Impact of COVID-19 on Women in Engineering and Technology: A Follow Up

Survey Report

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Introduction

The COVID-19 pandemic continues to challenge our efforts to safely return to in-person activities. As the situation evolves, surveys serve as periodic snapshots of the pandemic's impact on diversity in the engineering and technology sectors.

The Society of Women Engineers first surveyed its members in June 2020 to examine how the pandemic was affecting their personal and professional lives. A second survey was conducted one year later, with responses collected between June 2 and June 17, 2021. While both surveys were open to any member over 18 years of age, this report focuses on the responses received from women and queer/non-binary people who made up 99% of our respondents, comparing responses from this year's survey to those obtained last year.

Of the 603 responses received on this year's survey, 18% were enrolled in college courses and 76% of those students were undergraduates. Of the 506 working professionals, the top disciplines represented were mechanical, chemical, and electrical engineering, respectively, representing 34% of respondents. Across the sample, 17% of respondents were people of color.

SWE is a global organization. While U.S. respondents comprised 94% of our sample, we received responses from over 15 other countries, including India, Canada, and Mexico.

> During the SWE 2020 conference, I tried the suggestion of setting the first hour to personal life (meditation, exercise), and it has really helped with mental stress. Unfortunately, as we return to work, my employer doesn't support a balanced life and expects work activities 8-5...It is unfortunate that employers are not learning and returning to the 'work to live' attitude/expectation.
>
> - White Woman,
>   Senior Engineering Manager

Recent studies have shown the pandemic's disproportionate burden on working mothers, with many still slowly returning to the workforce[1,2]. Employers can implement policies and cultivate cultures that support working parents and benefit all workers as they transition back into the workplace.

- Create re-entry programs, including returnships[3], to attract parents who have previously left the workforce. These types of programs allow employees to get reacquainted with their skills.

- Provide returning parents and new employees, including recent college graduates, with mentors. Mentorship programs can help new employees build professional networks and social connections with their co-workers.

- Expand flexible work options, such as remote work and flexible work schedules, and promote the use of these options. Since many employers still have remote work technology, this can be leveraged to normalize the continual use of remote work (e.g., working remotely two days a week) when possible.

- Provide childcare and eldercare benefits, such as child care centers, financial assistance for child and elder care, and paid family leave.

- Promote and normalize the use of paid-time off along with employee check-ins. The pandemic has left many distraught, and survey respondents reported burnout and mental health as their biggest challenges during this difficult time.

While return to normalcy is not guaranteed, colleges and employees can take steps to ensure support for students' needs.

- Provide ample opportunities for students to engage and connect with others. Many students missed out on forming social connections inside and outside the classroom. Utilize creative ways to encourage engagement (e.g., socially distanced/outside social events, virtual events).

- Increase mental health resources and counseling services. Similar to SWE professionals, many students indicated mental health and burnout as their biggest challenges.

- Create virtually-based opportunities for students to participate in, including virtual career fairs and professional opportunities (e.g., internships and co-ops in remote environments).

1. Petts, R. J., Carlson, D. L., & Pepin, J. R. (2020). A gendered pandemic: Childcare, homeschooling, and parents' employment during COVID-19. *Gender, Work & Organization, 28*(S2), 515-534.
2. Proujansky, A. (2021, April 27). Nearly 1.5 Million Mothers Are Still Missing From the Workforce; Mothers, especially those with school-aged children, have been slow to return to work during the Covid-19 pandemic. *Wall Street Journal.* https://www.wsj.com/articles/nearly-1-5-million-mothers-are-still-missing-from-the-workforce-11619472229
3. Lipman, J. (2019, June 7). Helping Stay-at-Home Parents Reenter the Workforce. *Harvard Business Review.* https://hbr.org/2019/06/helping-stay-at-home-parents-reenter-the-workforce

I changed companies during the pandemic - due to inflexibility at my old employment. It wasn't feasible to go into the lab/plant to support critical infrastructure issues when my children were quarantined due to COVID19 exposure at school or childcare (ages 5 and 6). It was an incredibly difficult situation and would impact my career trajectory. I transferred to my new employer last month.

- White Woman, Chemical Engineer

Summer Internships

71% of students who received a summer job offer reported working in either a completely remote or hybrid environment.

Graduation Progress

31% of students are concerned that the pandemic will delay their college graduation date compared to 48% of students a year ago.
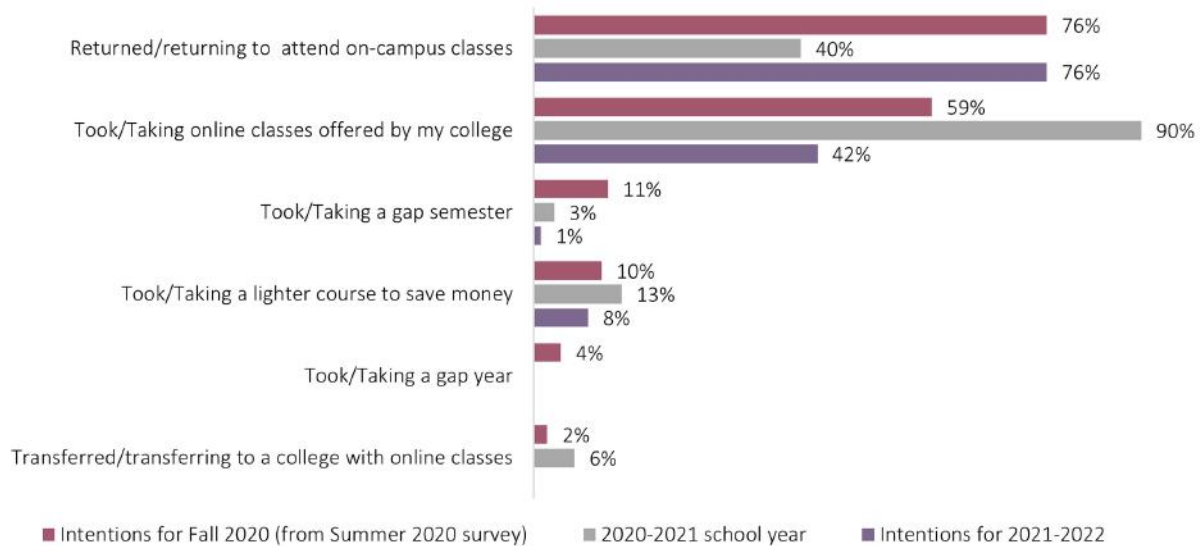
95% of students have received or plan to receive the COVID-19 vaccine.

My GPA took a serious hit... because it's so much harder for me to focus or ask questions in online class rather than in-person instruction. I'm still struggling to repair my sleep schedule.

- White Woman, Undergraduate Student

Students

Intentions for Fall 2021

While most students (76%) in last year's survey intended to return to their college for Fall 2020, only 40% reported they attended on-campus classes for the 2020-21 academic year. In turn, 90% reported they took online classes this past year when only 59% intended to do so. Still, it seems online classes have gained traction, as 42% of students intend to take them for Fall 2021. Lower proportions of students report they will take a gap semester (1%) or a lighter course load to save money (8%) for the upcoming semester compared to last year's respondents. No students reported they intend to transfer to a college to take online classes or take a gap year, which were options students considered pursuing last year.

Returned/returning to attend on-campus classes: 76%, 40%, 76%
Took/Taking online classes offered by my college: 59%, 90%, 42%
Took/Taking a gap semester: 11%, 3%, 1%
Took/Taking a lighter course to save money: 10%, 13%, 8%
Took/Taking a gap year: 4%
Transferred/transferring to a college with online classes: 2%, 6%

■ Intentions for Fall 2020 (from Summer 2020 survey) ■ 2020-2021 school year ■ Intentions for 2021-2022

NOTE: Multiple responses permitted.

Concerns about Delayed Graduation

Similar to last year, a higher proportion of Students of Color expressed more concern about a delay to their graduation date compared to white students. However, this year's survey shows that more than twice as many Students of Color as white students expressed these concerns, a higher differential than a year ago.

White Students   24%

Students of Color   53%

Workplace Environment

While 25% have returned to their workplace, remote work environments are not entirely gone. 86% reported that they can still work remotely.

Returning to the Workplace

24% of those who are returning to their workplace by the end of the year report feeling uncomfortable doing so, and this discomfort was expressed at higher levels among people with disabilities.

Employment Concerns

35% are concerned about losing their job within the next 6 months, which is about the same proportion (37%) of respondents that expressed similar concerns last year.

94% of professionals have received or plan to receive the COVID-19 vaccine.

> As an Asian-American woman, I was initially very concerned about the possibility of facing racial discrimination or harassment when conducting field work during COVID. Fortunately, I have not encountered any problems with this, but it is occasionally stressful when I see reminders in the news that it's something I can't really afford to forget or lose sight of, for the sake of my own safety.
>
> - Asian-American Woman, Environmental Engineering Consultant

Professionals

Impact on Employment Status

Similar to last year, most of the respondents working in engineering or technology professions indicated that they were currently employed with the same organization as before the pandemic. However, 12% report they are employed at a new organization, three times as many as those who reported doing so last year.
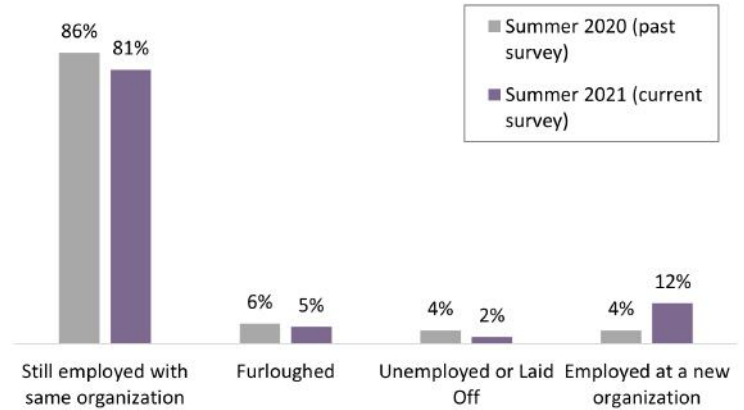
Employer Response to COVID-19

More respondents report that over the past year employers have halted actions that address budgetary impacts of COVID-19 compared to those who report these are still in place, including furloughing employees, implementing salary cuts, and rescinding job offers. However, employers continue to have budget restrictions on travel and professional development comparable to those reported last year.
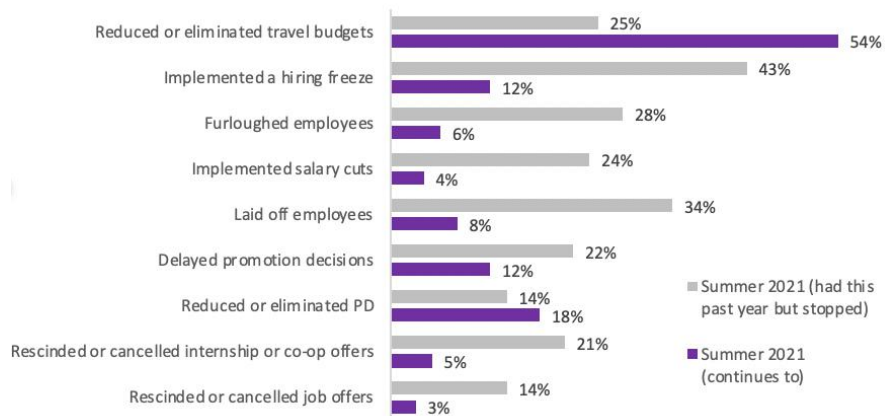
NOTE: Multiple responses permitted.

Employer Communications

68% approve or highly approve of how their employer has responded to the COVID-19 pandemic, compared to 76% of respondents who reported similar approval levels last year.

92% feel that their employer has provided adequate communications regarding how the organization is addressing COVID-19 concerns for its employees.

89% reported that their employer has re-assessed its policies regarding remote work because of COVID-19, which is an increase from last year's report.

Finding Balance

Job to Home Spillover

64% of respondents reported low energy levels to do things with family and loved ones, and 63% indicated they did not have enough time for themselves because of their job during the pandemic.

Home to Job Spillover

57% of respondents report that during COVID-19 their personal lives drained them of the energy needed to do their job, and 58% expressed not being able to concentrate on their job.

School-Life Balance

55% of students reported having difficulty with school-life balance.

> I lost my job prior to the pandemic. I experienced extra stress about finding a new job when the pandemic hit.
>
> - Hispanic, Latina/x, Chicana/x Woman, Civil Engineering Manager

Heavier Family Responsibilities Load

According to this year's survey, a comparable proportion of women and queer/non-binary respondents took on all or most of the educational support responsibilities (51%) as those who did last year. A slightly higher percentage (53%) were solely or mostly responsible for taking care of adult dependents than last year's respondents (46%). Yet, the percentage of those who were mostly responsible for childcare in their households was about half of those who did so last summer (16% vs 32%). This difference was due to a higher proportion of respondents indicating that their child(ren) did not require constant care.

Summer 2020

Past year or currently (Summer 2021)
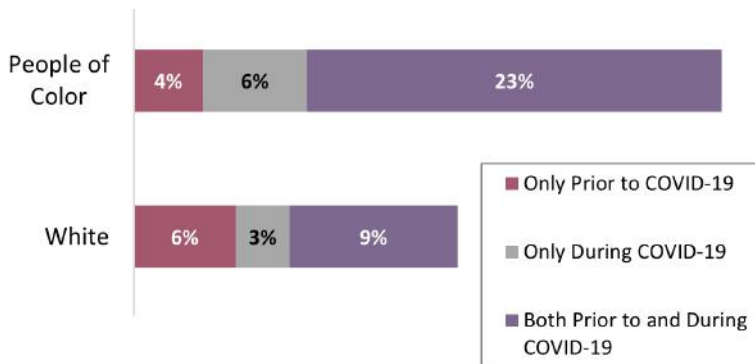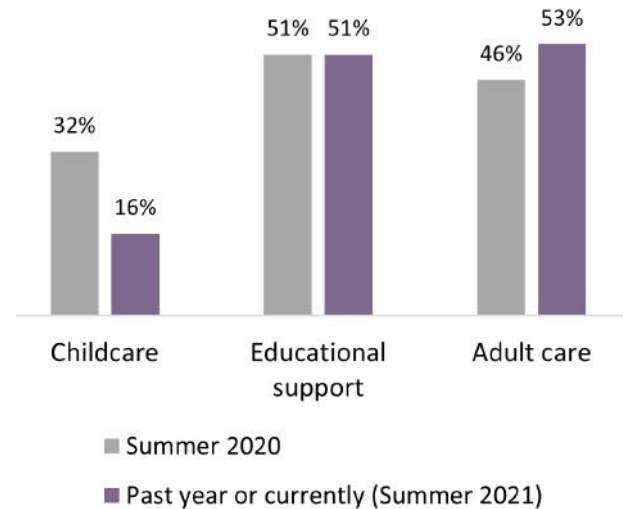
People of Color are Disproportionately Affected

A higher proportion of People of Color (6%) report that they had been passed over for important assignments compared to their white peers (3%) during COVID-19. Moreover, these occurrences were not isolated events as even more (23%) People of Color reported that this type of bias occurred during *and prior to* COVID-19.

Only Prior to COVID-19

Only During COVID-19

Both Prior to and During COVID-19
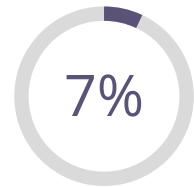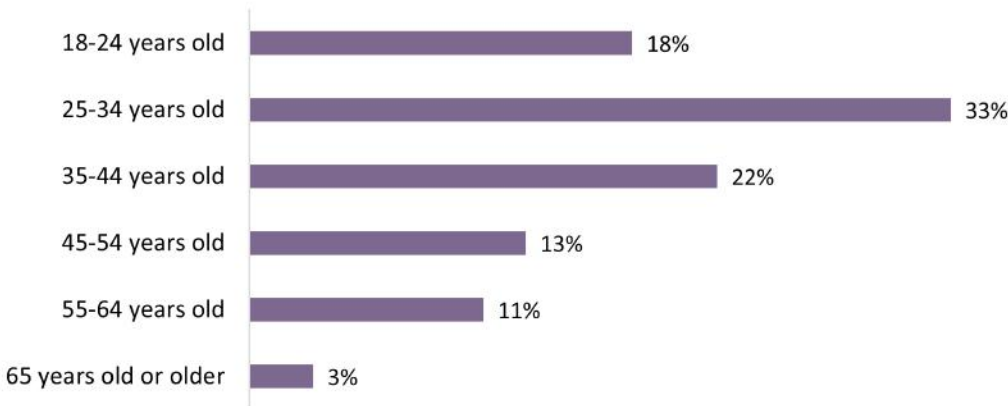
Employer-Provided Accommodations

Despite the uncertainty and strain the COVID-19 pandemic has placed on everyone, many of the women and queer/non-binary respondents reported that their employers have provided them with many supports and flexibility during this difficult time.

86%   Allowed flexible work schedules

53%   Provided vaccine time paid-off

71%   Provided mental health counseling
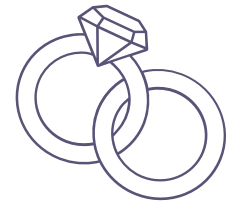
Sample Demographics

We received 603 responses. The survey was open to all genders: less than 1% of respondents were men and 1% were gender queer/non-binary or other. This report focuses on responses from women and gender queer/non-binary.
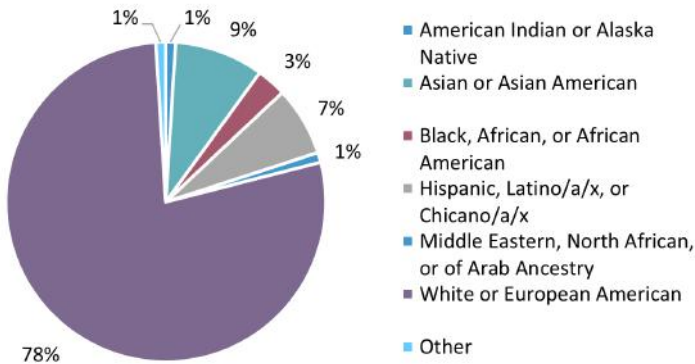
Age

18-24 years old	18%
25-34 years old	33%
35-44 years old	22%
45-54 years old	13%
55-64 years old	11%
65 years old or older	3%

7%

Have a Disability Impairment

Race/Ethnicity of U.S. Respondents

- American Indian or Alaska Native — 1%
- Asian or Asian American — 9%
- Black, African, or African American — 3%
- Hispanic, Latino/a/x, or Chicano/a/x — 7%
- Middle Eastern, North African, or of Arab Ancestry — 1%
- White or European American — 78%
- Other — 1%

64% Married or Living with Partner

32% Have Children

Sexual Orientation

- Heterosexual — 85%
- Gay or lesbian — 1%
- Bisexual — 8%
- Other or prefer not to answer — 6%

7% Have Adult Dependents

Methodology
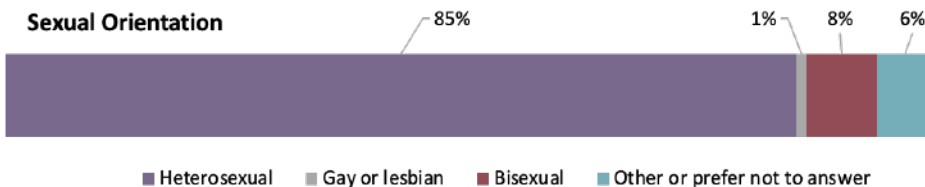
The Society of Women Engineers surveyed its membership to gain an understanding of the impact of COVID-19 on their professional and personal lives. SWE developed a survey in Qualtrics for online data collection. The survey link was shared with SWE members around the globe through an email invitation to participate. Engineers and students over the age of 18 were eligible for inclusion in the study. The majority of respondents were from the United States, with 6% based outside of the U.S. Responses were collected from SWE member over 18 years of age, including 4 men, but this report focuses on the responses received from women and queer/non-binary respondents.

Chi-square tests were conducted to better understand whether there was a relationship between certain variables. Results of these tests are included with the descriptive statistics, as appropriate.

About SWE

The Society of Women Engineers (SWE) is the world's largest advocate and catalyst for change for women in engineering and technology. The not-for-profit educational and service organization is the driving force that establishes engineering as a highly desirable career aspiration for women. As a champion of diversity, SWE empowers women to succeed and advance in their personal and professional lives. For more information about SWE, please visit www.swe.org.
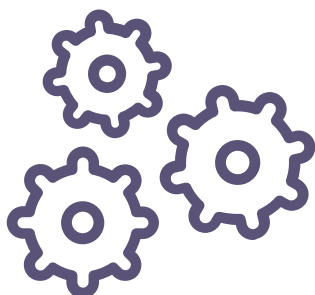

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Acknowledgments

We would like to thank all SWE members who took the time to complete this survey and past surveys during the COVID-19 pandemic. SWE appreciates your participation on these surveys as these offer a glimpse into the work and life experiences of women in technology and engineering fields during the pandemic.