How an Antiscience President and the COVID-19 Pandemic Altered the Career Trajectories of STEM PhD Students of Color

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In this mixed-methods study, we performed content analysis on openended survey items to reveal primary themes related to how PhD students are responding to the Trump policies and the COVID-19 pandemic. In our data set, 40.7% of the respondents reported that their career plans have been affected by Trump's antiscience policies, 54.5% by the COVID-19 pandemic. Our study revealed three themes, which were (1) awareness of the reduced funding for STEM (science, engineering, technology, and mathematics) and higher education, (2) heightened awareness of and commitment to the pursuit of social and racial justice, (3) interest in seeking job opportunities abroad. The top three themes for the COVID-19 pandemic were (1) shifting graduation timelines and adjusting research to the virtual campus life; (2) losing jobs, concerning about hiring freezes and fewer job openings; and (3) reconsidering their place in a STEM field postpandemic, including a possible complete change in career plans; thoughts of leaving the country for international jobs.

Doctoral students' career interests and aspirations are shaped in part by their educational environment and experiences. However, some students' career trajectories shift away from seeking faculty positions due to the hypercompetitiveness and political nature of securing and succeeding in a tenure-track position (McGee et al., 2019). Doctoral students in science, technology, engineering, and mathematics (STEM) have been hit particularly hard by the antiscience ideologies and policies that came out of the Trump Administration, coupled with the challenges from the COVID-19 pandemic. Asian, Black, Indigenous, and Latinx (ABIL) students have been disproportionately and negatively impacted by both of these factors. The 2021 report from National Student Clearinghouse Research Center unearthed an accelerating decline in the number of students in STEM. For example, after 2 years of dropping by an average of 1.5%, engineering saw a 3.5% decline year-on-year since 2020. The number of students in physical science majors had dropped by 4.6% in 2019 and 4.7% in 2020; in 2021 it dropped by almost 10,000 or 7.6%. Similarly, after 2 years of dropping by 1.2%, this year's figures show that math and statistics majors have 2.5% fewer enrollees (Sedmak, 2021). Responding to the COVID-19 pandemic, universities have moved to online instruction, and many have closed campus labs (Sahu, 2020). This has slowed and sometimes stagnated scientific research, which in turn affects doctoral students' graduation and postgraduation career plans. Countless STEM companies and university departments have implemented hiring freezes and have cancelled or reduced ongoing research projects and internships (Flaherty, 2020). Meanwhile, students of color are suffering disproportionately during the pandemic as their experiences are increasingly shaped and worsened by racism and systemic marginalization (Chotiner, 2020).

The Trump Administration added to an already toxic environment for STEM doctoral students of color with its discriminatory rhetoric (Griffin, 2018). The administration fueled the suspicion and hatred against Asians and other international STEM students by referring to the COVID-19 pandemic with racist terms such as "China Virus" and "Kung Flu" (Rogers et al., 2020; Reuters, 2020). "Scientific" racism has once again surfaced during the Trump Administration, but this ideology was never truly dormant (Solomon & Maxwell, 2018). While claiming he is not a racist, Trump referred to parts of Africa, as well as Haiti and El Salvador, as "shithole" countries (Graef, 2018). In light of the COVID-19 pandemic and the former president's antiscience rhetoric, we investigated how STEM doctoral students of color are making career and life decisions about their future. We employed the theoretical framework of professional doctoral socialization to determine whether these effects on their career trajectories are compounded by the intersection of the two overlapping events (the pandemic and the Trump Administration's policies). We also sought to understand how vulnerable STEM PhD students of color are to either or both of them.

Merging data from two national surveys (*Exploring the Experiences and Career Trajectories of STEM Doctoral Students of Color* [EECT-STEM, *N* = 129], and *Supporting Innovations and Diversity among Entrepreneurs* [SIDE, *N* = 357]), we gathered information on how likely STEM PhD students are to pursue one of 11 career choices, five in academics (i.e., faculty in research; faculty in teaching; faculty in entrepreneurship; postdoc; alternative academic) and six nonacademics (i.e., job in start-up; job in industry; business owner, job in nonprofit; job in government; job in K–12). These findings indicate that these two catastrophic events have elevated anxiety and concern among STEM PhD students, which could have dire consequences for STEM innovation by possibly (1) reducing the number of PhDs of color working in STEM fields in U.S. workforce and (2) shifting STEM talent away from the U.S. workforce.

Literature Review

Asian, Black, Indigenous, and Latinx Doctoral Students and Faculty in STEM. Asian, Black, Indigenous, and Latinx (ABIL) students have a long history of being underrepresented in STEM, despite the efforts of nationally renowned Historically Black Colleges and Universities, along with Hispanic Serving Institutions, and Tribal Colleges, which have programs for diversifying STEM fields (Briggs, 2017; Gomez et al., 2018; McGee et al., 2020). Although Asian students in STEM are overrepresented, they can still face marginalization and discrimination (McGee, 2018). Higher education institutions have created a host of new policies and practices, and revised others, attempting to show a commitment to diversity in STEM education and employment.

However, these efforts often lack an adequate understanding of why racially marginalized students continue to be underrepresented in STEM fields. The low numbers of racially minoritized doctoral students in these fields are driven by unwelcoming institutional climates, racial/ethnic stereotyping, fueled by institutional and social barriers in the academy, and a difficulty with envisioning themselves as part of the STEM workforce in the face of racially charged academic environments (McGee, 2020b).

Over the past decade, Asian faculty and White women have experienced significant increases in faculty numbers in STEM, while Latinx faculty increased by less than a percentage, Indigenous faculty remained stagnant, and STEM Black faculty numbers decreased (Roy, 2019). From 2009 to 2018, the percentage of Asian American engineering faculty members grew from 22.7% to 28.3%, but other minoritized racial-ethnic groups remained relatively stagnant (National Science Foundation, 2019). For example, percentages of Latinx faculty increased from 3.5% to 3.8%, while the percentage of Hawaiian/Pacific Islander engineering faculty did not change substantially, remaining at 0.1%. Similarly, the percentage of Black engineering faculty members has decreased slightly from 2.5% to 2.4% over the past 9 years (Roy, 2019). Efforts to further diversify the STEM academic workforce are facing the challenge that racially minoritized doctoral students are often turned off from such careers by the extra labor and energy required to prove themselves as intellectually worthy in comparison to their White counterparts, who do not suffer from ability-situated stereotypes and biases (McGee et al., 2019). With the recent added challenge of Trump's rhetoric regarding international STEM students, along with the COVID-19 pandemic, research on the new and renewed challenges for STEM ABIL doctoral students is warranted.

COVID-19's Impact on the STEM Education for Asian, Black, Indigenous, and Latinx Students. The COVID-19 global pandemic continues to stifle STEM academic departments and industries. They both face impediments such as reallocation of research funds, laboratory closures, and cancelled contracts. Universities have responded to COVID-19, weathering the sudden movement of academic instruction and employment from in-person to a virtual teaching and learning setting (Duong et al., 2020). With reduced access to funding, lab space, equipment, and volunteers, graduate students' research plans, and even career plans, are in doubt. A study funded by NSF surveyed over 4,000 graduate students from 11 institutions regarding their experience during the COVID-19 pandemic; three of the institutions studied were minority-serving colleges (Zahneis & June, 2020). Around one quarter of the graduate students surveyed believed that they would need to extend their degree programs for at least 6 months; while about 17% said that they had changed their career plans since the pandemic. Other institutional changes,

such as hiring freezes and loss of revenue, will undoubtedly have lingering and unfavorable effects on the broader scientific community (Bauman, 2020; Schelunes, 2020).

The COVID-19 crisis has exacerbated existing health and education disparities between ABIL and White people. The pandemic in the United States has disproportionately affected people with low socioeconomic status, as well as Black, Indigenous, and Latinx people, all of whom have experienced higher rates of cases, hospitalizations, and deaths. Moreover, a new study reveals that previous research has underestimated the true extent of racial disparities in COVID-19 deaths—as well as the extent to which structural racism contributes to these deaths (Siegel et al., 2021).

Racism, operating with the global pandemic, has also sown a crisis for higher education. Asian, Black, Indigenous, and Latinx in higher education are dealing with heightened stress since they wrestle with staying in the academy while worrying about getting sick, while also looking after communities that are experiencing cases of disease and death at elevated rates (Christopher, 2020; McGee & Stovall, 2015).

COVID-19 combined with historic underrepresentation forms a crisis within a crisis for ABIL people in STEM. The racial disparities in the impact of COVID-19 have causes that span decades, predating the pandemic, and reaching back generations (Christopher, 2020), destroying decades of efforts to bring ABIL talent into STEM fields. There are new challenges coupled with longstanding barriers for ABIL STEMers. As *Nature* (2020) has stated, science cannot risk losing the next generation, especially since this generation of students and educators are operating within a heightened level of structural racism in STEM (McGee, 2020b).

COVID-19 and the STEM Job Outlook and Employment Projections. According to the projection made by the U.S. Bureau of Labor Statistics (Zilberman & Ice, 2021), STEM occupations are projected to grow over two times faster than the total for all occupations in the next decade. STEM occupations are expected to grow by 8% between 2019 and 2029, while offering higher average pay than non-STEM positions, while the labor market is projected to grow by 3.7% over the same period (Zilberman & Ice, 2021).

In general, however, the pandemic has both crippled the labor market and solidified the need for the STEM workforce to remain resilient. The unemployment rate jumped from 3.8% to 13% during the first 2 months of the COVID-19 outbreak, greater than the increase during the Great Recession, and underrepresented racially minoritized (URM) groups have less job security than their White counterparts (Kochhar, 2020). A report by Gould and Kassa (2020) pointed out that young workers age 16 to 24 have a higher unemployment rate than other age groups, and young URM workers experience higher unemployment rates than their White counterparts.

Some news reports have shown that the COVID-19 pandemic has made it more difficult for STEM graduates to land a job. Even for those who were lucky enough to find a job, offers can be rescinded overnight due to the frequent changes as a result of the tumultuous economic recession. A CNBC series featured an African American psychology PhD student (Blake, 2020). The Black woman PhD candidate made the decision to change her plans for an academic career to pursue a research position in the private sector during the pandemic. She discovered that universities were generally lacking the funds to support even the faculty they had. With a large number of academic institutions enacting hiring freezes in the United States and worldwide, doctoral students who desire to pursue positions in higher education have been forced to leave academia since there is unlikely to be a position for them in the near future (Caterine, 2020; Woolston, 2020). Such sudden and drastic fluctuations increases the burdens on STEM graduates navigating the job market.

The Impact of the Trump Administration's Policies on Doctoral Students in STEM. President Trump's political rhetoric focused on the detrimental effects of globalization on the White working class. The Trump Administration contributed to an already toxic environment with discriminatory rhetoric intended to appeal to his mostly White supporters (Griffin, 2018; McGee, 2021). His discriminatory rhetoric, as well as his antiimmigrant political strategy, fueled anxiety in minoritized groups (Brown, 2016); it has also caused these groups to exhibit mistrust and pessimism about the future (Griffin, 2018).

Moreover, the former president's short-sighted antiscience policies impaired the STEM community. *Nature* (2020) outlined the timeline of Trump's policies and actions that have had a strongly harmful impact on researchers and issues related to science, from travel bans in 2017 (Morello & Reardon, 2017) to the global pandemic in 2020 (Viglione, 2020). In addition to discriminatory policies and practices the former president fueled suspicion and hatred against Asians by referring to COVID-19 with racist terminology including "Chinese Virus" and "Kung Flu." His Administration also pointed to Black and Hispanic drinking and drug use as a rationale for the higher rates of COVID-19 illness and death in those communities (Rogers et al., 2020; Reuters, 2020) a blatantly racist appeal. Trump's rhetoric has been widely described as racist (Lamont et al., 2017) and sexist (Maas et al., 2018; Scotto di Carlo, 2020), for example, by referring to Mexican immigrants as "rapists and criminals" and Muslims as terrorists (Richardson, 2017, p. 748). Only recently have researchers started to investigate the direct and indirect impact of President Trump's national security–related measures, his visa and immigration policies and related rhetoric, including his statements regarding international STEM students (e.g., Japanese and Nigerian students; (Open Society Justice Initiative, 2019).

According to a report in National Science Board (2020), temporary visa holders earned one third (34%) of Science and Engineering doctoral degrees in 2017, and 71% of these graduates stayed in the United States for 5 years after obtaining their degree. However, the Trump Administration triggered anxiety and fear among international students. For example, the executive orders restricting travel from six Muslim-majority countries (Iran, Libya, Somalia, Sudan, Syria, and Yemen) has alarmed international students as the U.S. political climate has become increasingly more confusing, hostile, and stressful (Todoran & Peterson, 2020). In July 2020, the Trump Administration prohibited international students from staying in the United States if they enroll exclusively in online courses. The new rule was quickly rescinded as around 20 universities filed lawsuits to stop the implementation of this regulation (Redden, 2020). At the same time, new international students who are taking courses only online are banned from entering the United States (Hackman & Korn, 2020). In September 2020, the Trump Administration added new restrictions, limiting stays for international students to 2 years. Schnell (2020) suggests that this move will influence STEM doctoral students to secure a postdoctoral researcher position outside the United States (Schnell, 2020). The new limits on skilled-worker (H1-B) visas issued in October 2020 inhibited international students from participating in the U.S. labor market (Anderson, 2021). As a result of these changes, international students encountered more instability and new challenges every month, impeding their productivity and altering their plans for the future.

In sum, the intersecting traumas associated with both Trump's policies and the COVID-19 pandemic has consequences that bode ill for the country's technology leadership and for the future of innovation. Taken together, these events might reduce the numbers of STEM doctoral graduates of color, while shifting talent in these fields away from the United States.

Theoretical Framework: Doctoral Socialization Toward Post-PhD Careers in STEM. The theory of professional socialization developed by Weidman et al. (2001) is often used to explore the relationship between doctoral students' career trajectories and their doctoral study experiences. This theory emphasizes the influence of educational institutions' culture and environment on the experiences of doctoral students, including their desire for and preparation for careers in academia (Twale et al., 2016; Weidman & Stein, 2003). Other research unearths the important and career defining transition from "dependence to independence," that occurs when doctoral candidates have reached the status of ABD, "all but dissertation" in the United States (Baker & Pifer, 2011). Given the significance of the doctoral candidates' relationship with their advisor and their advisor's lab, it is important for researchers, faculty, and administrators to understand students' identity development and transition to independence (Baker et al., 2013). Increasingly, research has focused on the experience of doctoral and postdoctoral students and their career choices. The literature on professional socialization shows how educational environment and experiences help shape doctoral students career interests and aspirations (Blockett et al., 2016; Thiry et al., 2015). For example, studies revealed that STEM doctoral students' interests in academic careers decrease as they continue in their process of doctoral socialization (Fuhrmann et al., 2011; Sauermann & Roach, 2012).

The doctoral socialization of people of color in STEM has certain observable characteristics. STEM training programs are systematically imbued with historical and contemporary disadvantages, including a lack of racial diversity (McGee, 2020b). Historically, STEM education and occupations were designed to attract White men who were heterosexual, abled-bodied, Christian or atheist, and middle-class or above. This design, with these biases, permeated the curriculum and the entire STEM ecosystem. It has created an inhospitable culture for students, postdocs, and faculty, who are assumed not to fit the above criteria. Adverse climates in universities and industries decrease the attractiveness of STEM education and, ultimately, affect careers in those fields for ABIL people (Orom et al., 2013). Blockett et al. (2016) examined the Black doctoral students' pathways to academic careers and existing barriers to the growth of Black faculty. They found three areas in doctoral socialization where Black scholars suffer the most marginalization: faculty mentorship, professional involvement, and environmental support.

Students of color are more likely to have a lower sense of belonging and suffer from mental health issues and other health problems due to structural racism and the dominating Eurocentric culture in STEM fields (Chakraverty, 2020; McGee et al., 2019; Miles et al., 2020; Yadav et al., 2020). This hostile culture can inhibit people of color from choosing a career in academia. According to our research, the career trajectories of many ABIL students shifted away from faculty positions as a result of undesirable factors in STEM culture, for example, hyper competitiveness and the political nature of securing a tenure-track position. As a result of this hostile culture, racially minoritized students' often turn to activism on behalf of social justice, what we have termed the *equity ethic* (McGee & Bentley, 2017; Naphan-Kingery, et al., 2019; McGee et al., 2021).

The evidence supports a close connection between doctoral socialization and postdoctoral career choices. This connection encourages us to examine further the possible impact of the COVID-19 pandemic and the Trump Administration on the socialization experience and career choices of current ABIL students. Thus, our primary research question is as follows:

In what ways are ABIL career interests affected by Trump's policies and/or the COVID-19 pandemic and why?

This question is answered quantitatively via responses to two close-ended items regarding the impact of the Trump Administration and COVID-19 on future career plans, and qualitatively via responses to open-ended items describing the nature of this impact.

Method

As coauthors we identify as two women of African descent and two women of Asian descent, born and raised in China. The lead author has previously written articles about the importance of racial solidarity between Black and Asian, based in part on our shared oppression and an understanding of the larger tactic of "divide and conquer" that keeps minoritized groups at each other's throats, while the system White supremacy benefits from this disunity. The second and third author admit that racism is not a widely understood topic in their home country. The second author began to literally endure the impact of racism and discrimination, as her people went from being admired in STEM to hated and discriminated against throughout her time at Vanderbilt. Her anticipation of a future troubled by unwelcoming and hostile environments is producing second thoughts about remaining in this country post-PhD, which would be a loss to the U.S. scientific community. The third author also began to recognize and learn about discrimination while at Vanderbilt University. Her own status as an Asian international student created more awareness of racial inequality issues within the U.S. system of higher education. She believes in the often neglected power of qualitative methods, even as a highly trained quantitative researcher. The fourth coauthor is more of a quantitative social scientist but also a spouse of more than 20 years and a mother of four. Thus, her views are shaped by her own and her family's racialized and minoritized experiences at the intersection of race, gender, class, and sociohistorical identity. The first author was a former electrical and industrial engineer, and the fourth author is a former STEMer, who at one point was on the path to obtain a PhD in neuroscience. Instead, the first author earned her PhD in mathematics education and the fourth author in science, technology, and innovation policy. Our combined lived experiences as Black and Asian female researchers shaped our collective contributions and mixed methodologies delivered within this article.

In this mixed-methods triangulation study design, quantitative and qualitative data are converged and analyzed concurrently to validate and corroborate results (Creswell & Plano Clark, 2017). We collected the data between May 2019 and December 2020 through two ongoing surveys: (1) EECT-STEM and (2) SIDE. The resulting analysis had a sample size of 486. Both surveys were funded by the National Science Foundation and targeted to STEM doctoral students of color (e.g., African American/Black, Latinx/Hispanic, Indigenous, and Asian). Although SIDE has a more specific focus on the nascent entrepreneurial experiences of STEM students of color, both surveys focus on the career trajectory of URM STEM students, and the variables included in our analysis were obtained by asking the same questions in both surveys. Therefore, we believe it is reasonable to merge the data from both instruments to increase our overall sample size (Lenth, 2001). To determine if the survey samples are from two different populations, and therefore embedding different characteristics, we included survey type in our analysis (1 = SIDE; 2 = EECT-STEM). To avoid duplicate participants, we double-checked both surveys and excluded results from those who have completed both surveys. First, we built statistical models to explore *what* factors predict the influence of the two events (i.e., Trump Administration rhetoric and COVID-19 pandemic) on students' career plans; then, our content analysis revealed *how* those factors might have an effect on those plans.

Demographic Variables. Age, U.S. nativity, gender, sexual orientation, race, and socioeconomic status (SES) are included as control variables in predicting the influence of the Trump Administration and COVID-19 on the participants' career trajectories. These variables enable us to investigate quantitatively the differences in the experience of doctoral students of color across various subgroups. All the measures were done once with the cross-sectional design. Frequency distributions across surveys can be found in Table 1. From the frequency table, it is clear that the respondents from the two surveys do have different characteristics in terms of race, SES, and whether they are affected by Trump Administration and COVID-19 pandemic. Therefore, survey type should be added to the model to eliminate its effect and get more precise results for other predictors.

Our sample ranged in age from 21 to 62 years ($M = 29.69 \pm 8.14$), and 79.2% of our respondents were U.S. born. Gender was a categorical variable where we coded "female" as 1, "male" as 2, and 3 as other "gender identity" (e.g., transgender women/men; gender variant/nonconforming). In our sample, 49.2% of the participants are female and 48.8% are male, with the remaining 2.0% identified as other gender. Also, for sexual orientation, we used binary coding from both surveys so 0 indicates heterosexual and 1 indicates other sexual identity, including homosexual, asexual, bisexual, and others. In our sample, 81.5% were heterosexual, and 18.5% identified as having another sexual identity. Race was categorized into seven subgroups: (1) African American, (2) American Indian/Alaska Native, (3) Asian/Asian American, (4) Latinx/Hispanic, (5) Middle Eastern and North African, (6) Multiracial, (7) White. However, in our sample, there is only one White participant, who is not our targeted demographic, so the respondent was excluded from the analysis. At the same time, we had fewer than 10

TABLE 1
Frequency Table of the Variables Included in the Analysis

Variable name (categorical)	SIDE (N = 357) frequency (percentage)		EECT-STEM (N = 129) frequency (percentage)	
	Yes	No	Yes	No
U.S. nativity (U.S. born)	296 (82.91)	61 (17.09)	89 (68.99)	40 (31.01)
Female	169 (47.34)	188 (52.66)	70 (54.26)	59 (45.74)
Sexual orientation (heterosexual)	296 (82.91)	61 (17.09)	100 (77.52)	29 (22.48)
African American	193 (54.06)	164 (45.94)	25 (19.37)	104 (80.63)
Asian/Asian American	1 (0.28)	356 (99.72)	49 (37.98)	80 (62.02)
Latinx/Hispanic	91 (25.49)	266 (74.51)	30 (23.26)	99 (76.74)
Multiracial	72 (20.17)	285 (79.83)	25 (19.38)	104 (80.63)
SES (high)	255 (71.43)	102 (28.57)	44 (34.11)	85 (65.89
Trump	113 (31.65)	244 (68.35)	85 (65.89)	44 (34.10)
COVID-19	173 (48.46)	183 (51.26)	92 (71.32)	37 (28.68)

Variable name (continuous)	SIDE (N = 357)		EECT-STEM (N = 129)	
	M	SD	M	SD
Age	29.91	8.92	29.05	5.42
Academic job	2.07	0.78	2.39	0.69
Entrepreneurial job	2.54	0.64	2.15	0.77
Government job	2.02	0.59	2.20	0.66

Note. Participants who identified as White, American Indian/Alaska Native, or Middle Eastern/North African were excluded because the sample size for each group was less than 10. SIDE = Supporting Innovations and Diversity Among Entrepreneurs; EECT-STEM = Exploring the Experiences and Career Trajectories-Science, Technology, Engineering, and Mathematics.

participants in the American Indian/Alaska Native, Middle Eastern and North African categories; we excluded these respondents from our analysis due to the lack of statistical power. Thus, we have 44.9% of participants (*n* = 218) identified as African American, 10.3% as Asian or Asian American (*n* = 50), 24.9% as Latinx or Hispanic (*n* = 121), and 20.0% as multiracial (*n* = 97). We chose "Asian" as a reference group, serving to show the difference between racial identifications, because of their unique experience relating to the Trump Administration and the COVID-19 pandemic. Our last control variable referred to the respondent's socioeconomic status; we capture this value by using responses to a single question, *Would you say your total household income is enough for your household to live comfortably?* coded as 1 for "Yes" and 0 for "No." It is a subjective measure, but the phrasing we chose captures financial strain and mental well-being of our respondents. Among all the respondents, 61.5% (*n* = 299) of them indicated enough income to live comfortably.

Measures

The Trump Administration and the COVID-19 Pandemic. We asked two open-ended questions in both surveys on the impact of the Trump Administration and the COVID-19 pandemic on the participants' career plans. The two questions are (a) *In what ways, if any, do the current United States executive branch's practices and policies influence your current or future career plans* and (b) *In what ways, if any, have recent events related to COVID-19 influenced your current or future career plans?* Close-ended response options include (a) They have not or (b) They have, please explain. First, we used binary-coded responses where 0 represents no influence and 1 indicates at least one kind of influence so that both variables can be used in quantitative models to reveal *whether* they relate to other variables. Out of 486 participants, 198 participants (40.7%) indicated that the policies and ideologies of the Trump Administration had some effect on their career plan or career-related issues, while 265 participants (54.5%) said that their career plans were influenced by the COVID-19 pandemic. Based on the open-ended responses, we received from the participants who reported being affected by the two events, we conducted qualitative content analysis to extract prevalent themes that offer deeper information on *why* and *how* the Trump Administration and the COVID-19 pandemic influenced those plans.

Likelihood to Pursue a Specific Career. All participants were asked to rate their likelihood to pursue 11 different career paths on a 4-point scale (from *not at all likely* to *very likely*). The career paths include (1) university faculty

member with an emphasis on research, (2) university faculty position with an emphasis on teaching, (3) university faculty with an emphasis on starting a business/becoming a faculty entrepreneur, (4) postdoctoral fellowship, (5) alternative academic jobs, (6) job in a nonprofit organization, (7) job in a start-up or entrepreneurial firm, (8) job in government, (9) job in industry/established firm, (10) job in K–12 education, and (11) found a start-up or become a business owner/entrepreneur. Based on the results from exploratory factor analysis (root mean square of residuals [RMSR] = 0.03, root mean square error of approximation [RMSEA] = 0.08), the 11 career paths are grouped into three categories for further analysis: (1) academic position (i.e., faculty in research; faculty in teaching; faculty in entrepreneurship; postdoc; alternative academic); (2) role in private sector (i.e., faculty in entrepreneurship; job in start-up; job in industry; business owner); and (3) government position (i.e., job in nonprofit; job in government; job in K–12).

Analytical Approach. First, two multiple logistic regression models were fitted using binary codes for Trump and COVID-19 (1 = *affected*; 0 = *unaffected*) as outcome variables. Six social status variables (i.e., age, U.S. nativity, gender, sexual orientation, race, socioeconomic status) were included as predictors. In addition, we also included the survey type (1 = SIDE; 2 = EECT-STEM) to control for sampling error. Then, three multiple linear regression models were fit to the data using three outcome variables, that is, likelihood to pursue academic jobs, likelihood to pursue a role in business, and likelihood to pursue government work. Two dichotomous variables, whether students were affected by the Trump Administration and COVID-19 pandemic, were included as predictors. Age, U.S. nativity, gender, sexual orientation, race, socioeconomic status, and survey type were then added as control variables.

Next, content analysis was conducted to extract themes from answers to both open-ended questions. Two analysts coded the two open-ended questions independently according to a predetermined structure that the authors first established and then adjusted to better target the research questions. The final coding structure had 9 themes for the Trump Administration question and 8 themes for the COVID-19 questions. To better orient our analysis, we chose to focus on career related themes (e.g., "rethinking career plan" and "fear of unemployment") and some of the unique themes (e.g., "changes in work or study due to the COVID-19 pandemic" and "impacts of government policies") that could help us compare the influences of the two different events. After the two rounds of coding were completed, an interrater reliability analysis using the Kappa statistic was performed to determine consistency among raters. The interrater reliability for the two raters was found to be kappa = .70 ($p < .001$), 95% CI [0.65, 0.75], showing a moderate to substantial agreement between the two coders (Belotto,

2018; Landis & Koch, 1977). All the disagreements in coding were further investigated and resolved by the two coders; both raters agreed on the final result of the coding process.

Results

Multiple Logistic Regression

The Trump Administration. Seven variables were included in our models, including survey type (i.e., CAREER & SIDE). As is shown in Table 2, the model with seven predictors (i.e., age, U.S. nativity, gender, sexual orientation, race, SES, survey type) fits significantly better than the null model that has only the intercept (χ^2 = 63.831, $p < .001$). Compared with Asian students, Black, Latinx, and Mixed-race students were significantly more likely to report that the Trump Administration had an impact on their future career plans (Black: β = 1.030, p = .016; Latinx: β = 1.021, p = .014; Mixed-race: β = 1.401, p = .001). In addition, participants from the SIDE survey reported being less affected by the Trump Administration than participants from the EECT-STEM survey.

COVID-19. The model built to predict the effect of COVID-19 fits significantly better than the null model (χ^2 = 41.740, $p < .001$). The results demonstrate that age positively predicts whether STEM doctoral students of color were affected by the COVID-19 pandemic (β = 0.030, p = .019). Specifically, older participants were more likely to report that they were affected by COVID-19. Participants with higher socioeconomic status were also less likely to be affected by COVID-19 compared with respondents with lower SES (β = −0.559, p = .010). The difference between the two samples from the two surveys was also significant (β = −1.025, $p < .001$), SIDE respondents were also less likely to be affected by COVID-19 than EECT-STEM surveyors.

Multiple Linear Regression

Likelihood to Pursue Academic Jobs. Table 3 shows that our model that has two predictors (i.e., Trump and COVID-19) and seven control variables (i.e., age, U.S. nativity, gender, sexual orientation, race, SES, survey type) fits significantly better than the null model that has only the intercept (F = 4.76, $p < .001$). Among the predictors, doctoral students of color who were affected by the Trump Administration were more likely to pursue academic jobs than those who were not affected by the administration's policies (β = 0.241, p = .005). In addition, older students were more likely to pursue academic jobs (β = 0.027, $p < .001$); and students who were born in the United States were more likely to pursue academic careers than those who were born outside the United States (β = 0.304, p = .001).

TABLE 2

Logistic Regression Results Using Binary Coded Trump and COVID-19 Variables as Outcomes (1 = Affected; 0 = Unaffected)

Outcome and predictor	β	$\Delta\chi^2$	Δdf	p
Trump		63.831	10	<.001
Intercept	−0.827[†]			
Age	0.024[†]			
U.S.-Nativity (ref = no)	−0.064			
Gender-woman (ref = man)	0.081			
Gender-other (ref = man)	0.719			
Sexual Minority (ref = no)	0.429			
Race-Black (ref = Asian)	1.030*			
Race-Latinx (ref = Asian)	1.021*			
Race-Mixed (ref = Asian)	1.401**			
SES (ref = low)	0.038			
Survey type (ref = EECT)	−1.874***			
COVID-19		41.740	10	<.001
Intercept	−0.379			
Age	0.030*			
U.S.-Nativity (ref = no)	0.332			
Gender-woman (ref = man)	0.249			
Gender-other (ref = man)	0.470			
Sexual Minority (ref = no)	0.277			
Race-Black (ref = Asian)	0.525			
Race-Latinx (ref = Asian)	0.231			
Race-Mixed (ref = Asian)	0.348			
SES (ref = low)	−0.559**			
Survey type (ref = EECT)	−1.025**			

Note. $N = 486$. EECT = Exploring the Experiences and Career Trajectories.
[†]$p < .1$. *$p < .05$. **$p < .01$. ***$p \le .001$.

Likelihood to Pursue Business Jobs. The model built to predict likelihood to pursue entrepreneurial jobs fit significantly better than the null model ($F = 4.137, p < .001$). Trump and COVID-19 did not predict the outcome. However, women were less likely to pursue business jobs than men ($\beta = -0.210, p = .005$). There was also a significant difference between the two samples from the two surveys ($\beta = 0.531, p < .001$). Specifically, participants from the SIDE survey are more likely to pursue business careers than participants from the EECT-STEM survey.

Likelihood to Pursue Government Work. The model built to predict likelihood to pursue government work fit significantly better than the null model ($F = 1.85, p = .040$). Trump and COVID-19 did not predict the outcome. However, students who were born in the United States were more likely to pursue government work than those who were born outside the United States ($\beta = 0.173, p = .032$). Latinx students were also more interested in government work than Asian students ($\beta = 0.269, p = .032$). In addition, participants from the SIDE survey were less likely to pursue government work than EECT-STEM participants ($\beta = -0.241, p = .011$).

Discussion

In the first portion of our analysis, we investigated what factors could predict whether participants in our study were influenced by the Trump Administration and the COVID-19 pandemic. Results indicated a few significant predictors. First, SIDE participants were less likely to be affected by the two events, which is notable since these students and graduates are/were funded under the National GEM Consortium,[1] which is independent (to some extent) from the federal government. Moreover, responses around the effect of the Trump Administration show racial differences. Specifically, Black, Latinx, and Mixed-race participants reported being affected by the Trump Administration more than Asian participants. In terms of COVID-19, respondents with lower satisfaction with their income and older respondents reported being affected by the global pandemic more than others surveyed. We surmise that Asian students have international

TABLE 3

Multiple Regression Results Using Likelihood to Pursue Three Career Paths as Outcomes (1 = Not at all likely; 4 = Very likely)

Outcome and predictor	β	R^2	Adj. R^2	F	p
Academic jobs		.142	.112	4.76	<.001
Intercept	1.293***				
Age	0.027***				
U.S.-Nativity (ref = no)	0.304**				
Gender-woman (ref = man)	−0.093				
Gender-other (ref = man)	0.176				
Sexual Minority (ref = no)	0.035				
Race-Black (ref = Asian)	0.070				
Race-Latinx (ref = Asian)	−0.020				
Race-Mixed (ref = Asian)	0.032				
SES (ref = low)	−0.117				
Survey Type (ref = EECT)	−0.172				
Trump (ref = no)	0.241**				
COVID-19 (ref = no)	0.007				
Business Jobs		0.125	0.095	4.137	<.001
Intercept	2.401***				
Age	0.001				
U.S.-Nativity (ref = no)	−0.100				
Gender-woman (ref = man)	−0.210**				
Gender-other (ref = man)	−0.106				
Sexual minority (ref = no)	−0.120				
Race-Black (ref = Asian)	−0.140				
Race-Latinx (ref = Asian)	−0.265[†]				
Race-Mixed (ref = Asian)	−0.215				
SES (ref = low)	−0.073				
Survey type (ref = EECT)	0.531***				
Trump (ref = no)	0.130				
COVID-19 (ref = no)	0.014				
Government work		0.060	0.028	1.85	0.040
Intercept	1.986***				
Age	−0.002				
U.S.-Nativity (ref = no)	0.173*				
Gender-woman (ref = man)	0.033				
Gender-other (ref = man)	0.072				
Sexual Minority (ref = no)	−0.021				
Race-Black (ref = Asian)	0.209				
Race-Latinx (ref = Asian)	0.269*				
Race-Mixed (ref = Asian)	0.245[†]				
SES (ref = low)	−0.123[†]				
Survey type (ref = EECT)	−0.241*				
Trump (ref = no)	0.072				
COVID-19 (ref = no)	−0.037				

Note. $N = 486$. EECT = Exploring the Experiences and Career Trajectories.
[†]$p < .1$. *$p < .05$. **$p < .01$. ***$p \leq .001$.

options for their post-PhD careers that serve as a layer of protection against Trump's rhetoric. However, this study ended before the recent rise in violence against Asian people (Rogers et al., 2020; Reuters, 2020).

In our second analysis, we explored how the Trump Administration and the COVID-19 pandemic affected career choices. We also included social status variables as a control. First, SIDE participants reported more openness to

business jobs, and less openness to government jobs. Given that SIDE participants are recruited from the National GEM Consortium, an organization that aims to promote the participation of underrepresented students in the science and engineering industry, this result is not surprising. Furthermore, people who were affected by the Trump Administration were more willing to pursue academic jobs, which may be due to their equity ethic (McGee, 2020a; McGee & Bentley, 2017; Naphan-Kingery et al., 2019). The equity ethic concept proposes that Black and Brown STEMers gravitate toward empathic social causes, the elimination of disparities, and racial justice efforts within and beyond their STEM pursuits. Their own racial and ethnic marginalization—and the way they themselves have suffered—translates into concerns about local and global disparities. The equity ethic is rooted in the history of racialized suffering (McGee, 2020a). From the enslavement of Africans and Indigenous people in the Americas, to the genocide of tribal groups, to contemporary racism, Black and Brown people have been excluded from mainstream society, which has led to the cultivation of helping and equity-seeking behaviors.

Other social status variables also affect career choice. Specifically, older and U.S.-born respondents were more open to pursuing academic jobs; men were more open to roles in business; U.S.-born respondents were more open to pursuing government jobs; and Latinx participants were more open to government jobs than Asian participants. Older respondents were more likely to be returning students; they have been in the workforce and understand the benefits of the professoriate lifestyle. In addition, according to student development theory for doctoral students, older respondents were more likely to be in Phase 2 (i.e., integration) or Phase 3 (i.e., candidacy) when they started to accept and enact their identity as a scholar (Baker & Pifer, 2011, 2014; Gardner, 2009). Identifying with being a scholar might increase the desirability of staying in academia. Greater restrictions on non-U.S.-born students, in addition to the rhetoric perpetuated by President Trump, better positioned U.S.-born PhD for employment at a U.S. university or within government. Organizations like the National Institute of Health and the National Science Foundation offer robust cutting-edge research and great benefits. However for non-U.S.-born Asians, government jobs are elusive. The Trump Administration's policies have created extra layers of difficulty for non-U.S. born Asian and Black people. Women were more entrepreneurial than men, and women of color were more entrepreneurial than White women. However, despite being majority owners of 30% of private sector businesses, women's annual revenues are lower than males due to a variety of structural factors (i.e., women are more likely to enter competitive retail and service sectors) and motivational factors (i.e., women seek out opportunities to pursue social and economic goals; Manolova et al., 2012) alongside sexist and racist institutional barriers (i.e., VCs failure to invest in women-led start-ups or those founded by people of color; Digitalundivided, 2018).

Content Analysis

Content analysis of the two open-ended questions regarding the Trump Administration and the COVID-19 pandemic reveals similar themes related to URM STEM students' concerns about their future career plans. Among the 501 participants in our research, 205 responded that their career trajectories were affected by the Trump Administration's practice, while 273 said that their career trajectories were affected by the COVID-19 pandemic. The numbers are different from those presented in the quantitative analysis since we do not exclude participants of any racial subgroup.

Three overarching themes emerged from the question about the Trump Administration: (1) students' awareness of and their commitment to racial, gender, and equity issues in the United States; (2) their awareness of the reduced support and funding the Trump Administration had for STEM and higher education in general; and (3) their thoughts on leaving the United States to pursue opportunities in other countries. At the same time, when asked how the COVID-19 pandemic has affected their career plans, the participants' responses offered the following three major themes: (1) their graduate program timelines have been influenced negatively (including postponed research or examinations, cancelled or delayed internship/practice, and postponing graduation date); (2) some respondents lost their job or job offer or were concerned about hiring freezes and fewer job openings; and (3) they are reconsidering or changing their career plans (including their geographic location). In the following section, we will present direct quotations from our participants to support and explain these themes.

The Trump Administration and URM STEM Doctoral Students' Career Plans

Our respondents were aware of the Trump Administration's reduced funding and support for STEM and higher education (32%, $n = 66$). They were aware especially of the Administration's funding cuts and disregard for environmental issues and basic science. At the same time, many participants also reflected on how these funding cuts could influence their future career choices, including their fear of underemployment or unemployment ($n = 22$), and avoidance of government or academic career ($n = 22$). The following quotations represent typical responses related to this theme:

> I want to work in the aerospace industry and government funding of this industry directly influences my ability to get a job or be able to hold a job in that field. (Multiracial female—Engineering)

The amount of funding and support for environmental agencies influences my thought on working for the government in the future.·(Latinx female—Natural science)

The current administration's lack of belief in science worries me because they can and are cutting funding for organizations that help fund me and my work (NSF, NIH, etc.). (African American male—Engineering)

Among 205 participants who said that their career plans have been affected by the actions of the Trump Administration, 31% (*n* = 63) mentioned increases in their awareness of and commitment to equity issues in response to the Trump's racist and sexist political rhetoric (Maas et al., 2018; Lamont et al., 2017; Scotto di Carlo, 2020). Participants also expressed concerns for their own experiences and the climate at their future workplace as People of Color. Although the same theme is mentioned in the responses received to the question related to the effects of COVID-19 (4%, *n* = 10), the disparity indicates that this theme is associated much more closely with the Trump Administration than with the pandemic.

I'm really intimidated by the ongoing aggression towards minorities, women, and people of color by the current executive branch's practices and policies. It makes me feel sometimes like no matter what I do things are getting worse and that there are lots of people living in the US who agree with those policies. (Multiracial female—Engineering)

Trump's ignorance about race relations in America as well as his focus on law and order are leading the Republican Senate to reverse the progress of civil rights made globally over the past half a century. (African American male—Engineering):

In the current climate I'd feel too afraid to be in too public a position (i.e., in higher level leadership of a company). (Latinx female—Computer science)

The third theme mentioned by 28 (14%) participants in our survey is related to either thoughts about leaving the United States, or a decision to do so because of the Trump Administration. Among the 28 participants who had such considerations, 11 self-identified as African American and seven as Latinx.

I am considering pursuing careers outside of the US now. I believe in what this country stands for but am embarrassed to say I am American given the current administration. (Multiracial male—Engineering)

Reconsidering future career in the USA—thinking about Canada instead. (African American female—Engineering)

The way the current administration is dealing with minorities is appalling. It makes me concern[ed] for my future and the future of people that look like [me] and are from a similar minority background. It makes me question if I want to work and reside in the US long term. I have been considering looking for career opportunities abroad, especially in countries where I might feel safer. (Latinx male—Engineering)

As [an] immigrant myself, I was NOT willing to stay in this country and help the economy if the politicians kept being disrespectful to my community. Politicians being like that for four years showed me how truly some uncultured Americans think. And now, I am more aware than never of the true struggle I have been facing and I will face. It gets so tiring. (Latinx female—Engineering)

The COVID-19 Pandemic and URM STEM Doctoral Students' Career Plans

The most frequent occurring theme (33%, *n* = 91) from the responses regarding the COVID-19 pandemic is that respondents' progress in graduate school has been affected negatively. Many mentioned that their research plans, dissertation, or examination had been postponed, while others had their internship or practicum cancelled or delayed. Some participants even reported delaying their graduation year.

[The pandemic] kept me from interning as I expected to this summer and gaining the experience I wanted to apply my coursework to outside the classroom. (African American female—Engineering)

I lost my internship this summer and had to get a position at my school. It would have helped to do an internship with that company since I wanted to help secure a position after graduation. (African American female—Engineering)

I was planning to do a research program in Sydney, Australia that was cancelled due to COVID-19. I also fell behind on a research project and was delayed several months. (Asian female—Engineering)

My research was entirely halted, lost thousands of dollars because of related costs for me and my family due to job losses and medical bills, did poorly in classes. (Latinx male—Engineering)

The second most frequently occurring theme (26%, *n* = 71) had to do with participants suffering from unemployment or worrying about the hiring freezes and limited job opportunities when they enter the job market. These responses were coupled with participants expressing an increased motivation to work more independently, pursue entrepreneurship, or put job security first.

[The pandemic] resulted in me being laid off from my full-time employer and me pursuing entrepreneurship. (African American male—Engineering)

Since I'm currently unemployed (partially influenced by the pandemic), it has allowed me to register and schedule time to vote for upcoming elections. (Latinx male—Engineering)

Since there's a hiring freeze, I worry that prospects for hiring new tenure-track faculty by the time I graduate will be even worse as universities attempt to financially recover from this crisis. (Multiracial female—Social science)

The last theme was mentioned by 55 out of 273 participants (20%) who said that their career plans have been affected by the COVID-19 pandemic. These respondents were reconsidering or changing their career plans due to the

pandemic. Some of them are considering leaving academia and going into industry, while others are considering moving to a new location or position, or have already done so. Surprisingly, some participants mentioned a few positive outcomes with respect to career changes such as an early retirement, or the opportunity to explore more career choices.

> The manner in which the US handled the situation truly concerned me and the amount of careers/jobs/opportunities lost due to the pandemic was detrimental and truly made me begin to re-think my future plans, etc. (African American female—Computer science)

> I'm also looking for industry jobs in addition to academic jobs. (Asian nonbinary—Computer science)

> I have not been able to be with my husband as he is applying for a visa and the pandemic has slowed the process. So, I decided to move out of the US during the pandemic. (Multiracial female—Engineering)

> Working from "home," alone in my tiny apartment far from home, has been extremely challenging. Especially given the expectations to continue working at full steam as [a] graduate student. (Latinx male—Natural sciences)

Implications and Conclusion

Although Trump's presidency is over, Trumpism remains. Thus, our participants will have to reckon with its residue in the form of practices, policies, ideologies, and behaviors. Biden's $6 trillion budget request to Congress lays out scientifically robust economic ambitions, with proposals for significant new spending such as $14 billion devoted to climate change. However, $715 billion in 2022 is allocated to a possible war with China, along with the current U.S. involvement in Iraq, Syria, and Afghanistan (Office Under the Secretary of Defense, 2021) suggests that much of the STEM funding is still associated with militarism and warfare.

Trumpism marks the beginning of a new Republican Party, which will continue to create challenges for non-U.S.-born and racially underrepresented students and degree holders. Trumpism will continue to support the roll back of environmental and public-health regulations, while undermining science and scientific institutions. Former President Trump even admitted in an interview to purposefully misrepresenting the viral threat of COVID-19 early in the pandemic, while almost simultaneously creating policies on limiting workplace diversity and inclusion training programs. The assault on critical race theory might minimize the prospects for STEM racial justice efforts. The historical and more recent tragedies of racial violence underscore the importance of revolutionary efforts to address racism and injustice, and to promote diversity and inclusion within the educational landscape. The students in our study were quite cognizant of an orchestrated war on science and the multiple and intersectional impacts on their academic and personal lives.

The COVID-19 pandemic has brought the perils of ignoring science and evidence into sharp focus, with direct and adverse consequences. According to the National Student Clearinghouse Research Center, American colleges and universities have suffered the greatest decline in enrolment in a decade, with 603,000 fewer Americans enrolled in college or university than were enrolled in 2020 (Sedmak, 2021). How many ABIL STEM students have vanished in this pool of lost postsecondary students? COVID-19 has exacerbated the harm already inflicted on our respondents; the assaults of Trump's rhetoric, policies, and practices multiplies the harm. Institutions should have policy-specific contingency plans to lessen the burden on ABIL students, faculty, and staff within and beyond STEM.

Furthermore, universities with more resources, such as research-intensive institutions with large endowments, experience less detrimental results than institutions that focus heavily on teaching. This means that doctoral students at minority serving institutions, especially at Historically Black Colleges and Universities, need additional resources to counter a long history of underinvestment. Research on how funding cuts disrupt STEM innovation remains in the shadows since the focus of current research in these fields is on combating the virus itself.

The STEM research community should better understand the challenges associated with the disruptions from both COVID-19 and the policies of the Trump Administration on their future and current career trajectories, on their research agendas, and on the broader scientific community. Moreover, attention to international students and faculty, who represent a large percentage of STEM students and academics, should center on how racist and antiimmigrant rhetoric, policies, and practices affect already anemic U.S. STEM research and employment opportunities.

The dual pandemics of COVID-19 and Trump Administration policies and rhetoric have created unique and intersecting challenges for STEM students and for the faculty, program staff, and administrators who support them. As a community, we are increasingly having to contend with external shocks, with the upending of future career plans. These dual challenges have once again brought into question whether ABIL students will seek participation in the U.S. STEM workforce. They already face enhanced mental, physical and emotional stress as a consequence of their sustained exposure to structural racism as a part of their daily lives and in ways that are often reinforced and compounded within their academic institutions. Trump certainly was not the cause of an increasingly homogenous STEM workforce, but the damage his Presidency has done will reverberate beyond his 4 years in the White House. We need an aggressive antiracist, antixenophobic, racial justice-infused, well-funded, and sustainable STEM action plan to recover and recoup, with those in the ABIL community (co) leading the way.

Note

1. National GEM Consortium's mission is to enhance the value of the nation's human capital by increasing the participation of underrepresented groups (African Americans, American Indians, and Hispanic Americans) at the master's and doctoral levels in engineering and science. Toward that end, GEM recruits underrepresented students looking to pursue master's and doctoral degrees in applied science and engineering, and matches their specific skills to the specific technical needs of a GEM sponsor, which are largely Fortune 500 STEM companies.

References

Anderson, S. (2021). Trump DOL wage rule remains threat to h-1b visas and immigrants. *Forbes*. https://www.forbes.com/sites/stuartanderson/2021/02/17/trump-dol-wage-rule-remains-threat-to-h-1b-visas-and-immigrants/

Baker, V. L., & Pifer, M. J. (2011). The role of relationships in the transition from doctoral student to independent scholar. *Studies in Continuing Education*, *33*(1), 5–17. https://doi.org/10.1080/0158037X.2010.515569

Baker, V. L., & Pifer, M. J. (2014). Preparing for practice: Parallel processes of identity development in stage 3 of doctoral education. *International Journal of Doctoral Studies*, *9*, 137–154. https://doi.org/10.28945/2041

Baker, V. L., Pifer, M. J., & Flemion, B. (2013). Process challenges and learning-based interactions in stage 2 of doctoral education: Implications from two applied social science fields. *Journal of Higher Education*, *84*(4), 449–476. https://doi.org/10.1353/jhe.2013.0024

Bauman, D. (2020, May 13). We're tracking employees laid off or furloughed by colleges. *Chronicle of Higher Education*. https://www.chronicle.com/article/We-re-Tracking-Employees/248779?cid=RCPACKAGE

Belotto, M. J. (2018). Data analysis methods for qualitative research: Managing the challenges of coding, interrater reliability, and thematic analysis. *Qualitative Report*, *23*(11), 2622–2633. https://doi.org/10.46743/2160-3715/2018.3492

Blake, S. (2020, July 10). *This STEM graduate has been applying for five jobs per day—and no luck yet*. CNBC. https://www.cnbc.com/2020/07/10/this-stem-graduate-has-been-applying-for-five-jobs-per-dayno-luck-yet.html

Blockett, R. A., Felder, P. P., Parrish, W., III, & Collier, J. (2016). Pathways to the professoriate: Exploring Black doctoral student socialization and the pipeline to the academic profession. *Western Journal of Black Studies*, *40*(2), 95–110.

Briggs, C. (2017). The policy of STEM diversity: Diversifying STEM programs in higher education. *Journal of STEM Education*, *17*(4). https://www.learntechlib.org/p/174403/

Brown, J. A. (2016). Running on fear: Immigration, race and crime framings in contemporary GOP presidential debate discourse. *Critical Criminology*, *24*(3), 315–331. https://doi.org/10.1007/s10612-016-9317-8

Caterine, C. L. (2020, April 30). *Mass exodus*. https://www.insidehighered.com/advice/2020/04/30/pandemic-threatens-force-more-phds-leave-academia-ever-and-they-will-need-career

Chakraverty, D. (2020). The impostor phenomenon among post-doctoral trainees in STEM: A US-based mixed-methods study. *International Journal of Doctoral Studies*, *15*, 329–352. https://doi.org/10.28945/4589

Chotiner, I. (2020, July 1). How racism is shaping the Coronavirus pandemic. *New Yorker*. https://www.newyorker.com/news/q-and-a/how-racism-is-shaping-the-coronavirus-pandemic

Christopher, G. (2020, September 8). *COVID, racism, and higher education*. Pullias Center. https://pullias.usc.edu/blog/covid-racism-and-higher-education/

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research*. Sage.

Digitalundivided. (2018). *Project Diane report*. http://projectdiane.digitalundivided.com

Duong, V., Pham, P., Yang, T., Wang, Y., & Luo, J. (2020). *The ivory tower lost: How college students respond differently than the general public to the COVID-19 pandemic*. arXiv.org. https://arxiv.org/abs/2004.09968

Flaherty, C. (2020, April 1). Frozen search. *Inside Higher Education*. https://www.insidehighered.com/news/2020/04/01/scores-colleges-announce-faculty-hiring-freezes-response-coronavirus

Fuhrmann, C. N., Halme, D. G., O'Sullivan, P. S., & Lindstaedt, B. (2011). Improving graduate education to support a branching career pipeline: Recommendations based on a survey of doctoral students in the basic biomedical sciences. *CBE—Life Sciences Education*, *10*(3), 239–249. https://doi.org/10.1187/cbe.11-02-0013

Gardner, S. K. (2009). *The development of doctoral students: phases of challenge and support*. Jossey-Bass.

Gould, E., & Kassa, M. (n.d.). *Young workers hit hard by the COVID-19 economy: Workers ages 16-24 face high unemployment and an uncertain future*. Economic Policy Institute. https://www.epi.org/publication/young-workers-covid-recession/?utm_source=Economic+Policy+Institute&utm_campaign=3b154ae817-EMAIL_CAMPAIGN_2019_02_21_07_37_COPY_01&utm_medium=email&utm_term=0_e7c5826c50-3b154ae817-60829046&mc_cid=3b154ae817&mc_eid=544a5778f9

Gomez, A., Palma, C. K., & Hurtado, S. (2018). *Improving STEM degree attainment rates: Lessons from Hispanic serving institutions*. American Educational Research Association.

Graef, A. (2018, January 15). *Trump: "I am not a racist."* CNN. https://www.cnn.com/2018/01/14/politics/donald-trump-racist/index.html

Griffin, R. A. (2018). Black women's intellectualism and deconstructing Donald Trump's toxic white masculinity. In D. M. D. McIntosh, D. G. Moon, & T. K. Nakayama (Eds.), *Interrogating the communicative power of whiteness*. Routledge. https://doi.org/10.4324/9780203730003-5.

Hackman, M., & Korn, M. (2020, July 24). ICE says newly enrolling international students can't come to U.S. if classes fully online. *Wall Street Journal*. https://www.wsj.com/articles/ice-says-newly-enrolling-international-students-can-t-come-to-u-s-if-classes-fully-online-11595611772

Kochhar, R. (2020, October 22). *Fewer mothers and fathers in U.S. are working due to COVID-19 downturn; those at work have cut hours*. Fact Tank. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/10/22/fewer-mothers-and-fathers-in-u-s-are-working-due-to-COVID-19-downturn-those-at-work-have-cut-hours/

Lamont, M., Park, B. Y., & Ayala-Hurtado, E. (2017). Trump's electoral speeches and his appeal to the American White working class. *British Journal of Sociology*, *68*(Suppl. 1), S153–S180. https://doi.org/10.1111/1468-4446.12315

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159–174. https://doi.org/10.2307/2529310

Lenth, R. V. (2001). Some practical guidelines for effective sample size determination. *The American Statistician*, *55*(3), 187–193. https://doi.org/10.1198/000313001317098149

Maas, M. K., McCauley, H. L., Bonomi, A. E., & Leija, S. G. (2018). "I was grabbed by my pussy and its#NotOkay": A Twitter backlash against Donald Trump's degrading commentary. *Violence Against Women*, *24*(14), 1739–1750. https://doi.org/10.1177/1077801217743340

Manolova, T. S., Brush, C. G., Edelman, L. F., & Shaver, K. G. (2012). One size does not fit all: Entrepreneurial expectancies and growth intentions of US women and men nascent entrepreneurs. *Entrepreneurship & Regional Development*, *24*(1–2), 7–27. https://doi.org/10.1080/08985626.2012.637344

McGee, E. O. (2018). "Asian Fail, Black Genius:" The detriment of stereotype lift and stereotype threat in high-achieving Asian and Black STEM students. *AERA Open*. https://doi.org/10.1177/2332858418816658

McGee, E. O. (2020a). *Black, Brown, bruised: How racialized STEM education stifles innovation*. Harvard Education Press.

McGee, E. O. (2020b). Interrogating structural racism in STEM higher education. *Educational Researcher*, *49*(9), 633–644. https://doi.org/10.3102/0013189X20972718

McGee, E. O. (2021). Fear, fuel, and fire! Black STEM doctoral students' career decision-making during the Trump presidency. *International Journal of Qualitative Studies in Education*. Advance online publication. https://doi.org/10.1080/09518398.2021.1930246

McGee, E. O., & Bentley, L. C. (2017). The equity ethic: Black and Latinx college students reengineering their STEM Careers toward Justice. *American Journal of Education*, *124*(1), 1–36. https://doi.org/10.1086/693954

McGee, E. O., Botchway, P. K., Naphan-Kingery, D. E., Brockman, A. J., Houston, S., II, & White, D. T. (2021). Racism camouflaged as impostorism and the impact on black STEM doctoral students. *Race Ethnicity and Education*. Advance online publication. https://doi.org/10.1080/13613324.2021.1924137

McGee, E. O., Brockman, A. J., & Park, C. S. (2020). Beyond stagnate! The underrepresentation of Black scholars in STEM higher education. *Explorations in diversifying engineering in faculty initiative*. https://vanderbilt.app.box.com/s/qqehfi70bq5zmnptqvhqivpf9s6wlkzq

McGee, E. O., Griffith, D. M., & Houston, S. (2019). "I know I have to work twice as hard and hope that makes me good enough": Exploring the stress and strain of black doctoral students in engineering and computing. *Teachers College Record*, *121*(4), 1–38.

McGee, E. O., & Stovall, D. O. (2015). Reimagining critical race theory in education: Mental health, healing, and the pathway to liberatory Praxis. *Educational Theory*, *65*(5), 491–511. https://doi.org/10.1111/edth.12129

Miles, M. L., Brockman, A. J., & Naphan-Kingery, D. E. (2020). Invalidated identities: The disconfirming effects of racial microaggressions on Black doctoral students in STEM. *Journal of Research in Science Teaching*, *57*(10), 1608–1631. https://doi.org/10.1002/tea.21646

Morello, L., & Reardon, S. (2017). Meet the scientists affected by Trump's immigration ban. *Nature News*, *542*(7639), 13. https://doi.org/10.1038/nature.2017.21389

Naphan-Kingery, D., Miles, M. L., Brockman, A., McKane, R., Botchway, P., & McGee, E. O. (2019). Investigation of an equity ethic in engineering and computing doctoral students. *Journal of Engineering Education*, *108*(3), 337–354. https://doi.org/10.1002/jee.20284

National Science Board. (2020). *Science & engineering indicators. The State of U.S. Science & Engineering*. https://ncses.nsf.gov/pubs/nsb20201

National Science Foundation. (2019). *Women, minorities, and persons with disabilities in science and engineering*. https://ncses.nsf.gov/pubs/nsf19304/data

Nature. (2020, October 5). *A four-year timeline of Trump's impact on science*. https://www.nature.com/articles/d41586-020-02814-3

Office of the Under the Secretary of Defense. (2021). United States Department of Defense, United States of America. *Defense Budget Overview*. https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2022/FY2022_Budget_Request_Overview_Book.pdf

Open Society Justice Initiative. (2019). *Unmaking Americans: Insecure citizenship in the United States*. https://www.justiceinitiative.org/uploads/e05c542e-0db4-40cc-a3ed-2d73abcfd37f/unmaking-americans-insecure-citizenship-in-the-united-states-report-20190916.pdf

Orom, H., Semalulu, T., & Underwood, W., III. (2013). The social and learning environments experienced by underrepresented minority medical students: A narrative review. *Academic Medicine*, *88*(11), 1765–1777. https://doi.org/10.1097/ACM.0b013e3182a7a3af

Redden, E. (2020). *ICE: New international students can't take only online courses*. https://www.insidehighered.com/quicktakes/2020/07/24/ice-new-international-students-cant-take-only-online-courses

Reuters. (2020, June 29). "No Excuse" for countries that fail in contact tracing, WHO's Tedros says. *New York Times*. https://www.reuters.com/article/us-health-coronavirus-who-tedros-idUSKBN24026A

Richardson, M. (2017). The disgust of Donald Trump. *Continuum*, *31*(6), 747–756. https://doi.org/10.1080/10304312.2017.1370077

Rogers, K., Jakes, L., & Swanson, A. (2020, March 18). Trump defends using "Chinese Virus" label, ignoring growing criticism.

New York Times. https://www.nytimes.com/2020/03/18/us/politics/china-virus.html

Roy, J. (2019). *Profiles of engineering & engineering technology*. American Society for Engineering Education.

Sahu, P. (2020). Closure of universities due to Coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus*, *12*(4). https://doi.org/10.7759/cureus.7541

Sauermann, H., & Roach, M. (2012). Science PhD career preferences: levels, changes, and advisor encouragement. *Plos One*, *7*(5), e36307. https://doi.org/10.1371/journal.pone.0036307

Schelunes, A. (2020, May 26). Universities issue hiring freezes in response to COVID-19. *Scientist*. https://www.the-scientist.com/news-opinion/universities-issue-hiring-freezes-in-response-to-covid-19-67334

Schnell, L. (2020, September 26). "You're not wanted": Trump's proposed college student visa changes worry international students—again. *USA TODAY*. https://www.usatoday.com/story/news/education/2020/09/26/trump-student-visa-rule-dhs-f-1-changes/3537182001/

Scotto di Carlo, G. (2020). Trumping Twitter: Sexism in President Trump's tweets. *Journal of Language and Politics*, *19*(1), 48–70. https://doi.org/10.1075/jlp.19034.sco

Sedmak, T. (2021, June 10). *Spring 2021 college enrollment declines 603,000 to 16.9 million students*. National Student Clearinghouse. https://www.studentclearinghouse.org/blog/spring-2021-college-enrollment-declines-603000-to-16-9-million-students/

Siegel, M., Critchfield-Jain, I., Boykin, M., & Owens, A. (2021). Actual racial/ethnic disparities in COVID-19 mortality for the non-Hispanic Black compared to non-Hispanic White population in 35 US states and their association with structural racism. *Journal of Racial and Ethnic Health Disparities*. Advance online publication. https://doi.org/10.1007/s40615-021-01028-1

Solomon, D., & Maxwell, C. (2018). *52 Harms in 52 Weeks: How the Trump administration hurt communities of color in 2017*. Center for American Progress. https://www.americanprogress.org/issues/race/reports/2018/01/10/444806/52-harms-52-weeks/

Thiry, H., Laursen, S. L., & Loshbaugh, H. G. (2015). "How do I get from here to there?" An examination of Ph.D. science students' career preparation and decision making. *International Journal of Doctoral Studies*, *10*, 237–256. https://doi.org/10.28945/2280

Todoran, C., & Peterson, C. (2020). Should they stay or should they go? How the 2017 US Travel Ban affects international doctoral students. *Journal of Studies in International Education*, *24*(4), 440–455. https://doi.org/10.1177/1028315319861344

Twale, D. J., Weidman, J. C., & Bethea, K. (2016). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *Western Journal of Black Studies*, *40*(2), 80–94.

Viglione, G. (2020). Four ways Trump has meddled in pandemic science: And why it matters. *Nature*. https://doi.org/10.1038/d41586-020-03035-4

Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education*, *44*(6), 641–656. https://doi.org/10.1023/A:1026123508335

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Volume 28, Number 3). Jossey-Bass Higher and Adult Education Series.

Woolston, C. (2020). Pandemic darkens postdocs' work and career hopes. *Nature*, *585*(7824), 309–312. https://doi.org/10.1038/d41586-020-02548-2

Yadav, A., Seals, C. D., Sullivan, C. M. S., Lachney, M., Clark, Q., Dixon, K. G., & Smith, M. J. T. (2020). The forgotten scholar: Underrepresented minority postdoc experiences in STEM fields. *Educational Studies*, *56*(2), 160–185. https://doi.org/10.1080/00131946.2019.1702552

Zahneis, M., & June, A. W. (2020, September 18). How has the pandemic affected graduate students? This study has answers. *Chronicle of Higher Education*. https://www.chronicle.com/article/how-has-the-pandemic-affected-graduate-students-this-study-has-answers

Zilberman, A., & Ice, L. (2021). Why computer occupations are behind strong STEM employment growth in the 2019-29 decade. *Beyond the Numbers: Employment & Unemployment*, *10*(1). https://www.bls.gov/opub/btn/volume-10/why-computer-occupations-are-behind-strong-stem-employment-growth.htm

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