

Investigating Compounding Impacts of Racism & COVID-19 on Learning & Employment in Computing & Technology

(CIRCLE-CT)

Findings From Survey 3 - Fall 2021



A Collaborative Project of AnitaB.org, the National Center for Women & Information Technology, and the STARS Computing Corps.

INTRODUCTION

In the summer of 2020, NSF provided RAPID funding for our organizations—AnitaB.org, the National Center for Women & Information Technology (NCWIT), and the STARS Computing Corps—to study the impacts of the COVID-19 pandemic on the computing and technology community. Because of heightened attention to systemic racism sparked by the tragic murder of George Floyd, we expanded our focus to understanding the intertwined impacts of the “dual pandemics” of COVID-19 and racism.

The current report discusses the key findings from our third and final survey, issued in August 2021. As with our previous two surveys, we sought to understand the experiences of individuals positioned across the computing ecosystem, including computing professionals, higher education faculty and staff, college computing students, and K-12 computing teachers. As previously mentioned in subsequent reports—as a self-selected sample of individuals recruited primarily from the networks of the three sponsor organizations—it is likely that this sample is dominated by individuals who support broadening participation in technology initiatives, or whose organizations do. Women are also overrepresented in the sample compared to their current participation in computing. This is a by-product of our organizations’ missions impacting the makeup of our networks. As with our previous reports, we pay particular attention to the experiences of persons from minoritized and marginalized groups.

The first two surveys in this study were primarily quantitative to allow us to compare experiences of the pandemics to psychosocial outcomes across demographic groups and positions in the computing ecosystem. Survey 1 was administered in summer 2020 and designed to document the immediate impacts of the “dual pandemics,” as we called them then, including the ways in which organizations pivoted in response to COVID-19. The second survey was fielded in the fall of 2020 and focused on the COVID-19 pandemic as an ongoing crisis parallel to racial justice movements and the impacts on the educational and work experiences of individuals in the technology community. Questions also asked about policies and programs their organizations may have implemented and impacts on career-building activities. Across all three surveys, participants reported on the impacts of the dual crises on psychosocial constructs such as belonging and persisting in technology, feeling like work matters, and level of commitment to their organizations/institutions. Reports and interactive dashboards from these surveys can be found [here](#). Taken together, findings from these previous surveys illustrated a near impossible challenge to disentangle the dual crises’ impacts on the lived experiences of the respondents.

Thus, in this final survey and report, we have sought to capture more qualitative information from the members of our communities. They were instructed to look back on their experiences, share stories of impact and describe emerging needs, while also considering what the future might hold. Informed by previous survey insights, we altered the survey framing to ask respondents to simply report experiences and needs without attributing them to either COVID-19 or attention to racial justice. This report provides some key insights and findings on both the challenges facing the talent within the computing ecosystem, as well as the recommendations for how employers might pivot to avoid further losses in diversity and representation in an already lacking landscape.

In the pages that follow, we share themes and highlights from the three open-ended questions included in the survey.

CONTEXT: FALL 2021

While records were being set for daily hospitalizations and deaths in many US states, it turns out that the United States still had not reached the peak of COVID-19-related deaths. When we issued this survey at the end of August 2021, both K-12 schools and higher education were entering a new academic year, with most opening their doors for in-person learning. Vaccines for COVID-19 were widely available for adults and children ages 12-18 in the United States, and 62% of the adult population had received at least one dose. At the time, COVID-19 vaccinations were not available for children ages 5-11. Distrust of COVID-19 vaccines and the recommendations by medical professionals and scientists was prevalent among a significant portion of the US population, and many were choosing not to receive the COVID-19 vaccination.

At the same time, weekly, if not daily, news reported additional Black people dying at the hands of police; protests continued around the nation; growing anti-Asian sentiment related to COVID-19 and hate crimes increased; COVID-19 outbreaks at crowded immigration border facilities impacted Latinx immigrants and families; and many companies, educational institutions, and individuals grappled with combatting racism through statements, policies, and education.

The remainder of this report is devoted to analyses of responses to the following open-ended questions:

- 1) Considering the social upheavals from both the heightened attention to racism and the spread of COVID-19 since early 2020: In what ways, if at all, have these two ongoing circumstances influenced your interest or ability to advance in your technology studies or career?
- 2) What changes would you like to see happen in computing fields to advance diversity, equity, inclusion, and anti-racism?
- 3) What do you need moving forward, if anything, to support your ability to advance in your technology studies or career?

Considering the social upheavals from both the heightened attention to racism and the spread of COVID-19 since early 2020: In what ways, if at all, have these two ongoing circumstances influenced your interest or ability to advance in your technology studies or career?

Results from the previous surveys conducted for this project (in summer 2020 and fall 2020) indicated--perhaps not surprisingly--varied impacts of COVID-19 and racism on respondents' ability to advance in their computing studies and careers. In the current survey we wanted to go beyond the numbers, and we asked respondents to describe these impacts in an open-ended question. This allowed each respondent to identify the most salient impacts of these dual crises for them.

As with the previous surveys, individual responses varied widely in the impacts they noted, and in fact, some noted no or temporary impacts. A sizable group noted positive impacts, primarily due to heightened attention to racism. Another sizable group noted negative impacts in areas such as learning, commitment to their organization, and motivation due to the COVID-19 pandemic and lack of action or ineffective action on racism. These trends are further elucidated below.

POSITIVE IMPACTS

Several respondents noted **heightened commitment to social justice work** or to work that directly impacts groups that have been marginalized in computing, e.g., mentoring students. Several spoke of a heightened sense of the impact their work can have and a responsibility to act and lead.

For example:

“As a professional leader, technologist, person of color, advanced graduate degree holder with certifications - I feel it is imperative that I be the voice of those that are silenced.”

● ● ● ● ● Asian woman in industry, no disability, not LGBTQIA+ community, unspecified caregiving status

“As a more junior engineer in my organization, I see the power that authority figures within my org have to cause change. This makes me more motivated to further my career so that I can be in a position to have bigger and more positive change.”

● ● ● ● ● White woman in industry, no disability, LGBTQIA+ community, not a caregiver

“I have committed more to working with minority children to ensure their progress in the K-4 environment.”

● ● ● ● ● Black woman unspecified persona, no disability, not LGBTQIA+ community, not a caregiver

Some academics wrote of making changes to their courses and to their research to **directly address racism and to empower students:**

“With the heightened attention to racism, it has strengthened my resolve to prepare my diverse student body for successful technology careers, as the income and wealth those careers generate will grant them greater political and social power, and thus greater ability to affect political and social changes that dismantle structural racism and white supremacy.”

● ● ● ● ● White man in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

“I am a college instructor. I’ve felt an obligation to include discussion of racial issues in my classes, which has overall been a positive experience.”

● ● ● ● ● White woman in higher education, with a disability, not LGBTQIA+ community, not a caregiver

“The attention to racism has helped educate me on how I can be a better ally to those around me at my school and made me consider how I can make antiracist efforts in my research.”

● ● ● ● ● White woman student, no disability, not LGBTQIA+ community, not a caregiver

POSITIVE IMPACTS *(CONTINUED)*

Some noted that their commitment had not necessarily changed, but that the **increased acknowledgment of racism** in their organization and access to other resources have made that work potentially more impactful.

“I was aware already, since we had opened conversations with our Black/African-American and Hispanic students prior to that. So it did not influence my interest, but the fire it lit under others enhanced my ability to create change.”

 White woman in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

“I have learned that I have a unique voice in the field that has potential for impact and positive change. I also found there are others that think like me through the #AllTechisHuman movement.”

 White woman in higher education, with a disability, not LGBTQIA+ community, not a caregiver

Several respondents noted the **positive impacts afforded by remote work and learning** during the COVID-19 pandemic.

“The work from home environment helped with my disability. I got accommodations that I wouldn’t have received prior.” [She also noted that “working from home improved [her] health.”]

 White woman in industry, with a disability, not LGBTQIA+ community, not a caregiver

[The remote work options opened up].. “more internship opportunities for students with disabilities.”

 Middle Eastern/North African woman student, with a disability, not LGBTQIA+ community, not a caregiver

“I think it has helped that it promotes a work from home option. This used to be very rare. I already work from home, but having it more available gives me more opportunities...”

 Black and White man in industry, no disability, not LGBTQIA+ community, caregiver of a minor

NO OR FEW IMPACTS

Respondents who reported little to no effects, or only temporary ones, were primarily individuals who identified as White and who were not members of the LGBTQIA+ community.¹ Many only wrote brief responses such as “no effect,” but a few provided more explanation. For example, a White woman faculty member with a disability (not LGBTQIA+ community, not a caregiver) noted that “COVID was all negative all the time, but I do feel that its impacts on me are mostly temporary.”

It also appears that seniority, as we saw in our previous surveys, may shield some individuals from the worst impacts:

“I received tenure right before COVID hit, so I already felt as though I was advancing. COVID has prevented me from traveling to conferences, but the conferences were conducted virtually, so I have still had some engagement and collaboration with people in my professional network.”

White man in higher education, no disability, not LGBTQIA+ community, not a caregiver

NEGATIVE IMPACTS

Respondents reported negative impacts from annoying to profound, including burnout, learning losses, job frustrations, being cut off from key networks, losing faith in one’s organization, concern about how anti-racism work is being done, and losing a job. Subsequently, some respondents reported disengaging, downshifting, resigning, or retiring early. This section considers the most common types of negative impacts noted by respondents.

Several respondents commented on the negative impact the pandemic has had on their **ability to network**, a pattern we noted in previous surveys [here](#). For example, an Asian woman working in industry noted that she had a “*lack of grapevine information, less support and visibility, poorer health.*” Similarly, a White man working in higher education commented on the negative impacts of working remotely: “*It makes everything harder to do, reduces connections to colleagues both in my office and around the country.*”

This inability to network can have profound effects on those just beginning their careers, as evidenced in this comment:

“COVID-19 really isolated me from others in my lab and community. As someone who had just joined a PhD program, it was really hard to know if the things that I was struggling with were normal or not. (It turns out some were and some weren’t.) Not knowing the norms makes it really hard to advocate for yourself....”

White women student, no disability, not LGBTQIA+ community, not a caregiver

¹ This survey is not a representative sample, and as such, findings should not be generalized to the larger population. Demographics of respondents, and observations about patterns in the present data, are provided for contextual purposes only.

NEGATIVE IMPACTS *(CONTINUED)*

A White woman working in higher education echoes this: “[We] need to provide additional support to students beginning their career, they are lost.”

Many noted **burnout** or a sense that everything is just harder to do. This comment from a woman working in industry captures this feeling:

“It’s been so much work with the pandemic and also advancing with my company. So much work. It just never ends. At the same time, our customers are overwhelmed, too, which makes selling our product harder. That means I don’t get the external validation that this is a good use of my time as much. It’s pretty depressing and overwhelming.”

White woman in industry, with a disability, LGBTQIA+ community, caregiver

Faculty members commented that they and their students are burned out but that they are still trying to work to be more equitable.

For example, a faculty member noted:

“[The pandemic and anti-racism] have both influenced me to want to work to be more equitable in teaching. But I also feel more overwhelmed/burned out at the increased workload from dealing with courses being online.”

White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

And a few noted the **“tax”** that people of color are bearing because of racism.

One student commented:

“I think it’s been very distracting in the sense that I am having a much harder time focusing on my studies/career than other students who are not POC [people of color] who the news/social upheaval seems to have little to no impact on their schooling or day to day lives. It’s very frustrating to me because it is emotionally taxing personally, and also because I feel compelled to take action at my school since no one else is. I also get a lot of requests from my department to do DEI things so it also takes away from my time to focus on school as well.”

Asian woman student, no disability, LGBTQIA+ community, not a caregiver

NEGATIVE IMPACTS *(CONTINUED)*

Organizations may acknowledge the greater impact on people of color of COVID-19 and racism, but some respondents are seeing little constructive help or structural changes from their employers:

“As a Black/African-American woman in technology, these two circumstances have rocked my world. The workplace has been unrelenting, even though they acknowledge the personal trauma of racism and death that I am working with.”

 Black woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

COVID-19 and the heightened **attention to racism have also disillusioned many people**, particularly in terms of what they have seen from their leaders, organizations, and communities. The combination of disappointment in institutions and added demands has led some to withdraw from their work and even leave their positions, studies, or fields.

For example, one respondent is considering early retirement:

“COVID in particular has caused me to reconsider my priorities. I have started giving more attention to family and wellness over career. I am beginning to consider a path to retirement or [to a] less stressful job situation. Part of this may be a natur[al] part of mid-career transition, but I feel it was accelerated by COVID. I also was disappointed in the institutional response to both of these issues really. So, it makes it easier to distance myself from giving too much to the job.”

 Black women in higher education, no disability, not LGBTQIA+ community, caregiver of an adult

A woman working in industry relates a similar experience:

“My employer has revealed their true colors in terms of adamantly opposing remote work (until forced to accommodate it by public health officials) during the pandemic and revealing through leaked recordings and explicit decisions that they see racial equity as a distraction from work and a hindrance to [our mission]. As such, I’ve lost all long-term outlook for my current job and am looking elsewhere to work.”

 White woman in industry, unspecified disability status, LGBTQIA+ community, caregiver of a senior

NEGATIVE IMPACTS *(CONTINUED)*

The disillusionment with organizations' symbolic ("empty words") or ineffective responses to racism and COVID-19 emerged in many comments.

"Watching my institution's responses to both has been somewhat demoralizing, and has me questioning more often how much I really want to stay in this field and this job. I think it's the combination of the saying-but-not-doing-anything-meaningful and the unstated requirements that we turn ourselves inside out for our students and the institution. We now have new institutional leadership and I am hopeful that things on both fronts will improve, but I remain skeptical."

 White woman in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

"The heightened attention has just been empty words in our department. Our administrators and most faculty say one thing, but then their actions show that they don't support minorities in [our computing department]."

 Self-identified mixed race woman in higher education, unspecified disability status, not LGBTQIA+ community, caregiver of a minor

Some respondents felt that things had gone too far or were being implemented in problematic ways.

"[T]he word equity is now being used to stop any discussion about new initiatives. If you don't agree, then you aren't about equity. This has been used to advance upper administrators' agenda without trying to discuss and, maybe even, improve the idea. I am just done and will leave administration at the end of this year. I will continue to work [in the] sphere[s] I can influence, but since I am not invited to broader conversations, then the only way I can keep my sanity is to let it go."

 White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

"The heightened attention to racism is important, but the proposed solution to it (enforcing equality of outcome) is morally and ethically bad as well as pragmatically impossible."

 Individual in higher education, caregiver of a minor, unspecified race, gender, disability status or LGBTQIA+ community status

"No influence [of COVID-19 or anti-racism] really, as I have no desire to "advance" in my career. I do worry about the negative effect of the Woke Revolution and the accompanying Cancel Culture upon our society. What the question refers to as a 'heightened attention' to racism is actually an insincere obsession with racism for the purpose of using it as a weapon against anyone who does not agree with the leftist agenda."

 White man in higher education, no disability, not LGBTQIA+ community, not a caregiver

What changes would you like to see happen in computing fields to advance diversity, equity, inclusion, and anti-racism?

To identify paths forward that the computing community could take after these many months of social upheaval, respondents were asked what DEI-related and anti-racism changes they would like to see occur. While the responses were broad and covered many areas, there were several themes that stood out.

WORK ON PIPELINE OF STUDENTS FROM HISTORICALLY-EXCLUDED GROUPS

A common response to this question was to increase the influx of students into computing through **K-12 interventions and curricula strengthening**. This was not seen as a cure-all, however, as there was acknowledgement that other actions need to be taken as well.

“Diversity when hiring. People say blaming it on the pipeline is an excuse, but I believe it is a big part of the problem. It’s getting better, but for example, because it was a problem in the past all the SME’s [subject matter experts] at my work are middle aged white men, because when they started there was legitimately a pipeline problem.”



Native American woman in industry, no disability, not LGBTQIA+ community, not a caregiver

“Diverse workforce.... It needs to start at a younger age so that people grow up knowing that they belong, not having to convince themselves that they belong once they’re older.”



Asian woman in industry, no disability, not LGBTQIA+ community, not a caregiver

“I would like to see every middle and high school, especially in poor, rural and other underserved communities, offer computer science to those students at a level appropriate to them (e.g., AP CS principles in high school).”



White man in higher education, no disability, not LGBTQIA+ community, not a caregiver



The computing community is not unified around a single vision for advancing diversity, equity, and inclusion in the field.

MAKE CHANGES IN POST-SECONDARY CS CURRICULA

Among respondents from higher education, there was a desire for more **curricular support to enable greater inclusivity and understanding of DEI** in computing. These included more culturally relevant curricula, acknowledgement of the effects of bias in the software development process, and required courses for the major that attend to cultural competency and social good.

“More culturally relevant resources in curriculum. Mandatory training.”

White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

“In terms of curriculum, greater focus on how software design decisions impact various demographic groups.”

White man in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

“Let’s consider these issues as CORE to our field and not just as add-ons. Let’s reimagine our curriculum so that social, historical, justice, ethics, etc. issues are a central part of the curriculum and not one-off things.”

White woman in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

ENHANCE ACCOUNTABILITY

As we heard in the responses to how the dual crises have shaped respondents’ interest and pursuit of computing, there was a desire to see greater accountability in organizations and institutions for actually making meaningful reforms.

“Making D&I efforts directly affect manager’s job performance during promotions. They can say they care about D&I, but without that piece of accountability, not enough gets done and is just often used as a talking point.”

Asian woman in industry, with a disability, not LGBTQIA+ community, not a caregiver

“Many academic institutions are quick to label others as racist, yet when racism-related issues within an institution are brought to the attention of institutional leaders, there is a collective shrugging of shoulders as if there is nothing that can be done except for continued meek diversity efforts.”

Asian man in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

“Have the big names and companies address racism by talking about particular events (so where exactly did the event happen and when) and not just in general.”

Self-identified South Asian man student, no disability, not LGBTQIA+ community, not a caregiver

SHARING THE LOAD

It seemed that many respondents to our survey were taking action in one way or another within their sphere of influence to combat racism and achieve greater social equity. Among these, there was a desire for others to share the load of the work to **identify and speak out against racism and other forms of discrimination**.

“A focus on ethics and responsibility in AI as part of the education process AND part of what we will accept as a field. I have heard a lot that white women back away when things get difficult at work, preserving their job over supporting others working for equity, and in particular, African American Women. It would be great to have a listening session for white women, and other allies, about how we need to stand up - and risk job loss- to get equity. Hard truth, but the reality is that while I often feel so lucky to be at the table, the reality is I work harder than others. I have yet to lose my job for speaking up BUT it has hurt my career.... we need to let our African American peers tell us what they need, what we need to do and not debate it all.”



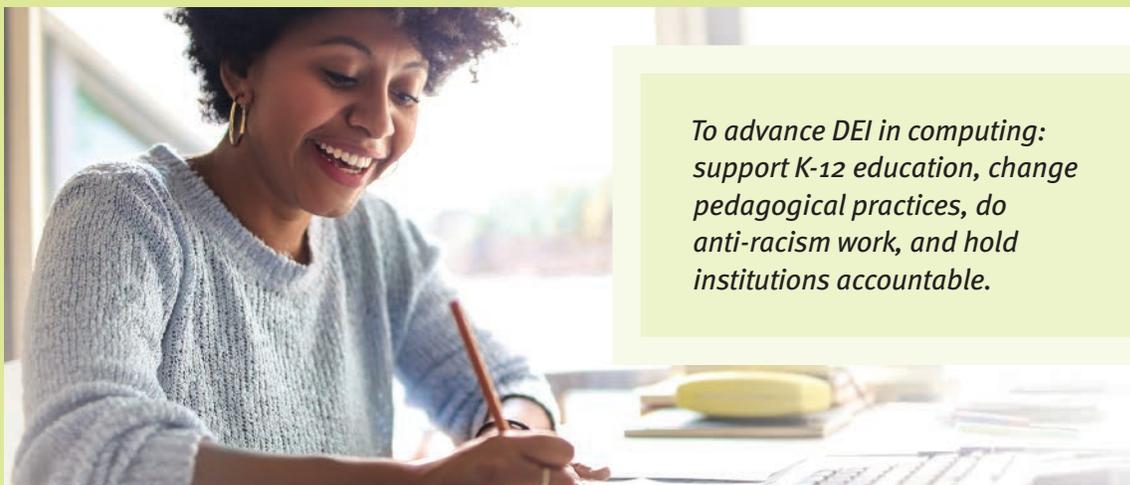
White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

“Actively anti-racist and diverse hiring. More voices calling out negative practices. More voices calling out practices that are not overtly negative, but aren’t working towards progress.”



White woman in industry, no disability, LGBTQIA+ community, not a caregiver

Taken together, the many different responses to this open-ended question suggest that the computing community is not unified around a single vision, and that there is **dissension among the community** about whether or not this type of work belongs in computing. Overall, though, among respondents, there was a sense that there are concrete things individuals can do, such as support K-12 education, change pedagogical practices at the post-secondary level, do anti-racism work, and hold institutions accountable. Even in the face of these possibilities, however, there was an overall sense of pessimism in the comments concerning what people are seeing done at their organizations and institutions.



To advance DEI in computing: support K-12 education, change pedagogical practices, do anti-racism work, and hold institutions accountable.

REACTIONS AGAINST ANTI-RACISM MOVEMENTS

Not everyone who responded to the survey thought that what they had seen of the diversity and/or anti-racism movements were on the right track. We noted **tensions in opinions** consistent with the broader social polarized climate around the value and importance of anti-racism. These observations included perceptions that anti-racism is simply racism in another form, and that there was no racism in computing, only different aptitudes and opportunities. These are encapsulated in the excerpts below.

“To advance DEI, the anti-racism movement needs to divest itself of two things:

- 1) Thinking of all racism in terms of systemic racism....While systemic racism is important, erasing cultural and individual factors ...leads to simplistic and inaccurate thinking. It is important to consider all three major factors in our society contributing to racism, not just one.*
- 2) The Black and White thinking at the heart of the anti-racist narrative, pitting irredeemably privileged and racist whites against victimized blacks, a narrative which erases the struggles of Hispanics, Asians, and others in our society....Tying the anti-racist movement to, well, racism is completely unacceptable. Nobody thinks today it was acceptable for Yale to have quotas on Italians, Jews, and Blacks up until 1970, but somehow the anti-racist leadership (cf. Kendi) is literally calling for racial discrimination today. Until the DEI and anti-racist movements can purge the cancer of racism from their own midst, they have no business trying to lecture actual anti-racists on anything, and should stay the hell away from the computing fields until that day comes.”*



Individual in higher education, caregiver of a minor, unspecified race, gender, disability status, and LGBTQIA+ community status

“I am sick and tired of hearing about diversity, equity, and inclusion. I do not subscribe to “diversity” as a core value. My core values include honesty, doing useful work, and being self-reliant. I’m all in favor of women and “minorities” entering the computing field, and of removing any obstacles to them doing so. But the idea that there is something “wrong” if the distribution of people in a given field differs from the distribution in the larger population is silly. The simple fact is that men tend to be more interested in gadgets than are women, and so a higher percentage of men enter fields such as computing and engineering. Women tend to be more nurturing, and so they tend to enter fields such as nursing more than do men. Is that a big problem? I don’t think so. As for “equity”, the premise of that term seems to be that if outcomes differ among different populations (e.g., men vs. women, white vs. black), it can only be because of some form of discrimination against those who do worse. That is nonsense!! As for anti-racism, it is nothing more than racism turned in a different direction, and it is evil. The way to end racism is to end racism, not to turn it against a different group.”



White man in higher education, no disability, not LGBTQIA+ community, not a caregiver

“I personally do not believe there is significant racism in the computing field, but I do think there are far few[er] African-American, Hispanic and Native American faculty in computer science. At my university the main obstacle for students from these groups to continue on to the Ph. D. is availability of funding, which needs to start at the undergraduate level.”



White man in higher education, no disability, not LGBTQIA+ community, not a caregiver

EXPANDING CONCEPTION OF DIVERSITY-RELATED CONCEPTS

Among those who did agree that efforts to diversify computing (and society) are important, there was a desire for the term “**diversity**” to be more inclusive, particularly to include disabilities. But there was also confusion about the many terms being used, such as DEI, anti-racism, etc.

“Holding in-person conferences and more interactions for diversity about hiring people with disabilities.”

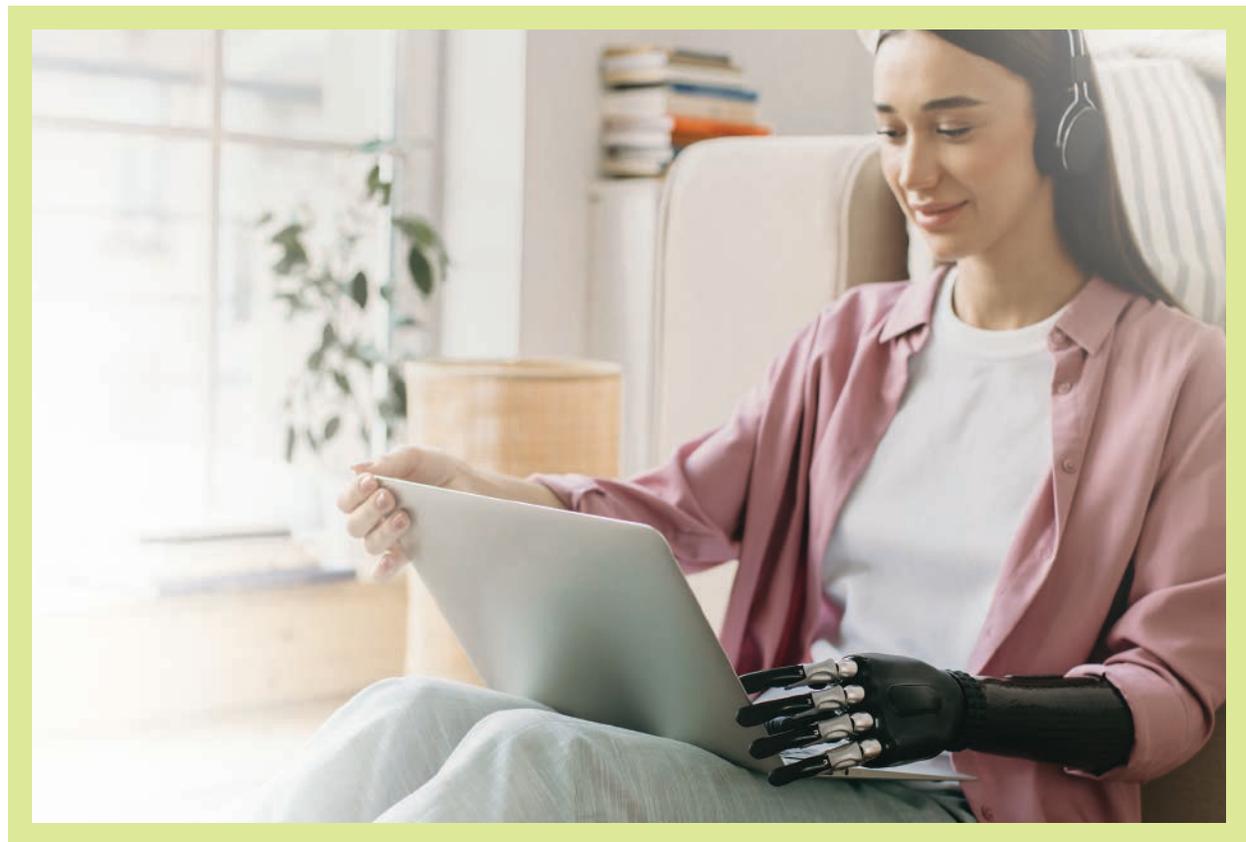


Middle Eastern/North African woman student, with a disability, not LGBTQIA+ community, not a caregiver

“I believe that anti-racism is creating problems not because the issue itself is controversial, but because there are no clear definitions of what it is and how it differs from diversity, equity, and inclusion.”



White man in higher education, with a disability, not LGBTQIA+ community, not a caregiver



What do you need moving forward, if anything, to support your ability to advance in your technology studies or career?

Respondents were asked to reflect on what, if anything, they needed to support their own studies or careers. Not surprisingly, given the diversity of the computing community, there was a wide range of responses. These are arranged thematically in the pages that follow.

SUPPORT FROM OTHERS

The majority of responses to this question described a need for support because they were feeling over-extended, overworked, or otherwise burnt out. The demands of work and/or school, the stress of experiencing racism, the stress of the continuing COVID-19 pandemic, means that people need, as one Black woman working in industry put it, *“something other than a ‘business as usual’ approach, when it is clear that we are in some very challenging times.”*

“More time to prepare classes, less pressure to develop new programs in a time of great stress.”

 White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

“I feel drained, there is too much work and almost no support to do what is required..., it is hard not to feel overwhelmed and frustrated.”

 Black and Latinx woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

“I need increased support at work to accomplish my tasks with more support and less of my time. I have seen how much of my time goes to my job, and I worry about building resentment about the time away from family.”

 White man in higher education, with a disability, not LGBTQIA+ community, caregiver of a minor, caregiver of an adult

Additionally, some indicated that **supports and shifts in expectations around work are needed** not just as responses to the stressors of the current crises, but also in the long term. As one respondent, a White man working in higher education, expressed, *“My hope is that the move to more reasonable job/career expectations is long-lasting.”*

HEIGHTENED DEI AWARENESS AMONG EMPLOYERS

Many respondents to our survey also expressed the need for heightened awareness about a wide variety of diversity, equity and inclusion (DEI) topics in their own environments—including not discriminating against employees who are also caregivers (regardless of gender), not discriminating against employees with disabilities, and providing financial and administrative support for making changes. Respondents reported a desire for **authentic and sustained attention to DEI issues** from support for recruiting and hiring students to including DEI as an important factor in an individual’s career progression.

“Society needs to grow up and learn that humans have certain needs to survive. Raising children does not happen automatically--society is used to dumping this burden on women and thus any men who sacrifice their career for their children are automatically shoved out of career paths for no reason other than social biases.”

● ● ● ● Asian man in higher education, no disability, not LGBTQIA+ community, caregiver of minor

“I disclosed a disability at work. Since then I haven’t been given the same opportunities as my coworkers. I need to move to another job that appreciates what I have to bring.”

● ● ● ● White woman in industry, with a disability, not LGBTQIA+ community, not a caregiver

“As a Native Black American Woman with disabilities, racism has severely negatively impacted my career. Despite earning a bachelor of science degree with a concentration in Biology and having over 15 years of experience in business administration, I am still living in poverty. I need to contribute in a role that applies my skills and will accommodate my disabilities by allowing me to work remotely anywhere.”

● ● ● ● Black woman student, with a disability, LGBTQIA+ community, caregiver of a senior

Respondents noted not only their own trials at work related to being excluded or discriminated against, but also acknowledged that they needed guidance themselves.

Many respondents note a desire for authentic and sustained attention to DEI issues.



TRAINING ON HOW TO IMPROVE EQUITY

Many individuals in our sample expressed the need for more training on how to improve their own, or their organization's recruiting, hiring, or other practices that would help to diversify the workplace or classroom. These were people who wanted to do more to address issues of inequity but weren't sure they were taking the right action or weren't sure how to **help their organizations make lasting change**.

"I need pedagogical training, specific to my field, on how to teach/guide diverse demographics within my courses. As a higher educator, my interaction with students ends at graduation, however I would welcome insight on structural racism as it applies to job preparation and hiring (interviews, resumes, etc). I can't influence an employer's biases, but perhaps there are actions we can take at the higher ed level to prepare our graduates to navigate around those biases."



White man in higher education, no disability, not LGBTQIA+ community, caregiver of minor

"Honestly, what I would like is evidence-based pedagogy, management and student support practices. I would like to be able to be confident in changes. For example - How to implement holistic admissions processes to ensure the students accepted can be supported."



White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

"Training on how to discuss racial issues in the classroom."



White woman in higher education, with a disability, not LGBTQIA+ community, not a caregiver

"I personally feel equipped to advance or sustain in my career. I am not sure how to best use my platform as a leader to help others advance in their careers and technology studies. To the extent that I am in "the room where it happens", what should I say, do, or be mindful of to advance DEI concerns?"



Black woman in higher education, no disability, not LGBTQIA+ community, caregiver of an adult

The desire for more guidance did not come only from faculty, but they were the most explicit about what they felt they didn't know how to do. Students, people from industry and others in higher education expressed other needs, as described in the next section.

PERSON-TO-PERSON OPPORTUNITIES

Some respondents simply wanted more **opportunities to network or socialize**, activities which perhaps would not have been out of reach pre-pandemic. Others expressed a need for mentorship or other types of support for their careers and/or job responsibilities. For many, their needs were not new and not necessarily a result of the pandemic.

“I need support from my manager and leadership.”



Black, Latinx and Native American woman in higher education, no disability, not LGBTQIA+ community, caregiver of a minor

“Classes and workshops would be helpful, and a technical mentor that could help me find specifically what areas I should focus any study hours on.”



Native American woman in industry, no disability, not LGBTQIA+ community, not a caregiver

“People, networking opportunities for students and collaborators.”



Latinx and White woman in higher education, no disability, not LGBTQIA+ community, not a caregiver

OPEN EXPRESSION AND SAFE SPACES

Many comments expressed needs related to the desire for open expression and **psychological safety around diversity**. These came from those who are not “on board” with approaches to address racism but are silent about it for fear of reprisal, to those who have directly experienced the impacts of racism and other forms of bias.

“Some protection and a safe space... I don’t want to feel like I’m an alien. I’m not asking for favors, just don’t have prejudices.”



Self-identified South Asian man student, no disability, not LGBTQIA+ community, not a caregiver

“Basic consideration: Yes, I am Asian-American. No, I am from here (local). If you would like to know what my ethnicity is, I would be happy to tell you if you ask me directly. Do not call COVID the China-virus, harass Asian people, or attribute the virus to people eating bats (something thoroughly disproven by now), etc”



Asian woman student, no disability, unspecified LGBTQIA+ community status, not a caregiver

“This might sound silly, but I kind of just need a hug. Well, what I really need is just to be in the same physical space with people who are experiencing the pandemic as a new student.”



White woman student, no disability, not LGBTQIA+ community, not a caregiver

DISCUSSION & CALL TO ACTION

Prior to the pandemic, Diversity, Equity, and Inclusion (DEI) efforts were dutifully focused on tackling the lack of diversity and representation across industries, fueled by a robust business case and a moral imperative. DEI-- as a set of policies, practices, and programs-- has taken on many forms across sectors and has become a movement in itself. However, in the United States, contemporary DEI training as a construct in the workplace first emerged in the mid-1960s with equal employment laws and affirmative action policies. Nearly 60 years later, we continue the struggle to provide equitable and inclusive opportunities and experiences in education systems and workplaces.

This study identifies and examines several differential and compounding impacts of the ongoing COVID-19 pandemic and racism on individuals in the computing ecosystem. Through personal stories, we are able to see how the widespread disruptions to educational studies and career advancement by these dual crises have resulted in reexaminations of priorities, questioning of authenticity, and inspired deeper contemplation of “*what next*” and, more importantly, “*what should come next*”--for individuals, institutions, and companies alike. In this third survey, respondents expressed a diverse array of impacts from profoundly negative workplace experiences to reason for optimism because of the attention on DEI initiatives. In addition, there were respondents who reported being largely unaffected, those who resented the attention to DEI practices, and those who questioned their effectiveness and/or their employers’ intentions. The divergent experiences and perceptions of individuals surveyed also point to the importance of applying an intersectional framework to better understand social determinants, social consequences, and ultimately, how we respond to these dual crises through new policies and structural solutions.

In recent decades, one could observe an accelerating acceptance and adoption of DEI, at least in the form of a “*should do*” perspective in corporate domains and in public and private higher education. Prominent examples include corporate transparency reports and publicly sharing progress measures presented by corporate giants Google, Deloitte, PwC, and others. DEI transparency reports are a demonstration of commitment and intent. They have served as a pressure point for other corporations to follow as a “gold standard,” to help move the needle for inclusive policy adoption and increase diverse representation in leadership and management roles.

In higher education, visible examples include universities doubling down on efforts to increase representation in hiring, tenure, and leadership. An ever-increasing number of universities and colleges now staff DEI professionals in leadership positions and roles to update curricula and create support systems for students in an expanding effort to create more inclusive and welcoming campus cultures. In parallel, an increasing number of universities adopted need-blind acceptance and financial aid practices to mitigate admissions biases that disproportionately impacted students of color.

Despite these ongoing and expanding efforts to change corporate and academic cultures to be more inclusive, the dual health and social justice crises disproportionately impact women and racialized communities.

Women’s participation in the labor force in the US has been increasing since 2015, but these gains are being lost due to the pandemic. According to the Women Tech Council 2021 Report, women were four times more likely to leave work during the pandemic and be laid off, and Black and Hispanic women experiencing higher unemployment than their White male peers (Women Tech Council, 2021). In our study, negatively impacted respondents echoed these sentiments with justifications for leaving the workforce that included a strong need to prioritize family over career and motivations to prioritize personal wellness by seeking pathways to early retirement or less stressful employment. Emerging data indicate other longer-term consequences, as many women – who often face the dual burden of juggling work and caregiving duties – choose not to return to work, despite improvements in the economy (Fry, 2022).

DISCUSSION & CALL TO ACTION *(CONTINUED)*

Beyond the impetus to change personal priorities or decrease stress, numerous respondents collectively shared sentiments of disappointment, disillusionment, and burnout.

These sentiments directly result from the problematic ways they felt their employers or universities were responding to the pandemic, social justice movements, and how they were implementing DEI practices and policies. In particular, negatively impacted respondents were troubled by or felt harmed by performative actions and policies and a pervasive lack of support to persevere in their coursework, perform well in their jobs, or take on more responsibilities.

For numerous survey respondents, the challenges reported by individuals were as prominent in their responses as their perceptions of why- specifically the mentioning of problematic policies and performative actions by their employers, peers, and educational institutions. Despite the billions of dollars collectively spent by corporations, governments, and universities on DEI in recent decades, we have seen no monumental changes in success metrics. We often discuss this failing from the perspective of social sciences and economics research or the lens of corporate responsibility. However, this study captures how individuals with intersectional identities can offer insights and inform the solutions most worthy of pursuit. As a society, we are savvier about the characteristics of performative DEI. Thus, **the results that we report here-- employee frustration with organizational culture and solution implementations or the responses of students' sentiments of lack of inclusion, belonging, and opportunities-- are evidence of failures to create robust policies and practices.**

Beyond disparities in accessing healthcare and medical resources, the pandemic intensely highlighted gaps in access to technology and the internet. Millions of workers suddenly worked remotely, juggling the demands of spousal co-working and children attending school virtually. University campuses de-densified their campuses by sending students home, upending college students' experiences. Disruptions in social support and networking opportunities characterized remote university experiences. STEM courses pivoted to virtual labs, often done in isolation rather than in collaborations, while practicums, internships, and job interviews required virtual connectivity. Connectivity challenges and dependencies became an additional stressor for some and a barrier to others.

Many of the data and stories presented in this study are consistent with a growing body of other COVID-19 impact studies. The stories of those negatively impacted set the stage for understanding the ongoing *Great Resignation* and reports of "significant" mental health strains. Several conclusions have emerged from our two-year study consistent with data trends and impact research, suggesting that the pandemic may have imposed serious setbacks on DEI efforts. The combined results raise concern that we may currently be facing a new crisis-- the loss of representation and diversity in the computing ecosystem and beyond- a perfect storm that may undo the past decades of slow and hard-fought progress. While the economic stress of the pandemic initially threatened DEI initiatives, George Floyd's death brought it back into view as an essential part of responsible employment practices.

DISCUSSION & CALL TO ACTION *(CONTINUED)*

The whiplash of reactivity to the pandemic and social justice movements has become the impetus for many to ask: What are we doing that is meaningfully actionable? How do we avoid performative DEI, individually and organizationally?

During the pandemic, the murder of George Floyd ignited global attention to police brutality and systemic racism in the United States. Beyond the immorality of police violence and race motivated crimes, medical research has shown that this type of violence also contributes to adverse health outcomes, such as psychological stress leading to stroke or accelerated aging (Alang et al., 2017). Since George Floyd's death, systemic racism has finally been classified by many as a public health crisis. In addition to this pervasive psychological stress associated with experiencing racism and social injustice, our study notes the multiplying stress impact for many survey respondents in having to work in a "business as usual" environment, resulting in feelings of being overwhelmed and drained for students and employees. A shared sentiment among respondents was the need for shifts to more reasonable expectations around work performance, increased support, and more flexibility in the immediate and sustained future. One of the most significant upsides to widely adopted DEI training is that individuals are more educated and empowered to ask for meaningful evidence, metrics, and outcomes. Consequently, failures are more visible, and organizations need to be more accountable.

Although this study and the collective of other impact studies emphasize the extraordinary and adverse effects of the pandemic and social justice crises on DEI, it can also become a **call to action** with a clear motivation. The pandemic has brought wider consciousness to other crises, including systemic racism, with inequalities felt along various lines, from ethnicity to income. We must avoid the additional risk of creating more stratification resulting from pandemic adaptations for the computing ecosystems and workforce more broadly. For instance, as we consider the future of in-person versus remote work, we must proactively develop policies and promote practices that safeguard fair and equitable promotion and advancement opportunities- particularly for women, those with caregiver responsibilities, LGBTQIA+, and those with visible and invisible disabilities.

As these crises continue to unfold, we must learn to navigate and invest in new structures for support and collaboration that consider work products and outputs and accommodate psychosocial support and career development needs such as mentorship, networking, and leadership development. These workplace pandemic adaptations must also tackle the challenge of welcoming open expression and providing psychological safety around diversity. **To avoid further losses of diverse talent, employers will need to double down on policies and practices that will truly bring about transformational change in the workplace.** Organizational cultures will need to acknowledge employee voices and sentiments as part of their guidance for meaningful DEI implementations, metrics, and feedback cycles for improvement and transparency, ultimately adopting a growth mindset model toward organizational change.

For additional data and resources related to diversifying the technology sector, go to:

Research-based resources for diversifying the tech ecosystem:
www.ncwit.org/resources

Research on DEI in tech:
AnitaB.org Technical Equity Experiences Reports

AnitaB.org 2021 Top Companies for Women Technologists Key Findings & Insights Report

National Academies report on Transforming Trajectories for Women of Color in Tech:
<https://www.nationalacademies.org/our-work/addressing-the-underrepresentation-of-women-of-color-in-tech>

The About Catalyze Tech (ACT) Report:
<https://actreport.com/>

STARS Computing Corps programs and events foster community for broadening participation of underrepresented groups in computing:
<https://www.starscomputingcorps.org/programs/>

METHODOLOGY

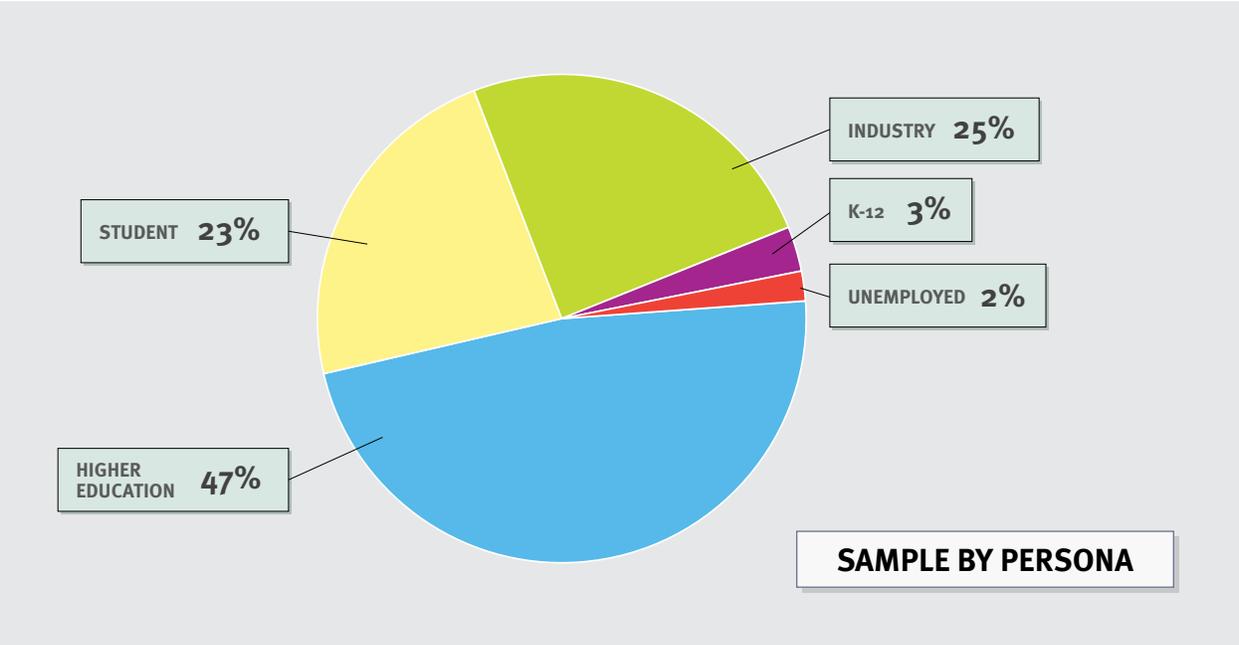
SURVEY INSTRUMENT AND ADMINISTRATION

The 18-item survey included participant demographic questions and two close-ended sections: Impact of COVID-19 and impact of recent attention to racism on respondents in the tech ecosystem. Additionally, two open-ended questions were asked that explored the interlocking factors of COVID-19 and the recent attention to racism on respondents’ interest/ability in and supports needed to advance in the tech ecosystem. A third open-ended question asked about desired changes related to DEI in the tech ecosystem.

Respondents were recruited through multiple channels including direct email invitations to individuals on mailing lists of the partner organizations (NCWIT, AnitaB.org, STARS) and partner newsletters and social media. The survey invitations stated that we were interested in “gathering responses from individuals across the computing and technical ecosystem.” Potential respondents were encouraged to share the survey invitation with their networks. The survey was administered online via Qualtrics and was open for responses from August 20 through November 15, 2021. One hundred and thirty-eight (138) individuals responded to the survey. No questions were required, so there are varying numbers of respondents who answered each question.

PERSONA

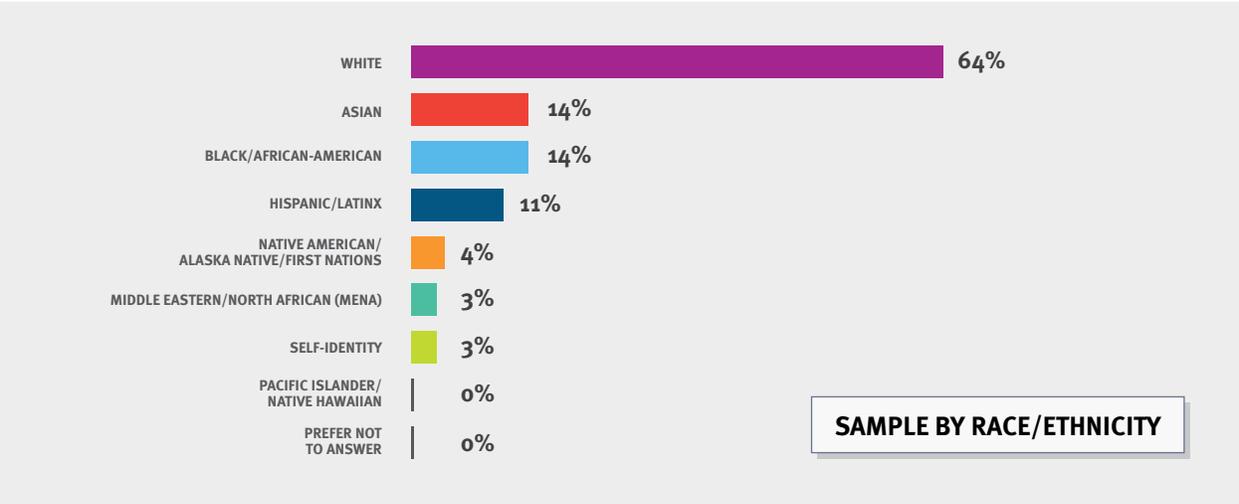
Respondents were asked to designate their current occupational or educational status and were assigned a Persona based on their response to this question. Of the respondents who answered this question (n=127), almost half (n=60, 47%) were individuals working at an institution of higher education. The second largest group of respondents was from industry (n=31, 25%), which includes those working at a for-profit company, non-profit, nongovernmental organization (NGO), or government agency, as well as start-up founders, and those that are self-employed. Because of the small sample, statistical analyses were not done controlling for Persona, as was done in Surveys 1 and 2 of this project. However, open-ended responses were examined within Persona, and Persona is included in all quotes in this report.



METHODOLOGY *(CONTINUED)*

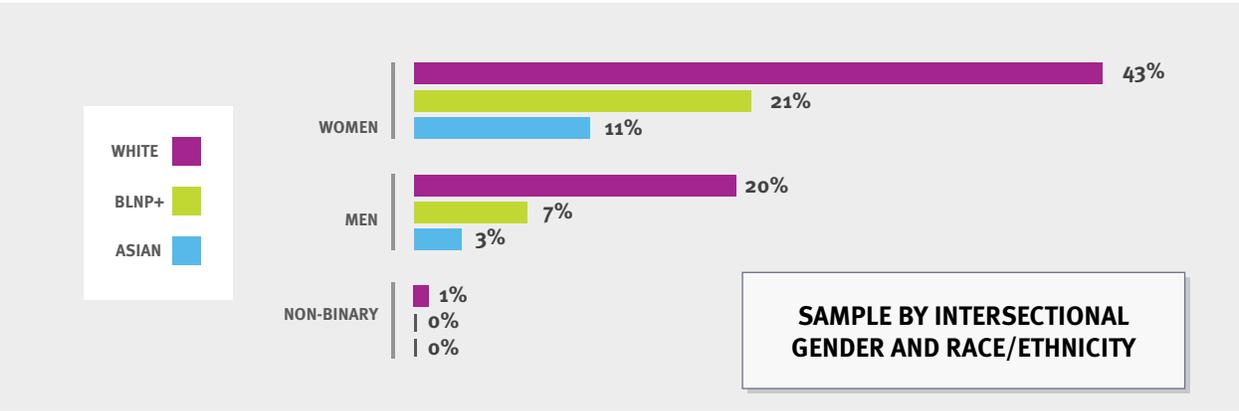
SAMPLE BY RACE AND ETHNICITY

Respondents were asked to report their race and ethnicity according to the following categories: Asian, Black/ African-American, Hispanic/Latinx, Middle Eastern/North African (MENA), Native American/Alaska Native/First Nations, Pacific Islander/Native Hawaiian, White, Prefer not to answer, or Self-Identify (open-ended). Multiple identities could be chosen, and 12% (n=9) of respondents selected two or more race/ethnicities. Statistical tests were run on quantitative responses individually for racial/ethnic groups to measure differences in responses to the survey items. These analyses were done only for Asian, Black, Latinx, and White groups, as the sample size was too small for analyses on other discrete racial/ethnic groups. No statistical test results for race are included in this report.



SAMPLE BY INTERSECTIONAL GENDER AND RACE

Respondents were asked to report their gender with the following response categories provided: Woman, Man, Nonbinary, Prefer not to answer, or Prefer to describe (open-ended). Of the 78 individuals who provided gender information, 72% (n=56) reported their gender as woman, 26% (n=20) as man, and 1% (n=1) as non-binary. When looking at the intersection of gender and race/ethnicity, the majority of respondents were White women (43%) or White men (20%), followed by Asian women (11%), Black women (9%), and Latinx women (8%). Statistical tests were run on two gender groups: men and marginalized genders, which included women and non-binary respondents. Respondents who selected “prefer not to answer” were excluded from all gender analyses.



BLNP+ includes respondents who identified as any of the following: Black, African-American, Latinx, Hispanic, Native American, Alaska Native, First Nations, Pacific Islander, Native Hawaiian.

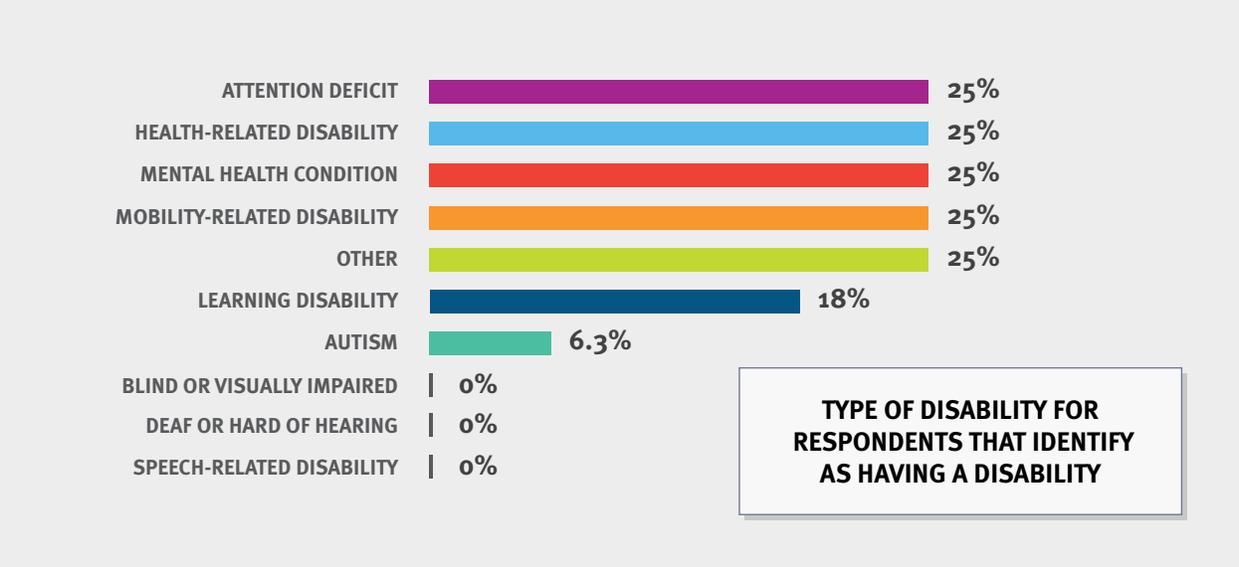
METHODOLOGY (CONTINUED)

LGBTQIA+ COMMUNITY

Respondents were asked whether they consider themselves “a member of the Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, and/or Asexual (LGBTQIA+) community.” Responses were: Yes, No, or Prefer not to answer. Of the 77 individuals who responded to this question, 12% selected “Yes,” 82% selected “No,” and 7% chose “Prefer not to answer.” Questions were analyzed for significant differences between respondents who selected “Yes” and those who selected “No.” Those who selected “Prefer not to answer” were excluded from LGBTQIA+ analyses.

DISABILITIES

Respondents were asked if they “identify as a person with a disability or other chronic condition.” Of the 78 individuals who answered this question, 72% selected “No,” 21% selected “Yes,” and 8% selected “Prefer not to answer.” Questions were analyzed for significant differences between respondents who selected “Yes” and those who selected “No.” Those who selected “Prefer not to answer” were excluded from disabilities analyses. Multiple disability types were presented to individuals who selected “Yes.” Due to limited sample size, statistical tests were not done by disability type.



SAMPLE LIMITATIONS

Survey 3 received a smaller response than previous surveys, with a much smaller sample of individuals working in industry and almost no K-12 respondents. Women are also overrepresented in the sample compared to their current participation in computing, although Survey 3 had the largest percentage of men respondents across the study. Although statistical tests were run to find differences between the aforementioned groups, this report does not include significant differences found due to the small overall sample size.

Link to past reports:

Survey 1 (Summer 2020): https://4b7xbg26zfmr1aupi724hrym-wpengine.netdna-ssl.com/wp-content/uploads/2021/02/Circle-T_Survey-1-Report_06-aw.pdf

Survey 2 (Fall 2020): https://4b7xbg26zfmr1aupi724hrym-wpengine.netdna-ssl.com/wp-content/uploads/2021/09/Circle-CT.Survey-2-Report.Final_.pdf

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To access the datasets, contact AnitaB.org's Evidence & Influence team at ei@anitab.org.

RESOURCES

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