



WOMEN IN STEM AND THE IMPACT OF GUEST WORKER VISAS

In the last 10 years, women increased their density in professional occupations, now making up 57 percent of the professional workforce, but saw density declines in computer and engineering occupations. Labor market trends are difficult to predict, but both the number and proportion of science, technology, engineering, and mathematics (STEM) jobs are expected to grow faster than average for all occupations.¹ While many of these jobs should be held by women as they make up half of the professional labor force, women are struggling to enter computer and engineering occupations that have a high concentration of temporary guest workers.

Guest workers should be used in the U.S. labor market when a shortage of labor exists. However, employers abuse the visa system and guest workers in an effort to drive down wages in the U.S.

Women in Professional Occupations

Women account for a majority of workers in professional occupations and their density is increasing. Between 2003 and 2013 women increased their density in professional and related occupations by **0.7 percent** (from 56.4 to 57.1 percent), that's approximately 2.4 million new female professionals.² From 2003 to 2013:

- Women's density in business and financial operations occupations grew by **0.3 percent** (from 55.4 to 55.7 percent) resulting in over 700,000 new female professionals;
- Among legal occupations, women increased their density by **4.6 percent** (from 46.2 to 50.8 percent); and
- Among health care practitioner and technical occupations, women increased their density by **0.7 percent** (73.7 to 74.4 percent).

Women in STEM Occupations

STEM jobs include professionals employed in accounting and auditing occupations, computer and mathematical occupations, architecture and engineering occupations, and life, physical, and social science occupations. Together, these occupations employ 9.35 million workers, of which, 32.5 percent are women. From 2003 to 2012:

- Among architecture and engineering occupations, the density of women remained flat at **14.1 percent**;
- Computer and mathematics occupations saw the largest decline of women's density, decreasing by **2.7 percent** (from 28.8 to 26.1 percent) despite the addition of over 850,000 new computer and math jobs; and
- Among life, physical, and social science occupations, women saw a **3.1 percent** increase (from 43 to 46.1 percent) despite an overall decline in employment in the sector.³

The Education Pipeline

Among U.S. and naturalized citizens, women earned over 340,000 science and engineering associate's, bachelor's, master's, and Ph.Ds. in 2010. Within the hard sciences (excludes psychology and social sciences) women earned nearly 140,000 degrees in 2010.

- In computer science, women earned 7,621 associate's degrees, 6,903 bachelor's degrees, and 2,653 master's degrees in 2010.⁴
- In engineering disciplines, women earned 4,945 associate's degrees, 12,766 bachelor's degrees, and 4,631 master's degrees in 2010.
- In 2010, women earned 18.3 percent of engineering bachelor's degrees and 21.3 percent of engineering master's degrees.⁵

Unemployment

Women in STEM occupations not only have low density rates, they also struggle with rates of unemployment that are higher than their male counterparts. Women face the highest unemployment rates in occupations that employ a disproportionately high number of guest workers (among all occupations, non-U.S. citizens make up 8.9 percent of the total workforce and 12.9 percent of the computer-related workforce⁶). In fact, over 500,000 temporary guest workers were employed in computer-related occupations in March 2014 while some computer-related occupations had unemployment rates for women as high as 24 percent. In March 2014:

- Among female computer programmers, 8.6 percent were unemployed while 12.9 percent of the workforce was comprised of guest workers;
- Female computer and information research scientists had a 21.4 percent unemployment rate, yet 6.8 percent of computer and information research scientists were guest workers;
- Among female database administrators, 24 percent were unemployed, but nine percent of the database administrator workforce were guest workers;
- Female network and computer systems administrators had a 12.3 percent unemployment rate and 7.2 percent of the workforce was comprised of guest workers; and
- Finally, among female industrial engineers 8.1 percent were unemployed and 7.8 percent of the workforce was made up of guest workers.⁷

The H-1B Workforce

H-1B visas are held by the employer, not the worker. This system makes it hard for guest workers to change jobs, negotiate higher pay, or raise concerns about working conditions. From an employer's perspective, this makes guest workers superior to U.S. and naturalized citizens who are able to exercise their full rights in the workplace.

- From 2003 to 2012, over 480,000 initial H-1B guest worker visas were issued to employers to hire guest workers in computer-related occupations.
- From 2003 to 2012, over 110,000 initial H-1B guest worker visas were issued to employers to hire guest workers in architecture, engineering, and surveying occupations.⁸

Conclusion

Women are woefully underrepresented in computer and engineering occupations. A large temporary workforce appears to make it easier for employers to exclude traditionally underrepresented classes of workers. Additionally, it is difficult to recruit women into computer and engineering occupations that have high rates of unemployment. Increasing the number of H-1B visas available to employers will continue to hold the female high-tech workforce to disproportionately low numbers.

Female high-tech professionals would benefit from comprehensive immigration reform. But comprehensive immigration reform must include the creation of an independent commission that would assess and manage future labor flows based on labor market shortages that are determined on the basis of actual need.⁹

¹ U.S. Department of Labor, Bureau of Labor Statistics, Employment Projections. Table 1.2 Employment by detailed occupation, 2010 and projected 2020. 2012.

² U.S. Department of Labor, Bureau of Labor Statistics, Household Data Annual Averages, Table 11. 2003 and 2012.

³ *Ibid.*

⁴ National Science Foundation, National Center for Science and Engineering Statistics. 2013. *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2013*. Special Report NSF 13-304. Arlington, VA. Available at <http://www.nsf.gov/statistics/wmpd/>.

⁵ *Ibid.*

⁶ U.S. Census Bureau, DataFerrett, Current Population Survey, Basic Monthly Microdata, March 2014.

⁷ U.S. Census Bureau, DataFerrett, Current Population Survey, Basic Monthly Microdata, March 2014

⁸ U.S. Department of Homeland Security, U.S. Citizenship and Immigration Services, *Characteristics of H-1B Specialty Occupation Workers, Fiscal Years 2003, 2004, 2005, 2006, 2007, 2008; 2009; 2010, 2011, and 2012*.

⁹ Marshall, Ray. *Immigration for Shared Prosperity—A Framework for Comprehensive Reform*, Washington: Economic Policy Institute, 2009.

For more information on professional and technical workers, check DPE's website:
www.dpeaflcio.org.

The Department for Professional Employees, AFL-CIO (DPE) comprises 22 AFL-CIO unions representing over four million people working in professional and technical occupations. DPE-affiliated unions represent: teachers, college professors, and school administrators; library workers; nurses, doctors, and other health care professionals; engineers, scientists, and IT workers; journalists and writers, broadcast technicians and communications specialists; performing and visual artists; professional athletes; professional firefighters; psychologists, social workers, and many others. DPE was chartered by the AFL-CIO in 1977 in recognition of the rapidly growing professional and technical occupations.

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