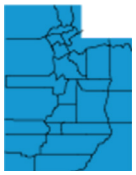
Utah Women Stats
Research Snapshot



UTAH WOMEN & LEADERSHIP Project

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Utah Women and STEM: A 2022 Update

Setting the Stage

According to the U.S. Bureau of Labor Statistics (BLS), careers in STEM (Science, Technology, Engineering, and Math) are expanding faster and pay better than other careers.[1] The median annual wage for STEM occupations in 2020 was nearly $90,000, more than double the median annual wage for all occupations (about $42,000).[2] STEM opportunities abound in Utah, one of the top 10 states for tech job growth, net tech employment concentration, and net tech employment job gains in 2020.[3] In fact, Salt Lake City is ranked the second-best city in the country for professional opportunities in STEM.[4]

Yet, despite the abundance of STEM opportunities, Salt Lake City was ranked 43rd among other metro areas for "STEM-Friendliness," a metric that, in part, considers the gender disparity in STEM field occupations and degrees.[5] Nationally and locally, fewer women obtain STEM-related college degrees and work in STEM-related occupations, and they leave STEM careers once employed at disproportionate rates compared to men.[6] Hence, the US and Utah STEM workforce remains predominately male. Recognizing the role that women contribute to a strong statewide workforce, educational and civic leaders are working to increase opportunities and pathways for more Utah women to be aware of, enter into, and thrive in STEM fields.

In 2016, the Utah Women & Leadership Project (UWLP) released a research snapshot entitled "Utah Women and STEM." This snapshot updates, expands on, and compares data of the three key areas featured in that snapshot:

1) Current STEM employment data;
2) Possible reasons for the STEM gender gap; and
3) Ongoing efforts to increase diverse participation and success in STEM fields.

Employment Data

Employment in STEM has grown from about 9 million workers nationally in 2016 to more than 10.5 million in 2021,[7] 6.9% of all workers nationally.[8] The BLS projects that between 2020 and 2030, US employment in STEM occupations will increase 10.5% compared to non-STEM occupational growth of 7.5%.[9]

While STEM jobs continue to have strong growth, women remain vastly underrepresented in these occupations globally, nationally, and in Utah—though they have made gains over time.[10] Nationally, women rose from 8% of STEM workers in 1970 to 24% in 2016 and 27% in 2021; however, they make up 47% of all workers (compared to 38% in 1970).[11] Within STEM professional fields, women tend to be concentrated in the social and life sciences and have much lower shares in computer and engineering fields.[12]

The traditional definition of STEM occupations used above includes computer, mathematical, engineering, life science, physical science, and social science occupations, but the list excludes healthcare, which is considered to be STEM-related.[13] When healthcare occupations are included in the definition of STEM, women's shares go up as women account for about 70% of workers in health-related occupations.[14] However, women tend to make up greater shares of lower-paying healthcare positions and are underrepresented among practitioners, indicating that the gaps remain between men and women in healthcare.[15]

Nationally, women make up approximately 27% of STEM workers, compared to 21% in Utah.

Occupations that rely on STEM skills but that do not require a college degree, such as skilled trades jobs (e.g., electricians or welders), are often not included in a traditional definition of STEM education or career pathways.[16] Expanding the definition of STEM occupations to include these workers increases the total number of STEM workers significantly—yet, women are even less represented among many skilled technical workers than among those in occupations requiring postsecondary expertise.[17] For example, of the nearly 19,000 electricians, plumbers, and pipefitters in Utah in 2019, fewer than 150 (0.8%) were women.[18]

In Utah, the STEM workforce has grown more than 20% since 2016, and both men and women have seen increases in STEM participation. While the share of women in STEM occupations has grown, they are still significantly underrepresented in these occupations relative to their overall participation in the labor force. Women comprise about 45% of the Utah labor force but make up only 21% of those employed in traditional STEM occupations. This is up from 18% in 2016 but remains about six percentage points below

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the national average.[19] Viewed another way, about 10.5% of employed men in Utah work in traditional STEM occupations (up from 9.6% in 2016), which is slightly higher than nationally, where 9.5% of all employed men work in STEM occupations. By contrast, 3.4% of employed women in Utah work in traditional STEM occupations (3.8% nationally).[20] This percentage has risen from 2.7% in 2016.[21]

In absolute numbers, more women work in nearly every computer, engineering, and science occupation than reported in our 2016 snapshot. In fact, the number of Utah women working in STEM fields rose about 40% from 2016 to 2019, while the number of Utah women working in non-STEM fields rose 11% over the same period. Yet their shares relative to men in many occupations remain quite low. For example, women account for 9% of Utah engineers (up from 6% in 2016), 17% of software developers and programmers (up from 12%), and 31% of life and physical scientists (down from 38%).[22]

The low shares of women, particularly in technology sectors, are concerning in Utah because the tech industry plays such a prominent role in the state's economy. In 2017, tech companies in Utah directly and indirectly supported more than one in seven Utah jobs (15.2%) and over one-sixth of the state GDP (17.6%).[23] Other expanding STEM areas in Utah include the defense, aerospace, and manufacturing sectors.[24] Currently, the top occupations for Utah women are healthcare support (83%), personal care/service (80%), and office/administrative support (72%).[25]

Examining the intersection of race/ethnicity and gender for STEM workers is important. Many people of color tend to be underrepresented in STEM fields, though this can vary considerably by race. For example, while Asian workers make up 3% of all employed Utah workers, they account for 8.2% of all STEM workers. Nearly as many Asian women work in STEM occupations as Asian men (4,300 vs. 5,170). Hispanic workers, however, are significantly underrepresented in STEM occupations in the state. While Hispanic workers make up 14% of all Utah employees, they account for 6.5% of all STEM workers. Only 2% of employed Hispanic women work in STEM occupations (compared with 3.4% for all employed women in Utah). This is similar for Black, American Indian, Native Hawaiian, and other Pacific Islander women in Utah.[26]

Low participation rates are troubling, particularly as STEM jobs tend to have higher average salaries, and women are already financially disadvantaged, given the large gender wage gap in Utah.[27] This is true both across and within the STEM workforce. For example, the estimated median tech salary in Utah is $77,492, which is almost double the $39,061 annual median salary of women.[28] Within STEM occupations, the Pew Research Center reported that the median earnings of women were $66,200 in 2019, which is around 74% of men's median earnings ($90,000).[29]

Possible Reasons for the Gender Gap

The gender gap in STEM occupations has many possible contributing factors. Differences between men and women in STEM education fields persist worldwide and begin as early as elementary school.[30] Although most young children have similar capabilities in math and science, many girls lose confidence in math by third grade.[31] By the time students enter college, men dominate the STEM majors, particularly math-intensive fields such as physics, engineering, and computer science. In fact, men outnumber women almost four to one in STEM majors.[32] Collectively, women in the US earn 57% of bachelor's degrees, 61% of master's degrees, and 54% of doctoral degrees across all fields. In STEM fields, however, women's share of these degrees is 37%, 36%, and 34%, respectively.[33] Women of color tend be especially underrepresented in STEM education fields, with Black and Hispanic women, "the two largest populations of underrepresented minorities," having "among the lowest participation rate in STEM education and careers."[34]

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While the overall number of Utah women in STEM fields has increased (for example, in biological/biomedical, physical science, and engineering fields), women in Utah have yet to reach parity in STEM education fields; the number of Utah women earning STEM degrees remains considerably lower than men in all STEM categories.[35] Additionally, even if women complete an education or skills training in STEM fields, they may not enter into STEM occupations. The RAND Corporation found that only 30% of women with STEM bachelor's degrees end up in STEM jobs, compared to 49% of men with STEM degrees who work in those jobs. Further, "men with a non-STEM bachelor's degree are about as likely to work in a STEM occupation as women with a STEM bachelor's degree."[36]

Cultural gender norms and attitudes that delineate many STEM fields and occupations as masculine may be one reason that women remain underrepresented in both STEM degree fields and the STEM workforce.[37] Gender stereotypes about women's abilities impact girls' and women's own internal biases, undermining their confidence in technical subjects and discouraging them from pursuing STEM jobs.[38] This is especially problematic for girls and women of color.[39] These socialized attitudes can also lead to bias in educators, colleagues, or superiors at work, who may, either openly or tacitly, underestimate the abilities of or discriminate against female students, peers, or subordinates.[40]

In STEM workplaces, women often feel isolated by limited access to female peers, role models, and mentors.[41] This may be one reason that women leave STEM careers at disproportionately higher rates than men, particularly those

who are working parents.[42] And, while the unemployment rate of STEM workers is lower than that of non-STEM workers, women in STEM experience higher unemployment than men in STEM careers.[43] Thus, employers, policy makers, and other stakeholders need to focus efforts on recruiting and retaining female employees.

Efforts to Increase Participation

Promoting a strong female STEM workforce in Utah requires effort from multiple stakeholders, including education providers, policy makers, and businesses. In order to ensure the sufficient local supply of qualified employees to fill future STEM jobs, Utah stakeholders must continue to increase efforts in promoting STEM fields (and specifically women in STEM) at all levels, including K-12, higher education, and professional employment.

Currently, the STEM Action Center offers a dedicated Girls in STEM webpage that features links to girls coding clubs and camps, as well as scholarship opportunities. Likewise, many institutions in the Utah System of Higher Education organize K–12 girls-only STEM summer camps to encourage higher participation in STEM fields. In addition to university outreach programs aimed at K–12 students, the major universities and colleges in the state offer numerous programs for postsecondary female students in STEM. These groups provide mentoring, networking, competitions, community outreach, training, and other support. Interested female students at any postsecondary institution in Utah should consult STEM departments in order to locate and participate in these programs.

Finally, at the professional level, various statewide associations for women, including Tech-Moms and the Women Tech Council, offer visibility (such as SheTech and the Annual Women Tech Awards), networking, and mentoring on various issues of personal and professional growth both for career professionals in the STEM sector as well as women in technology occupations in other industry sectors. In addition to supporting women individually, these entities also advocate for improved corporate culture among STEM companies and in career paths. Industries and their various pipelines will have to continue to make significant changes to better recruit, develop, and retain women in STEM fields. For more details about these organizations, please refer to the Utah Women & Leadership Project's extensive list of Utah Women's Networks and Groups, which includes many associations and chapters for women in STEM. Other organizations seek to support the success of women and girls of color in STEM, such as Club Ability and the Utah chapter of Latinas in Tech. Others ensure their programming for girls includes exposure to STEM fields such as CurlyMe! and Girls Scouts of Utah.

Some research indicates that these efforts may be moving the needle. For example, researchers at UC Berkeley analyzed Advanced Placement (AP) college-entrance exams in science, technology, engineering, and math (STEM) and found that "among African American students, AP STEM exams taken by women represented the overwhelming majority over men. Among Latinx students, the number of men and women was roughly equal."[44] While these trends are encouraging, there remains plenty of work to do.

Conclusion

Increasing the number of women in STEM degrees and occupations will result in educational, societal, and economic benefits in Utah and around the globe.[45] Mirroring national trends, the growing number of employment opportunities in Utah's STEM sector requires both more STEM talent overall and more equitable gender representation. Accordingly, Utah needs significant investment into efforts that encourage and mentor Utah girls and young women to pursue STEM education and careers, and industries must continue to improve the corporate climate to attract and retain women in STEM fields. This includes family-friendly policies that support working parents with flexible schedules, paid leave, and remote work opportunities. Successful efforts to increase female participation in STEM fields will strengthen all of Utah.

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