



United States Government Accountability Office

Report to the Ranking Member,
Subcommittee on Diversity and
Inclusion, Committee on Financial
Services, House of Representatives

June 2021

FINANCIAL SERVICES INDUSTRY

Factors Affecting Careers for Women with STEM Degrees



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GAO@100 Highlights

Highlights of [GAO-21-490](#), a report to the Ranking Member, Subcommittee on Diversity and Inclusion, Committee on Financial Services, House of Representatives

Why GAO Did This Study

The financial services industry is highly dependent on technology and more than one-fifth of industry employees have STEM degrees. Women continue to be underrepresented in management positions in the financial services industry and in STEM degree programs. As a result, some financial services firms have made efforts to promote interest among women in both STEM and financial services.

GAO was asked to review factors affecting financial services careers for women with STEM degrees. This report examines (1) factors that affect the participation of women in STEM degree programs and subsequent participation in financial services careers, (2) how selected financial services firms encourage girls and women to participate in STEM education programs, and (3) how selected financial services firms recruit and retain women with STEM backgrounds.

GAO analyzed Equal Employment Opportunity Commission (EEOC) and Department of Education data from 2014 through 2018 and Census Bureau data from 2014 through 2019. At the time of analysis, these were the most recent data available. GAO also reviewed studies on financial services and STEM education. GAO interviewed representatives of financial services firms, industry associations, and nonprofit organizations. GAO selected organizations and representatives based on their participation in previous work and a literature review. EEOC and the Board of Governors of the Federal Reserve System provided technical comments on a draft that GAO incorporated as appropriate.

View [GAO-21-490](#). For more information, contact Alicia Puente Cackley at (202) 512-8678 or CackleyA@gao.gov.

June 2021

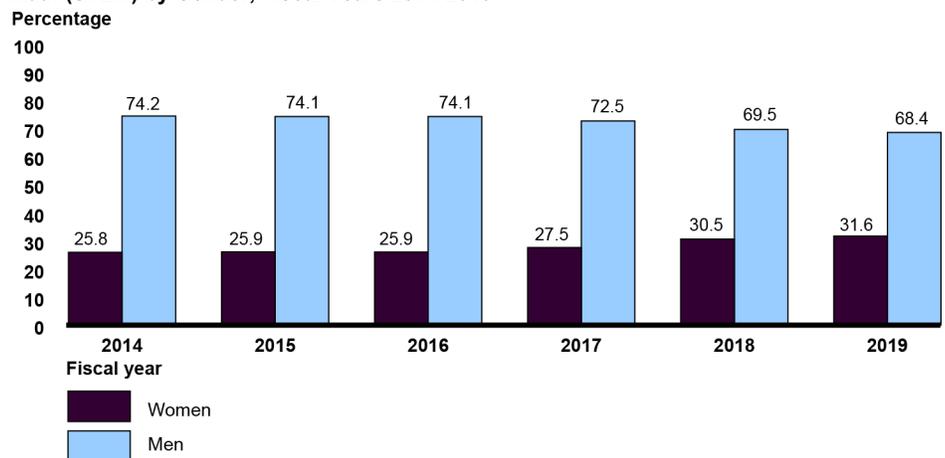
FINANCIAL SERVICES INDUSTRY

Factors Affecting Careers for Women with STEM Degrees

What GAO Found

Several factors affect women's participation in Science, Technology, Engineering, and Math (STEM) degree programs and subsequent careers in the financial services industry, according to research and stakeholders GAO interviewed. These factors include young girls' early exposure to STEM topics, access to resources such as computers and high-speed internet, and a sense of whether they belong in STEM degree programs. Women's interest in a financial services career also may be affected by the presence of role models and awareness of job opportunities. In recent years, women have represented roughly 30 percent of financial services industry workers with STEM degrees (see figure).

Financial Services Industry Workers with Degrees in Science, Technology, Engineering, and Math (STEM) by Gender, Fiscal Years 2014-2019



Source: GAO analysis of Census Bureau's American Community Survey data. | [GAO-21-490](#)

To encourage elementary and high school girls to learn about STEM, selected financial services firms provide funding and other support to nonprofit organizations that focus on increasing girls' participation in STEM. With this support, nonprofit organizations introduce girls to coding, basic programming, and other activities that may inspire interest in STEM education. Similarly, to encourage college women to pursue STEM degrees, selected firms sponsor conferences for women in STEM, offer scholarships to women studying STEM, and work with nonprofit organizations to help increase students' awareness of careers in the financial services industry.

Selected financial services firms recruit women with STEM degrees by collaborating with organizations that work with women STEM majors and sponsoring conferences for women in technology, among other efforts. Some firms have employee retention practices that are tailored to women with STEM expertise. For example, selected firms offer leadership training or employee resource groups for women in technology.

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Abbreviations

EEOC	Equal Employment Opportunity Commission
STEM	Science, Technology, Engineering and Math

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June 15, 2021

The Honorable Ann Wagner
Ranking Member
Subcommittee on Diversity and Inclusion
Committee on Financial Services
House of Representatives

Dear Ms. Wagner:

The financial services industry employed nearly 4.3 million people in 2018. Since 2014, the number of financial services employees with degrees in science, technology, engineering, and math (STEM) has generally increased. Employees with STEM degrees—representing 20.4 percent of all financial services employees in 2019—are crucial to the financial services industry because of its reliance on technology to offer online services and protect against cybersecurity threats, for example.¹ At the same time, many private sector organizations have cited the importance of recruiting and retaining women, especially for key positions, to better serve a diverse consumer base.² The recruitment and retention of women with STEM degrees is therefore of interest to many financial services firms. Further, as we have previously reported, encouraging participation in STEM education is a key practice to increase the number of people with careers in STEM.³

You asked us to review factors affecting financial services careers for women with STEM degrees. This report examines (1) factors that affect women's participation in STEM degree programs and subsequent careers in financial services, (2) how selected financial services firms encourage girls and women to participate in STEM education programs, and (3) how

¹The 20.4 percent figure is derived from our analysis of data from the U.S. Census Bureau's American Community Survey.

²We previously reported on the representation of women and racial/ethnic minorities in management positions in the financial services industry. GAO, *Financial Services Industry: Trends in Management Representation of Minorities and Women and Diversity Practices, 2007–2015*, [GAO-18-64](#) (Washington, D.C.: Nov. 8, 2017).

³GAO, *Science, Technology, Engineering, and Mathematics Education: Assessing the Relationship between Education and the Workforce*, [GAO-14-374](#) (Washington, D.C.: May 8, 2014).

selected financial services firms recruit and retain women with STEM backgrounds.

For all three objectives, we conducted a literature search to learn about factors affecting girls in STEM education, women's careers in financial services, financial services firms' efforts to support women and girls in STEM education, and recruiting and retention practices. We used research databases to search for scholarly or peer-reviewed material, government reports, conference papers, trade and industry articles, and association or nonprofit publications published from 2010 through 2020. In addition, we used Internet search techniques and keyword search terms to identify publicly available information on these issues.

We also interviewed representatives of financial services firms, financial services industry associations, nonprofit organizations that offer STEM education programs for girls, nonprofit organizations that advocate for women in STEM, nonprofit organizations that advocate for women in the workplace, and universities that offer Information Systems MBAs.⁴ We identified these organizations and representatives based on their participation in our previous work, suggestions from organizations that represent the financial services industry, and our literature review. Views expressed by the representatives of the entities we interviewed cannot be generalized to all such entities. We also spoke with officials from the Equal Employment Opportunity Commission (EEOC), Board of Governors of the Federal Reserve System, Securities and Exchange Commission, and the National Association of Insurance Commissioners. In addition, we interviewed three women in leadership positions in financial technology firms. We identified these women by reviewing an annual list of women leaders in financial technology that appeared in an industry publication and reaching out to a random sample of them.⁵ We also conducted a

⁴Specifically, we interviewed representatives of three financial services firms (JP Morgan Chase, Depository Trust and Clearing Corporation, and Bank of America), two financial services industry associations (Securities Industry and Financial Markets Association, and Independent Insurance Agents and Brokers of America), three nonprofit organizations that offer STEM education programs (National Girls Collaborative Project, Girls Who Code, and Girl Scouts of America), three nonprofit organizations that advocate for women in STEM (Anitab.org, Rewriting the Code, and the Society of Women Engineers), three nonprofit organizations that advocate for women in the workplace (Center for Talent Innovation, Catalyst, and Prospanica), and three universities with Information Systems MBAs (University of Maryland, Georgia Institute of Technology, and Rutgers University).

⁵The women leaders we interviewed were employed at the financial technology firms Marqueta, TrueAccord, and Fundation.

group interview with 10 women who either were studying STEM in college or had recently graduated. The group of college women we interviewed were selected because they participated in activities with Rewriting the Code, a nonprofit organization that focuses on supporting college, graduate, and early career women in technology.⁶

Additionally, to describe the participation of women in STEM degree programs, we analyzed data from the Department of Education's Integrated Postsecondary Education Data System to determine the percentage of women who earned STEM degrees from 2014 through 2018.⁷ We also analyzed 2014–2019 data from the Census Bureau's American Community Survey to determine the extent to which women who graduated with STEM degrees obtained jobs in the financial services industry. Moreover, we analyzed EEOC data for the financial services industry to identify trends in the representation of women and racial/ethnic minorities in management and nonmanagement positions from 2014 through 2018.⁸ We assessed the reliability of the data from Department of Education, Census Bureau, and EEOC through electronic testing, documentation review, and interviews with knowledgeable officials. We found these data to be sufficiently reliable for describing trends in workforce diversity.

We conducted this performance audit from April 2020 through June 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁶Views expressed by the representatives of the entities we interviewed cannot be generalized to all such entities.

⁷In prior work, we identified three STEM categories: Core STEM, Healthcare STEM, and Other STEM. For the analysis in this report, we included only the fields in the Core STEM category—engineering, life science, physical science, computer and information technology, and math and statistics—and excluded the fields in the other two categories. For additional information about STEM fields, see [GAO-14-374](#).

⁸At the time of our analysis, 2018 was the most recent year for which the full data set of the Integrated Postsecondary Education Data System and EEOC data were available. The most recent year for the American Community Survey data was 2019.

Background

Financial Services Industry's Reporting to EEOC

The financial services industry is comprised of firms and institutions that provide financial services to commercial and retail consumers.

EEOC requires employers to use the North American Industry Classification System to classify their respective industry. Under this system, the financial services industry includes the following five sectors:

- credit intermediation and related activities (banks and other credit institutions);
- funds, trusts, and other financial vehicles (funds and trusts);
- securities, commodity contracts, and other financial investments and related activities (securities and other activities);
- insurance carriers and related activities (insurance); and
- monetary authorities, which include central banks.

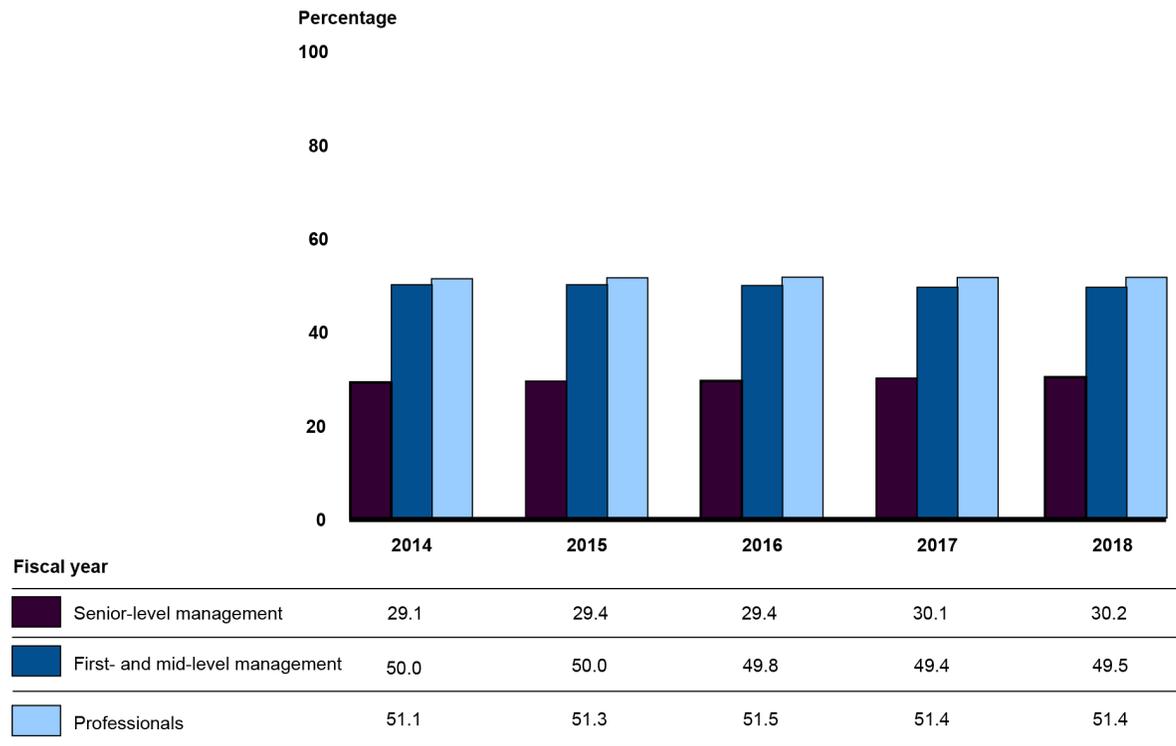
EEOC requires some private employers to annually submit data on employees' positions and demographic characteristics.⁹ Employers are to review EEOC's guidance describing two management positions and determine how their firm's job positions fit into these classifications. Senior-level managers include chief executive officers, chief financial officers, and managing partners, among others. The first- and mid-level management category includes (1) middle managers who report to senior managers and typically lead major business units, and (2) managers who report to middle managers and oversee day-to-day operations, such as team or branch managers. In addition, employers use non-management job categories, such as the "professionals" category, to classify their employees. Professional positions can include credit and financial analysts, personal financial advisors, financial examiners, and loan officers.

⁹EEOC requires private employers subject to Title VII of the Civil Rights Act of 1964 with 100 or more employees and meet certain other requirements to annually submit data on sex and racial/ethnic characteristics of employees by various occupations for a broad range of industries, including financial services. The Department of Labor's Office of Federal Contract Compliance Programs generally requires federal contractors who have 50 or more employees to annually submit data to EEOC (41 CFR § 60-1.7(a)).

Women and Minorities in the Financial Services Industry

The representation of women in senior-level management, first- and mid-level management, and professional positions in the financial services industry did not change significantly from 2014 to 2018 (see fig. 1).¹⁰

Figure 1. Representation of Women in Management and Professional Positions in the Financial Services Industry, 2014–2018



Source: GAO analysis of Equal Employment Opportunity Commission data. | GAO-21-490

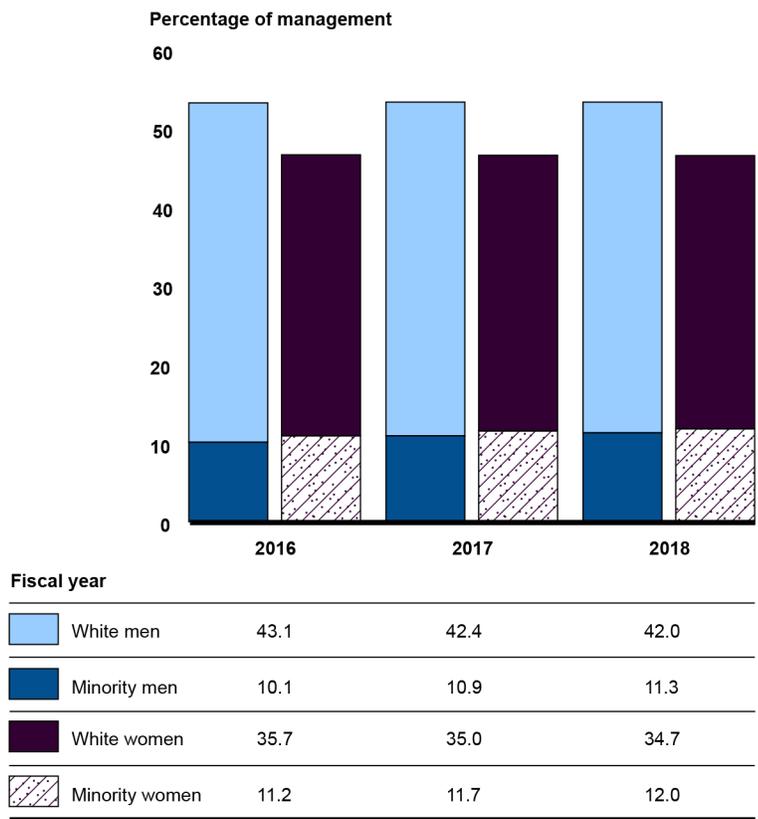
In 2017, we reported on the challenges the financial services industry faced in promoting and retaining a diverse workforce.¹¹ For example, we reported that negative perceptions of the financial services industry could limit potential candidates' interest in the field. We also reported that some

¹⁰In 2017, we reported that the representation of women and men at the overall management level (senior-level managers as well as first- and mid-level managers) in the financial services industry remained unchanged from 2007 through 2015. Women represented about 45 percent of managers and men represented about 55 percent during this period. See [GAO-18-64](#). Our updated data analysis indicate that this representation remained the same as of 2018.

¹¹[GAO-18-64](#).

financial services firms focused their recruiting on elite universities rather than recruiting talent at a broader group of schools. We also noted that financial services firms were increasingly competing with technology firms for talent. Overall representation of minorities in management positions increased from about 17 percent to 21 percent from 2007 through 2015, and our updated analysis shows it increased from 21 percent to 23 percent from 2016 through 2018 (see fig. 2).¹²

Figure 2. Representation of Minorities in Overall Management Positions in the Financial Services Industry, by Gender, 2016–2018



Source: GAO analysis of Equal Employment Opportunity Commission data. | GAO-21-490

STEM Education

STEM education refers to teaching and learning in the fields of science, technology, engineering, and mathematics. It includes educational

¹²Minorities were defined as including African-American, Asian, Hispanic, Native Hawaiian or Pacific Islander, Native American or Alaska Native, and “two or more races.”

activities across all grade levels—from pre-school to post-doctorate—in both formal and informal settings. Formal education activities are traditional instructor-led classes. By contrast, informal education activities give students learning opportunities outside of formal settings. Examples include contests, science fairs, and summer programs. Also, informal education activities are hosted by a variety of organizations, such as nonprofit organizations that support STEM education for girls and women.

Diversity in the Financial Services Industry

We have previously reported on diversity in the financial services industry. In 2010, we reported that without a sustained commitment among financial services firms to overcome challenges to recruiting and retaining minority candidates, diversity at the management level would continue to remain generally unchanged over time.¹³ In 2013, we noted that practices that support diversity in the financial services industry include sponsorships (where a senior-level manager acts as a guide to help an employee navigate the company) and efforts to address unconscious bias in promotions.¹⁴ In 2017, we noted that research has shown that larger organizations may have greater capacity to address workforce diversity, and tend to make greater efforts to prevent workplace discrimination against women and racial/ethnic minorities because they have direct legal obligations.¹⁵

¹³GAO, *Financial Services Industry: Overall Trends in Management-Level Diversity and Diversity Initiatives, 1993–2008*, [GAO-10-736T](#) (Washington, D.C.: May 12, 2010).

¹⁴GAO, *Diversity Management: Trends and Practices in the Financial Services Industry and Agencies after the Recent Financial Crisis*, [GAO-13-238](#) (Washington, D.C.: April 16, 2013).

¹⁵[GAO-18-64](#).

Several Factors Affect Women's Participation in STEM Degree Programs and Careers in Financial Services

Factors Affecting Whether Women Study STEM Include Early Exposure, Access to Technology, and a Sense of Belonging

Several factors contribute to whether girls stay interested in STEM through elementary and high school and go on to pursue and complete STEM degrees, according to stakeholders we interviewed as well as available research.¹⁶

- **Early exposure to STEM.** Girls' early exposure to STEM at home and school influences whether they will study STEM in college, according to research as well as college students and representatives of nonprofit organizations with whom we spoke. Several college women majoring in STEM told us that early exposure to STEM at home and school influenced their own decisions to pursue STEM education in high school and college. One student noted she was encouraged by a teacher to take computer science classes and that her parents had backgrounds in computer science. Another student told us she attended a high school that had a STEM focus and good computer science classes. Representatives of nonprofit organizations and financial services firms said it is important to engage girls in STEM at an early age and then maintain that interest in middle school and high school. A 2016 study also suggested that some girls who experienced computing in junior high school expressed greater interest in computing through their high school and college years.¹⁷
- **Access to resources.** Access to resources, such as computers, high-speed internet at home, and classes on STEM topics are important factors in girls' participation in STEM education. According to a

¹⁶These stakeholders included representatives of nonprofit organizations that offer STEM education programs for girls or that advocate for women in STEM, financial industry associations, financial services firms, and women leaders and college students.

¹⁷Accenture and Girls Who Code, *Cracking the Gender Code* (2016) accessed April 29, 2021, https://www.accenture.com/_acnmedia/PDF-150/Accenture-Cracking-The-Gender-Code-Report.pdf#zoom=50. Accenture is a global professional services company and Girls Who Code is a national nonprofit working to close the gender gap in technology.

nonprofit representative, access to these resources is less common among minority and low-income children. In 2016, we reported that disparities in education persist in U.S. public schools and are particularly acute among schools with the highest concentrations of minority and poor students. For example, schools with mostly Black or Hispanic students offered disproportionately fewer math and science classes.¹⁸

- **Sense of belonging.** A sense of belonging while studying STEM is critical for retaining girls and women in STEM classes and degree programs, according to representatives of nonprofit organizations and a financial technology firm. Factors that contribute to girls' and women's sense of belonging include the following:
 - *Perceptions about girls' and women's aptitude in STEM.* Perceptions about girls' and women's aptitude in STEM affect both how girls perceive themselves and how others perceive girls' and women's abilities. A 2011 study found that both elementary school boys and girls indicated a stronger association of math with boys than with girls.¹⁹ Additionally, representatives from one nonprofit organization told us that girls may perceive themselves to be worse at math and science than boys. Representatives of another nonprofit organization told us that this perception can have a negative effect on whether girls feel that they belong in STEM classes, and whether they pursue STEM classes and degrees.

College women with whom we met described examples of their abilities being questioned during college-level STEM classes. In addition, one student told us that in STEM classes dominated by men, it was easy for women to feel discouraged and that they did not belong. Another student told us that some men in her classes questioned her qualifications while working on a STEM project.
 - *Stereotypes of people in STEM.* Stereotypes about who works in STEM may discourage girls and women from pursuing STEM

¹⁸GAO- K-12 Education: Better Use of Information Could Help Agencies Identify Disparities and Address Racial Discrimination, [GAO-16-345](#) (Washington, D.C.: Apr. 21, 2016).

¹⁹Dario Cvencek, Andrew N. Meltzoff, and Anthony G. Greenwald, "Math-Gender Stereotypes in Elementary School Children," *Child Development*, vol. 82, no. 3 (May/June 2011): p. 766-779. A total of 247 children in grades 1 through 5 who attended private and public elementary schools in the Seattle area were administered implicit association tests, among other methods. The results of the study cannot be generalized to students outside of the study group.

education, according to representatives of nonprofit organizations that work with girls and women as well as research. For example, a representative of a nonprofit organization told us that stereotypes about coders—for example, that they are loners or obsessed with coding—may dissuade girls from learning to code. Similarly, a representative of another nonprofit organization told us that some girls may internalize observations of who they see working in STEM, and perceive that there is not a place for them in STEM. Additionally, undergraduate women who participated in a small 2013 study were less likely to express interest in majoring in computer science after reading a news article describing stereotypes about computer scientists.²⁰

- *Presence of role models.* Role models can encourage girls to stay in STEM classes and degree programs, according to research and several representatives from financial institutions and nonprofit organizations. For example, a 2015 study found that women who had attended high schools with a larger proportion of women math and science teachers were more likely to major in STEM in college or graduate with a STEM degree.²¹ A representative of a nonprofit that works with college women told us that college women need to see women role models who have come before them and found success in STEM fields. However, others noted there are limited role models for girls and women in STEM. One

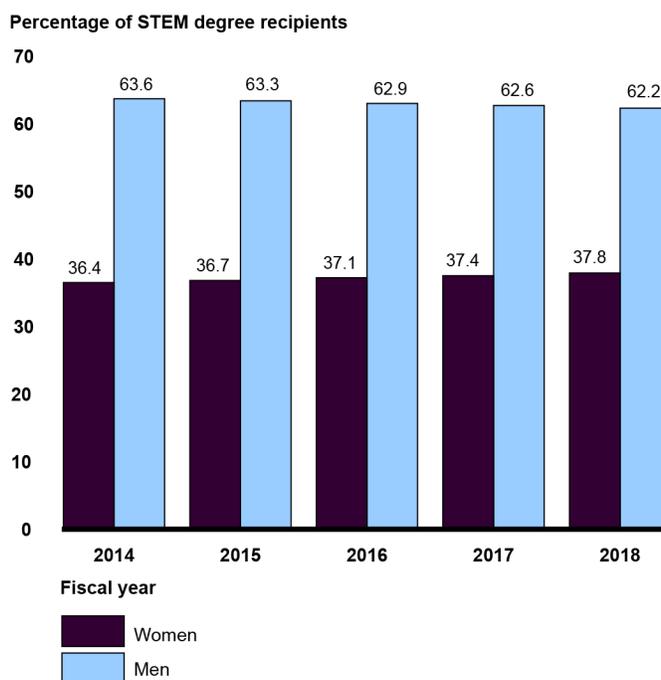
²⁰Sapna Cheryan et al., “The Stereotypical Computer Scientist: Gendered Media Representations as a Barrier to Inclusion for Women,” *Sex Roles*, vol. 69, no. 1 (2013): p. 58-71. A total of 54 undergraduate students (30 women, 24 men) who self-selected to participate in the study were asked to read one assigned article that either described or refuted stereotypes about computer scientists. The participants were then asked to rate how interested they were in a career in computer science. Reading the nonstereotypical article increased women’s expressed interest in computer science compared to women who did not read any article and also compared to women who read the stereotypical article (a separate group of 33 women were only asked to rate their interest in a career in computer science.) Men’s expressed interest in computer science was not affected by which article they read. The results of the study cannot be generalized to students outside of the study group.

²¹Martha Cecilia Bottia et al., “Growing the Roots of STEM Majors: Female Math and Science High School Faculty and the Participation of Students in STEM,” *Economics of Education Review*, vol. 45 (2015): p. 14-27. The study results were significant compared to women who attend high schools with lower proportions of female math and science teachers, and also compared to men who declared and/or graduated with a STEM degree. The results can only be generalized to the study population, which was the approximately 12,500 students who attended secondary public school in North Carolina in 2004 and later pursued their undergraduate studies in the University of North Carolina system and declared a major.

college student told us that in four years in college, she had no STEM professors that were women to look up to. Another college student mentioned she is often the only woman working on a STEM group project, which sometimes led her to question if she belonged in those classes.

These factors may help explain the imbalance between men and women with STEM degrees. In 2018, women represented 38 percent of STEM degree recipients, according to the Department of Education’s Integrated Postsecondary Education Data System (see fig. 3).²² Women’s representation among STEM degree recipients increased 1.4 percentage points from 2014 through 2018.

Figure 3. Science, Technology, Engineering, and Math (STEM) Postsecondary Degree Recipients by Gender, 2014–2018



Source: GAO analysis of Department of Education’s Integrated Postsecondary Education Data System data. | GAO-21-490

²²At the time of our analysis, 2018 was the most recent year for which the full data set of the Integrated Postsecondary Education Data System was available.

Perceptions of the Financial Services Industry Influence Career Choices of Women with STEM Degrees

Several factors affect whether women with STEM degrees pursue careers in the financial services industry, according to information we reviewed and financial services industry representatives and others we interviewed.

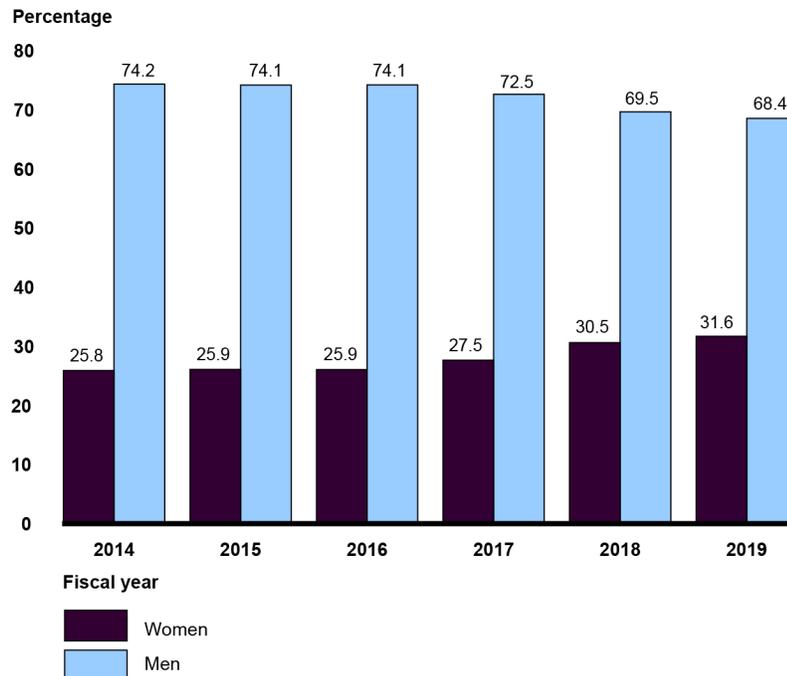
- **Presence of role models.** The presence of role models in the financial services industry may be a factor in whether women with STEM degrees pursue financial services careers. Representatives of a nonprofit organization we interviewed noted that the limited number of role models for women in the industry can create a perception of a work culture dominated by men that would impede women’s career advancement.
- **Stereotypes about the financial services industry.** Stereotypes about the work atmosphere in the financial services industry are another factor that may influence whether women with STEM degrees pursue careers in the field. Movies or television shows that depict the industry as misogynistic may dissuade women from applying for jobs in financial services, according to a representative of a university. One representative of a financial services firm said that there are negative perceptions about some positions in the firm, such as asset managers or financial advisors, who tend to be men.
- **Job descriptions.** Language in job descriptions may be a factor in whether women candidates apply for financial services positions. A 2011 study found that women who read job advertisements that used proportionally more masculine wording (i.e., words associated with stereotypes of men, such as dominant or competitive) had reduced anticipated sense of belonging in those jobs.²³ A university professor told us that the phrasing of some financial services positions remains an issue and could deter some women from applying. One financial services firm representative told us her firm worked with a nonprofit organization to rewrite its job descriptions to better appeal to women.

²³Danielle Gaucher, Justin Friesen, and Aaron C. Kay, “Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality,” *Journal of Personality and Social Psychology*, vol. 101, no. 1 (2011): p.109-128. Ninety-six Canadian university students (63 women, 33 men) each reviewed six job advertisements—two contained proportionally more masculine wording, two contained proportionally more feminine wording, and two were neutral—and then rated each job’s appeal and their anticipated sense of belonging in the job. Women reported greater anticipated sense of belonging within occupations that contained more feminine than masculine words. For men, gendered wording had no effect. The study authors noted that the experimental job advertisements may have contained proportionally more gendered words than in real advertisements. The results of the study may not be generalizable beyond the study population.

- Awareness of job opportunities.** Women jobseekers may not be aware of STEM-related career opportunities in the financial services industry. For example, an industry representative told us that jobseekers may not think of a bank as a technology company, but banks increasingly need employees with technological skills. Also, we have previously reported that an effective practice for financial services firms to recruit and retain women and racial/ethnic minorities is to offer programs to increase awareness of financial services.²⁴

These factors may help explain the variance in the proportion of STEM degree holders working in financial services that are men compared to women. As of 2019, women represented about 32 percent of STEM degree holders in the financial services industry—a 5.8 percentage point increase since 2014, according to our estimates of the Census Bureau’s American Community Survey (see fig. 4).

Figure 4: Financial Services Industry Workers with Degrees in Science, Technology, Engineering, and Math (STEM) by Gender, Fiscal Years 2014-2019



Source: GAO analysis of Census Bureau’s American Community Survey data. | GAO-21-490

Note: Standard errors of these estimates are equal to or smaller than 0.8%.

²⁴[GAO-18-64](#).

Selected Financial Services Firms Have Efforts to Encourage Girls and Women to Pursue STEM Degrees

Selected Financial Services Firms Sponsor Activities That Engage Elementary and High School Girls in STEM Activities

To encourage elementary and high school girls to learn about STEM, selected financial services firms sponsor nonprofit organizations that focus on increasing girls' participation in STEM education. Representatives of financial services firms and industry groups we spoke with listed numerous nonprofit organizations they work with to engage girls and women in STEM.²⁵ Nonprofit organizations that provide STEM-related activities told us that many financial services firms sponsor their organizations and activities through financial support. For example, a representative of one nonprofit said that corporate sponsors funded 80 percent of its programs directed at girls. A representative of another nonprofit organization told us it works with several different firms to create programs to engage girls in STEM.

In general, these nonprofit organizations seek to:

- **Teach coding and basic programming.** Selected nonprofit organizations teach girls coding and basic computer programming. For example, one organization teaches girls coding concepts such as loops, variables, conditionals, and functions and has girls complete a computer science project in its after-school programs.
- **Expose girls to STEM concepts.** Selected nonprofit organizations expose girls to STEM concepts such as engineering, technology, and cybersecurity. For example, one nonprofit supported by financial services firms provides girls with the opportunity to learn about engineering through hands-on activities like designing and building a racecar. Nonprofit representatives also told us girls also visit a financial services firm's cybersecurity hub to learn more about cybersecurity. This same nonprofit organization developed a "fun with purpose" K-12 curriculum to inspire girls to celebrate scientific discovery and expose them to STEM concepts related to those

²⁵See app. I for a list of selected organizations that engage girls and women in STEM.

scientific discoveries. A representative of another nonprofit said it provides opportunities for girls to use technology skills to solve real-world problems, emphasizing the effect that STEM careers have on the world.

- **Provide role models and a supportive environment for girls.** Selected nonprofit organizations provide girls with role models, and seek to do so in a supportive environment. One organization partners with a financial services firm to provide networking opportunities for girls by connecting them with women professionals in STEM roles. Another nonprofit organization teaches middle school girls about women who pioneered innovative technology. Additionally, a representative from this organization said that it tries to build community and a supportive environment for the girls who participate in its activities.
- **Expose girls to STEM occupations.** Selected nonprofit organizations provide girls exposure to STEM occupations. One nonprofit organization partners with financial services firms to provide high school girls with summer immersion programs within the firms. Another nonprofit organization exposes girls to STEM occupations through “career exploration” programs that show girls possible career paths with STEM degrees.

Studies have noted that some of these activities, such as offering after-school clubs and teaching girls about women in STEM, help girls overcome barriers in pursuing STEM education. For example, one study concluded that these activities allow students to experiment with STEM concepts and build confidence that they then carry back to formal education settings.²⁶ Another study found that high school girls had higher comprehension of a science lesson that contained images of women

²⁶Educational Research Center of America, *STEM Classroom to Career: Opportunities to Close the Gap* (2016).

scientists compared to a lesson that contained images of men scientists.²⁷

Selected Financial Services Firms Engage College Women through Partnerships with Nonprofit Organizations or Other Efforts

To encourage college women to pursue STEM degrees, selected firms partner with nonprofit organizations or universities to provide networking and peer-support opportunities, conferences, and scholarship funds, according to representatives of financial industry associations, nonprofit organizations, universities, financial services firms, and others.

- **Networking and peer-support opportunities.** Selected financial services firms partner with organizations that provide college women in STEM fields with networking and peer-support opportunities. One nonprofit organization, which partners with several financial services firms, provides college women with a community of peers and mentors, exposure to possible career paths and opportunities, internships, and skill development in networking, confidence, communication, and leadership. One student told us she received an internship and job opportunities in technology through this organization. Another student said the organization provided mentors through an internship with a financial services firm.
- **Sponsorship of conferences for women.** Some financial services firms sponsor conferences that focus on women in STEM. For example, financial services firms sponsor the Grace Hopper Celebration, an annual conference that provides opportunities for women with STEM degrees to network and find mentors.²⁸ Similarly, some financial services firms participate as sponsors and exhibitors in

²⁷Jessica J. Good, Julie Woodzicka, and Lylan Wingfield. "The Effects of Gender Stereotypic and Counter-Stereotypic Textbook Images on Science Performance," *The Journal of Social Psychology*, vol. 150, no. 2 (July 2010): p.132–147. The researchers created three versions of a chemistry textbook lesson that contained identical text, but one lesson contained only images of men scientists, one lesson contained only images of women scientists, and one contained images of both men and women scientists. Eighty-one high school students were randomly assigned to read one of the lessons and then completed a reading comprehension test about the lesson. Women students who read the lesson containing only images of women scientists had statistically higher lesson comprehension compared to those women students who read lessons containing only images of men scientists. The study results were not statistically significant for men students or for students of either represented gender who read the lessons containing images of both men and women. Results of the study cannot be generalized to students outside of the study group.

²⁸Rear Admiral Grace Hopper was one of the first women to receive a doctorate degree in mathematics and is viewed as an important and influential pioneer in the history of technology. In 2016, she was posthumously awarded the Presidential Medal of Freedom for her many contributions to the field of computing.

the Society of Women Engineers' annual conference, which includes a career fair.

- **Scholarships and endowments.** Certain financial services firms offer scholarships and endowments to engage college women and support their STEM education. For example, at least one firm provides scholarships targeted to women pursuing STEM degrees. Another firm created a permanent endowment with a medical center in 2020 to enhance access and support for young, underrepresented minority women interested in careers in medicine and biomedical research.
- **Funding for universities.** Selected financial services firms provide funding directly to universities to encourage STEM education programs. For example, an insurance company provided \$20 million to the University of Wisconsin-Madison to expand research in data science. Another financial services firm funded a technology lab at the University of Maryland to provide research opportunities in STEM and job opportunities for students, though not exclusively women.
- **Support other activities.** Some firms host activities to engage women pursuing STEM degrees. For example, an industry representative described a firm that hosts "hackathons" to raise awareness of STEM careers in financial services. Another firm's representative spoke about efforts to organize a career exploration program that exposes students, though not exclusively women, to opportunities in financial services.

Representatives of nonprofit organizations that work to support college women pursuing STEM degrees cited several benefits to these activities. They said networking and peer-support activities help college women remain in STEM majors by providing support and helping participants understand their career options. Additionally, conferences for women in STEM help attendees connect with companies and find internships and job opportunities. College women we spoke with described the importance of attending conferences for women in technology and having the support of peers and mentors.

Financial Services Firms Have Various Strategies for Recruiting and Retaining Women with STEM Backgrounds

Selected financial services firms recruit women with STEM backgrounds through targeted efforts, including partnering with nonprofit organizations and sponsoring STEM-related events. To retain women with STEM expertise, selected firms offer leadership training and sponsorship programs.

Recruitment Efforts Include Partnering with Nonprofits and Sponsoring STEM Events for Women

Some financial services firms we spoke with recruit women with STEM degrees or experience through partnerships with organizations that work with STEM majors, events for women in technology, and programs to bring people back into the workforce.²⁹

- **Partnership with nonprofit organizations to recruit specific types of applicants.** Selected financial services firms use nonprofit organizations to gain access to women with STEM degrees. For example, a representative of a nonprofit organization that works with college women majoring in STEM noted that financial services firms are increasingly working with nonprofit organizations that advocate for women and racial/ethnic minorities to recruit STEM majors. We previously reported that financial services firms are increasingly looking to recruit candidates at a broader group of schools rather than a small number of elite universities.³⁰ Additionally, a representative of a financial services firm told us it works with nonprofit organizations to find job candidates with STEM expertise but no college degree, which has helped the firm recruit STEM talent, including women.
- **Recruiting at events for women in in technology.** Some financial services firms sponsor events, such as conferences for women in technology, to recruit women with STEM backgrounds. For example, representatives from one firm told us that it sponsors events hosted by nonprofit organizations such as Lesbians Who Tech, Women Who Code, and Rewriting the Code. In addition, some firms recruit at career fairs associated with conferences for women in technology.

²⁹Our prior work on effective practices for recruiting women and racial/ethnic minorities cites practices such as recruiting at a broader base of schools rather than only elite universities, establishing relationships with student and professional organizations, and intentionally recruiting diverse candidates. [GAO-18-64](#).

³⁰[GAO-18-64](#).

One firm noted it typically hires over 100 individuals each year who the firm recruited at the Grace Hopper Celebration.

- **Offering re-entry programs for people who have left the workforce.** Several industry representatives said that some firms offer programs to recruit employees, in some cases women with STEM expertise, who have been out of the workforce for a period of time. For example, one financial services firm offers programs to rehire its former employees who have taken a multi-year career break. These re-entry programs give employees an opportunity to re-enter the workforce and provide the employer a chance to hire mature professionals with needed skills and experience. These professionals are frequently though not exclusively women.

Certain Retention Practices Are Tailored to Women with STEM Expertise

Representatives of financial services firms said most of their efforts to retain employees are aimed at all employees. These practices include offering family-friendly benefits, such as paid parental leave, childcare, tuition reimbursement, flexible work arrangements, and health insurance, among others. Financial services firms also may retain employees by offering competitive salaries and flexibility for employees to change careers within the firm.

However, some financial services firms have employee retention efforts that sometimes target women with STEM degrees in particular:

- **Sponsorship programs.** Selected financial services firms offer sponsorship programs—in which an executive acts as a guide to help an employee navigate the organization—to help promote and retain employees. A 2018 study found that sponsorship programs increased the number of women employees working in STEM who advanced in their careers and intended to stay with their current companies.³¹ The study cited a program at a financial services firm that encouraged its women in technology to set career goals and make a presentation to senior leaders with the guidance of a sponsor. In addition, representatives of three financial services firms we spoke with noted that their firms have sponsorship programs aimed at supporting women's careers.

³¹Center for Talent Innovation, *Wonder Women in STEM and the Companies that Champion Them* (2018). Based on a survey of about 3,200 individuals, the study found that women in STEM who advanced in their careers and intended to stay at their jobs were 72 percent more likely to do so at companies with a sponsorship program compared to those at companies without that program. Data were weighted to be representative of the U.S. population.

-
- **Leadership training programs.** Some firms offer leadership training and professional development programs aimed at supporting women's career paths. For example, according to an insurance industry association representative, the insurance industry works to retain women with STEM degrees through professional development events, including a conference on insurance technology. Additionally, representatives from a financial services firm told us about its retention programs that offer leadership training, including one specifically aimed at retaining women in technology.
 - **Affinity groups.** Affinity groups, sometimes referred to as employee resource groups or networking programs, provide forums for employees to gather socially and share ideas outside their work unit. Representatives of one financial services firm cited its Women in Technology and Operations employee group, which aims to develop its members' technical and leadership skills and help them meet other employees and learn about the firm. We previously identified establishing workplace affinity groups as an effective practice in retaining women and racial/ethnic minority employees.³²

Our prior work on effective practices for retaining women and racial/ethnic minorities cite practices such as training managers and employees on inclusion and unconscious bias, establishing management-level accountability, and providing mentors and sponsors to these groups.³³

Agency Comments

We provided a draft of this report to EEOC, the Board of Governors of the Federal Reserve System, and the Securities and Exchange Commission for their review and comment. We received technical comments from EEOC and the Board of Governors of the Federal Reserve System, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Chair of the Equal Employment Opportunity Commission, the Chair of the Board of Governors of the Federal Reserve System, and the Chair of the Securities and Exchange Commission. We will make copies available to others upon request. The report will also be available at no charge on our website at <http://www.gao.gov>.

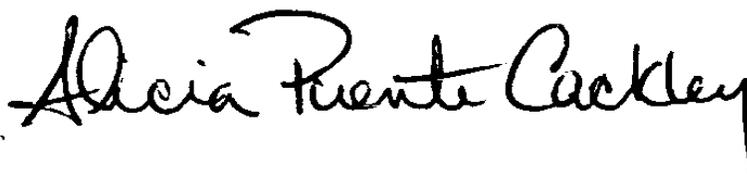
If you or your staff have any questions about this report, please contact me at (202) 512-8678 or cackleya@gao.gov. Contact points for our

³²GAO-18-64.

³³ibid.

Offices of Congressional Relations and Public Affairs are listed on the last page of this report. GAO staff who made major contributions to this report are listed in appendix II.

Sincerely yours,

A handwritten signature in black ink that reads "Alicia Puente Cackley". The signature is written in a cursive, flowing style.

Alicia Puente Cackley
Director
Financial Markets and Community Investment

Appendix I: Examples of Organizations that Engage Girls and Women in Science, Technology, Engineering, and Math

Table 1 provides examples of organizations that engage girls and women in science, technology, engineering, and math (commonly referred to as STEM). GAO did not assess and does not endorse these organizations.

Table 1: Organizations that Engage Girls and Women in Science, Technology, Engineering, and Math

Name	Website
AnitaB.org (Grace Hopper Celebration)	anitab.org
Black Girls Code	blackgirlscode.com
Break Through Tech	breakthroughtech.org
Central Exchange (WiSTEMM)	centralexchange.org
Code.org	code.org
ColorStack	colorstack.org
CybHer	cybher.org
Girl Scouts	girlscouts.org
Girls for Technology	girlsfortechology.org
Girls in Tech	girlsintech.org
Girls Inc.	girlsinc.org
Girls Who Code	girlswhocode.com
Invest in Girls	investgirls.org
Lesbians Who Tech	lesbianswhotech.org
National Center for Women and Information Technology	ncwit.org
Power To Fly	powertofly.com
Rewriting the Code	rewritingthecode.org
Society of Women Engineers	swe.org
STEM Connector (Million Women Mentors)	mwm.stemconnector.com
Technovation Girls	technovationchallenge.org
Tech Savvy Women	techsavvywomen.net
Women Who Code	womenwhocode.com

Source: GAO analysis of information provided by industry participants and nonprofit organizations. | GAO-21-490

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

Alicia Puente Cackley, (202) 512-8678 or cackleya@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Lisa Moore (Assistant Director), Leah DeWolf (Analyst in Charge), Giselle Cubillos-Moraga, Kumba Gaye, Jessica Sandler, Jena Sinkfield, and Shenandoah Sowash made key contributions to this report. Moon Parks and Jill Lacey provided technical assistance.

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