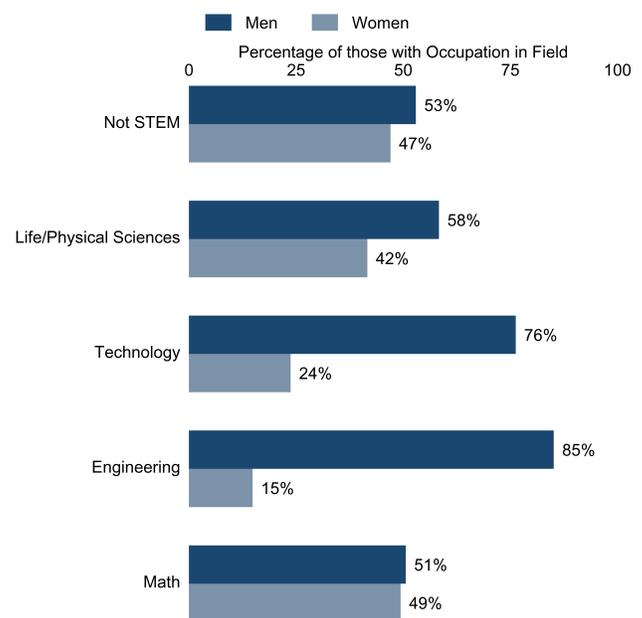


Figure 2. Employment in STEM Fields, 2011¹



As in educational attainment, the largest employment gap across STEM sub-categories is in engineering. Here the 85/15 split is identical to the gap among engineering degree holders. However, mathematics bucks the trend. Men make up 51 percent of the workforce in mathematics-related occupations, while women make up 49 percent. This is actually within the margin of error—in California men and women are employed in mathematics-related occupations at approximately the same rate.

WITHIN-GENDER DIFFERENCES

Another way to examine STEM in California is to look at the specific focus of those with STEM degrees and occupations. Table 1 provides data on within-gender differences in STEM degree attainment and employment. Women overwhelmingly prefer science degrees over other STEM fields (56 percent of all women in California with a STEM degree). The most popular major within the science field is biology with chemistry a distant second. The remaining women with STEM degrees hold them in engineering (23 percent), technology (13 percent), or mathematics (8 percent). While men with STEM degrees are as likely to hold degrees in technology (14 percent) or mathematics (6 percent) as their female counterparts, they are far more likely to have earned engineering degrees (53 percent) and less likely to have focused on science (27 percent).

A similar, though less striking, pattern is evident among those with occupations in STEM fields. While women with careers in STEM fields are more likely than are men to be in science occupations (20 percent vs. 9 percent) and less likely to work in engineering jobs (20 percent vs. 36 percent), the differences are smaller than those observed when looking at STEM education. The most common STEM occupation for both men and women is technology (54 percent of both men and women in STEM occupations).

FURTHER READING

Disparities in STEM Employment by Sex, Race, and Hispanic Origin. American Community Survey Reports. U.S. Census Bureau. 2013. <http://www.census.gov/prod/2013pubs/acs-24.pdf>

The Relationship Between Science and Engineering Education and Employment in STEM Occupations. U.S. Census Bureau. 2013. <http://www.census.gov/prod/2013pubs/acs-23.pdf>

Table 1. Focus of Those with STEM Degree or Occupation¹

Education		
Field	Number	Percentage
Men		
Science	355,800	27%
Technology	180,300	14%
Engineering	686,000	53%
Math	75,800	6%
Women		
Science	298,200	56%
Technology	69,100	13%
Engineering	119,900	23%
Math	43,900	8%
Occupation		
Field	Number	Percentage
Men		
Science	67,000	9%
Technology	419,000	54%
Engineering	280,500	36%
Math	12,700	2%
Women		
Science	47,800	20%
Technology	130,300	54%
Engineering	49,000	20%
Math	12,400	5%

ENDNOTES

1. U.S. Census Bureau, 2011 American Community Survey Public Use Microdata, 2012. Percentages are estimates based on survey data and contain varying amounts of error. Unless otherwise noted in text, differences in estimated values are significant at the 90% level. Numbers in Table 1 are estimates and rounded to nearest 100.
2. STEM majors are defined using categories found in *STEM: Good Jobs Now and for the Future*. By David Langdon, et. al. U.S. Department of Commerce, 2011. http://www.esa.doc.gov/sites/default/files/reports/documents/stemfinaljuly14_1.pdf
3. STEM occupations are defined using the Standard Occupational Classification Policy Committee recommendation's *Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations* definition, which does not include social science, architecture, and health occupations. http://www.bls.gov/soc/Attachment_B_STEM.pdf

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