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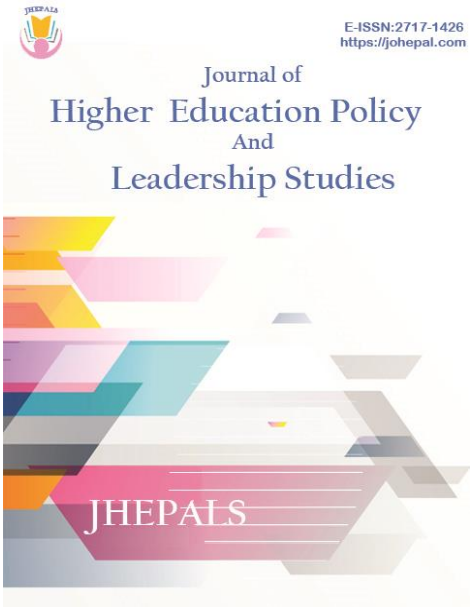
Why is the Underrepresentation of Diverse Tenured Track Engineering Faculty Stubbornly Persistent Despite Universities' Clarion Call for Diversity? The Perspectives of a National Sample about the Tenure Process



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Why is the Underrepresentation of Diverse Tenured Track Engineering Faculty Stubbornly Persistent Despite Universities' Clarion Call for Diversity? The Perspectives of a National Sample about the Tenure Process

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Abstract

This study examines how engineering faculty experience and perceive the tenure process at research intensive "R1" institutions, a critical factor for their representation and retention. Drawing on qualitative analysis of open-ended survey responses from 971 faculty, we explore how underrepresented faculty of color and their White colleagues respectively interpreted their journey through this pivotal career juncture. Drawing on the framework of diversity resistance, we investigate the tension between universities' public commitments to diversifying the professoriate and the persistent underrepresentation of faculty of color in tenure-track engineering ranks. Findings reveal three re-occurring themes that sustain this disparity: (1) attribution of the problem to a "pipeline" shortage, (2) inequitable service burdens that are often undervalued in tenure decisions, and (3) peer resistance to diversity and inclusion initiatives. Our results highlight the importance of how faculty perceive their workplace climate, as well as how structural and cultural dynamics can affect progress toward a more representative engineering professoriate operate to sustain that perception.

Keywords: Engineering Faculty; Tenure Track; Recruitment & Retainment; Black Faculty; Hispanic Faculty; Tenure Process

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Introduction

> **"**Our very survival depends upon preparing and marshaling all the talent we can possibly develop. If we were to eliminate the systemic racial inequities that crush the aspirations and potentialities of so many Black Americans, our nation would not only be more just and equitable, but it would also have an even greater capacity for innovation and productivity. We must let opportunity meet talent." (John Brooks Slaughter)*

Increasingly publicized high-profile violence against people of color, such as George Floyd and Breonna Taylor was met with publicly shared commitments by many higher education institutions to take a stand against racism and improve their diversity and inclusion efforts during the initial years of COVID-19 (Brown et al., 2022; Gonzalez et al., 2021a; Guthrie & Devies, 2024; Meikle et al., 2022; Rainey & Taylor, 2024). Coupled with the exposure of the disproportional negative effects of the global pandemic on the same population, the spotlight on these tragedies birthed new opportunities for intentional efforts toward dismantling systemic inequities and barriers to success that have long plagued and marginalized people of color (Guthrie & Devies, 2024; Tran & Jean-Marie, 2023). However, to enact these changes, real (often difficult) conversations about race and racism must occur. Writing diversity statements becomes pointless and performative if the actions, policies, and procedures within the institutions and their departments do not reflect those statements (Guthrie & Devies, 2024). Furthermore, anti-diversity legislation and external pressure against diversity (Chronicle Staff, 2025; Olmos et al., 2023) forces institutions to either double down their commitment to diversity against the tide of resistance, or cave to the pressure by rendering their diversity efforts meaningless or remove them altogether. Unfortunately, many institutions of higher education have opted to take the latter approach by abandoning, eliminating or significantly reducing their diversity, equity and inclusion programs (Spitalniak, 2024). It is, therefore, essential that institutions and departments understand racial issues and respond appropriately to cultivate diversity and inclusion, especially in the absence of formal programs encouraging such reflection.

Even if an institutional plan is in place to employ initiatives to promote diversity and inclusion, it is important to gauge the extent faculty would support such initiatives. While some in the department may be on board with the diversity goals, others may be indifferent or outright oppose such a focus. In the latter example, they may oppose for reasons such as the belief they represent "reverse racism" or the watering down program quality (Tran & Platt, 2023). Relatedly, faculty may be committed to promoting equity and inclusion but feel the current initiatives fall short or only serve symbolic or performative purposes, offering no substantive change (Davis, 2022; Palid et al., 2023). Here, the legitimacy of the initiatives is put into question.

Issues of racial inequity for students often receive attention. However, comparatively, these issues for faculty are often overlooked (Campos et al., 2021; Casad et al., 2021). In the

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Tenure Track Process: Black & Hispanic Faculty

United States, data from the National Center of Education Statistics (n.d.) have shown that nearly sixty percent of new faculty of color were hired to replace faculty of color who had previously left the institution (Whittaker, Montgomery, & Acosta, 2015). Currently, Black and Hispanic faculty make up 6.1% of full professors, 7.1% of associate professors, and 8.1% of professors in engineering. Compared to White faculty, 57.8% are full professors, 54.2% are associate professors, and 46.1% are assistant professors (American Society for Engineering Education, 2023). The neglect of attention to faculty diversity concerns is more likely in science, technology, engineering, and mathematics (STEM) departments because of the veil of objectivity associated with the department's standards and criteria (Gumpertz et al., 2017). For example, many may hold that belief that racial issues are irrelevant in STEM because "good" science is thought to be objective and de-politicized from cultural concerns (Cech & Sherick, 2015). These additional challenges for diversifying fields like engineering academia warrant specific attention. As a result, the purpose of the current study is to understand why Research-1 "R1" institutions of higher education often outwardly and publicly express a desire to diversify, yet racial underrepresentation persists in tenure-tracked engineering faculty ranks? We leverage the framework of diversity resistance to analyze faculty reactions to their tenure process, as an exemplary case to help us better understand this tension.

Literature Review

Prevailing racial stereotypes of Black and Hispanic scholars, for example, suggest that they are less academically capable of being successful in science and engineering faculty roles and unduly benefit from special interventions such as affirmative action policies to give them an unfair advantage in the hiring process over White faculty (Johnson & Bryan, 2017). These stereotypes are often perpetuated at the department level and are particularly damaging in engineering and the hard sciences, where there is a focus on empiricism. As a result, efforts to improve diversity and inclusion can create resentment as employees benefiting from those interventions can be viewed by their colleagues as not "earning" their position, leading to other forms of unfavorable treatment (Lukes & Bang, 2014; Tran & Platt, 2023). The exclusionary work environment explanation adds another layer, as it points to how the culture and climate of the institution can push Black and Hispanic engineering faculty (BHEF) out of the field (promoting their turnover) or create environments that are unattractive for recruitment purposes (Olmos et al., 2023; Shavaran et al., 2022; Tran & Platt, 2022). This study aims to better understand the complicated dynamics of academic engineering work contexts and the numerous ways it may promote or challenge workplace inclusion. Quality understanding of the lived experiences of marginalized people of color and the perceptions of their colleagues (who may either be perpetuating or resisting workplace exclusion) is critical if institutions truly desire to improve workplace inclusion to engender a sense of belonging for all.

For tenure-track faculty, the achievement of tenure can be seen as a significant milestone for inclusion. While the achievement of tenure may not equate to the faculty's perception of integration and feeling a sense of full belonging, the granting of tenure suggests the institution is willing to allocate an indefinite appointment to the individual, indicating a certain level of commitment. The point of tenure is also important to focus on

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as it has been identified as a major barrier to STEM faculty diversification (Connolly et al., 2015), as many underrepresented faculty either voluntarily leave before they achieve tenure or involuntarily turnover because of being induced or forced out by the institution at a disproportionate rate relative to their counterparts (Kaminski & Geisler, 2012). Consequently, we interpret the faculty reactions to their tenure process in our investigation to the answer to our research question.

It would be an error to assume that because an institution has publicly faced diversity initiatives and pro-inclusion statements, they are not spaces of exclusion. Exclusion can be perpetuated and sustained through "invisible" influences such as microaggressions, work inequity, culturally irresponsive contexts, and a work culture that juxtaposes equity with excellence (Guthrie & Devies, 2024; Tran & Platt, 2022).

Microaggressions

Microaggressions, specifically racial microaggressions, are "brief and commonplace daily verbal, behavioral, and environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory, or negative racial slights and insults to marginalized groups" (Sue et al., 2007, p. 237). Women and underrepresented racial minorities in STEM fields have frequently reported microaggressions as a common experience, from their adolescence (Grossman & Porsche, 2014), to their undergraduate and graduate studies (Alexander & Hermann, 2016), to even when they attain faculty positions (Gonzales et al., 2021b; Payton, Yarger & Pinter, 2018). In the context of microaggressions, the negative psychological and physiological responses elicited from frequent exposure to invalidation and insults are considered indirect communication of racism, sometimes unknowingly by the offender (Lui & Quezada, 2019). Even though microaggressions can occur anywhere, how they are managed (or ignored) in an organization influences whether the organization is perceived to be welcoming, inclusive, or chilly/exclusive. Consequently, a department or institution can facilitate a feeling of "social-psychological stress responses" when microaggressions are pervasive in its climate, which can result in feelings such as "frustration, anger, exhaustion, physical avoidance, psychological withdrawal, escapism, [and] acceptance of racist attributions" (Smith et al., 2007, p. 552).

Repeated microaggressions can lead to racial battle fatigue, which relates to "the physiological and psychological strain exacted on racially marginalized groups and the amount of energy lost dedicated to coping with racial microaggressions and racism" (Smith et al., 2007, p. 555). According to Arnold et al.'s (2016) narrative inquiry of Black faculty experiences, racial battle fatigue can also be reproduced by seemingly objective tenure and promotion processes, given the often bias-laden "invisible" aspects of subjective decisions and interpretations (e.g., teaching quality) that are directly related to tenure and promotion decisions (e.g., quality of teaching). There is a possibility that the ongoing but often subtle expressions of bias can cause internalized problems for people of color, such as a perception of inequity and a lack of institutional support. Sometimes, these feelings may result in their abandoning a job or career. To summarize, microaggressions can negatively impact the diversity climate through avenues such as biased tenure and promotion evaluations, which can lead to racial battle fatigue and eventually turnover.

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Inequity in Devalued Service Distribution

Another sizable issue at the institutional and departmental level is the disproportionate amount of service work that underrepresented marginalized faculty of color report conducting, such as serving as the diversity representative in department and university committees (O'Meara et al, 2019; Griffin & Reddick, 2011) or taking on additional mentorship or support (e.g., writing letters of recommendations) roles for students of color, giving students' comfort with faculty that "look like them." Yet these efforts have underrepresented faculty of color torn between feeling their support is necessary for students of color to succeed and being uncompensated for the extra time spent with students. To exacerbate the issue, their efforts are also not substantively valued in the promotion and tenure review process (Patton, 2004), despite institutions of higher education's public statements that claim to emphasize diversifying and supporting their students of color. This hurts the faculty professionally given that time spent with students could have instead been spent on activities that "count" for tenure. Service overload often has a negative impact on the diversity climate and turnover because by failing to "count" this service work, institutions contribute to the perception that they do not actually value diversity.

Culturally Irresponsive Work Environment

Furthermore, while engineering culture promotes individualism and depersonalization, underrepresented Black and Hispanic faculty members are often interested in collaborations, social networking, and more personalized experiences (Kulis et al., 2000). An engineering faculty culture and its community of practice that engenders the network of its members towards exclusive White norms is likely to create a climate that is off-putting to many underrepresented faculty of color and, therefore, may result in their departure from the organization. In this way, race is an essential aspect of the departmental climate (Felder et al., 2014) because there are often different attitudes, perceptions, interactions, expectations, and levels of investment from individuals related to their race in contrast to the dominant racialized norm embedded in the culture of an engineering department (Cech & Sherick, 2015). Employers that truly seek to create inclusive work environments would work towards creating more culturally responsive settings that engage a diverse workforce. Therefore, we interrogate how faculty demographic characteristics are associated with their perceptions of institutional cultural responsiveness, examined via the pivotal point of the tenure process.

Equity Juxtaposed to Excellence

Within higher education, equity and excellence are often perceived to conflict with one another when this is not supported by empirical evidence (Tran & Platt, 2023). For example, diverse and integrated teams of scientist is predictive of more innovative science and technology outcomes (Smith-Doerr, et al., 2017). Initiatives to provide more access to higher education for first-generation, Black, and Hispanic students are regularly peppered with criticism concerning the slipping (or "watering down" of) admissions standards, reduced academic rigor, and "quality of the students" (Tierney, 1999; Yosso et al., 2009). This type of condescending questioning extends to the faculty realm. For example, efforts to increase

[DOI: 10.61882/johepal.6.3.92]

diversity in the context of university faculty, particularly in STEM fields like Engineering, is often met with comparable questions and suspicions. In the hiring process, individuals from underrepresented backgrounds, such as those who are Black, Hispanic, or women often are excluded from engineering faculty hires and promotions due to the perception of their lack of "fit" with the hiring unit or their lack of quality and skills (Ladson-Billings, 1996). Case in point, in a nationwide study of academics across a broad array of disciplines, Leslie et al. (2015) found evidence to suggest that women and Black underrepresentation across fields may stem from pre-existing beliefs about field-specific innate intellectual talent associated with certain disciplines, resulting in a less welcoming atmosphere for these underrepresented groups who are stereotypically perceived to have less of this raw talent (Bennett, 1996; Steele & Aronson, 1995). They can promote stereotyping and discrimination from others or self-selection away from the discipline of the individual. These beliefs perpetuate barriers to the diversification of the profession and are amplified by the exclusionary culture of academia. Once in the faculty role, the questions, and suspicions about the fit and quality of racially diverse faculty members often continue, perpetuated through surprise concerning their presence in academia and devaluation of their scholarship (Settles et al., 2022), as well as biased teaching evaluations and decisions by tenure and promotion committees (Tran & Platt, 2022). This results in the inability to retain diverse faculty and creates an exclusive work environment that cultivates a sense that not everyone belongs in this setting.

Despite the impact of turnover, the bulk of scholarship has focused on the pipeline problem of attracting individuals to STEM faculty positions, with the same degree of attention not given to retaining them. Indeed, while research empirically supports the potential influence of faculty diversity initiatives on recruitment (Smith et al., 2015), the same cannot be said for retention (Gumpertz et al., 2017; Tran et al., 2020), suggesting a deeper void in our understanding of the latter problem because focusing exclusively on the pipeline ignores the "leaky bucket" of turnover that prevents meaningful sustenance of diverse faculty communities. This turnover is often motivated by critical moments in the faculty experience, such as the tenure process, that shapes the normative expectations promoted by the climate and cultures of academic disciplines, which are reinforced by departmental, institutional, and national factors (Griffin, 2019).

Our Purpose

As noted, to understand how to improve workplace inclusion in academia, it is important to understand the perspectives of those who experience exclusion and those who resist or perpetuate it (whether knowingly or unknowingly). Research on workplace inclusion in the academic setting has suggested that the academic workplace often promotes unwelcoming and exclusionary climates, isolating environments, and limited clarity and support in the tenure and promotion process (a critical juncture in the career of tenure-track professors) (Corneille et al., 2019; Genao et al., 2022; Gray-Nicholas et al., 2022; Shavaran et al., 2022). To compound the issue, the continued disproportionality of diverse demographics in the professoriate, especially in tenured roles, limits the number of potential mentors who may have shared experiences with mentees. Should these mentors exist, they could assist in navigating the workplace with an understanding of nuances related to demographic-specific

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challenges and can aid in the development of the next generation of diverse scholars (Whittaker et al., 2015). Their scarcity is particularly concerning in the STEM fields, which often see more severe underrepresentation.

For racially underrepresented faculty, the phenomenon of being sought after (as suggested by public statements and job advertisement, as well as increasing calls for diversifications by agencies like the National Science Foundation (NSF)), while remaining continually underrepresented is puzzling. Consequently, in this paper, we seek to investigate the broader tension of, "How do we reconcile the fact that many R1 institutions of higher education outwardly and publicly express a desire to diversify, yet racial underrepresentation persists in their tenure-tracked engineering faculty ranks?" We tackle this by focusing on a national sample of engineering faculty reaction to and experiences in their academic work environments, especially during the tenure process, as an exemplar case analysis.

Theoretical Framework

To demystify the lack of substantive diversification progress in the STEM faculty, despite institution's publicized commitment to the cause, we advance the literature by relying on the critical frameworks of diversity resistance, drawn from the broader human resources management literature (Thomas & Plaut, 2008). Diversity resistance, within this study's context, is defined as the lack of support, whether overt or covert, from individuals or the organization to efforts employed to diversify the engineering faculty body. Wiggins-Romesburg and Githens (2018) argue that diversity resistance can be thought of as "stereotyping as a cognitive process or backlash as an outward action" (p. 182). In the case of institutional diversity efforts, diversity resistance can be seen as a backlash and hinderance towards their progress. These types of resistance can occur at a governmental level (e.g., the state), and more localized levels such as the community, or even employees within an organization.

Within Wiggins-Romesburg and Githen's (2018) framework of diversity resistance, there are five organizational diversity perspectives in this framework. Wiggins-Romesburg and Githen's (2018) diversity resistance framework of the five organizational diversity perspectives are "along a continuum model with decreasing levels of diversity resistance and increased levels of diversity integration" (p. 184). The five organizational diversity perspectives are resistance (maximum resistance and minimum integration), discrimination prevention (high resistance and low integration), access and legitimacy (moderate resistance and moderate integration), inclusion (low resistance and high integration), and integration and learning (minimum resistance and maximum integration.

The resistance paradigm, characterized by maximum resistance and minimum integration is defined as a way for organizations to uphold their status quo of privilege and to limit or suppress diversity efforts. An example of discrimination prevention, which includes high resistance and low integration is that while claiming to provide equal opportunities for all employees, often maintain advantages for dominant groups through color-blind practices that disadvantage minority groups despite their intended purpose of fairness and integration. The access and legitimacy paradigm, which is defined as moderate resistance and moderate integration is how an organization can implement diversity, equity,

[DOI: 10.61882/johepal.6.3.92]

and inclusion initiatives, but then silo or tokenize certain minoritized groups to take upon that labor. The inclusion paradigm, characterized by low resistance and high integration, focuses on eliminating the pressure for minority groups to assimilate into dominant cultures while actively working to reduce inequitable practices and create genuine opportunities for all. The fifth paradigm, integration and learning, defined as minimum resistance and maximum integration incorporates a transformation of organizational processes through continuous learning from diverse perspectives, which leads to enhanced performance and innovation while promoting broader social change.

Leveraging a diversity resistance framework to interpret the voices of a national sample of engineering faculty helps to explain the dynamics that sustain workplace exclusion for underrepresented faculty of color despite surface-level rhetoric to the contrary and helps us understand related challenges that underrepresented faculty of color may face within the workplace. We leverage this framework to aid in our interpretation of our participant responses, with a key emphasis on balancing the voices of those who are marginalized and systematically excluded to emerge, in relation to the voices of those who resist diversification.

Research Design/Methods

In the fall of 2020 and spring of 2021, we conducted a national cross-sectional survey distributed to all engineering professors at Carnegie designated Research-1 (R1) institutions. The purpose of this survey was to explore the perceptions of faculty in engineering departments at R1 institutions concerning how their work environment affected their experiences of workplace inclusion. For this study, the data from the survey are specifically examined to address the broader question concerning why racial underrepresentation of tenure-tracked faculty ranks persists despite institution of higher education's public statements concerning the value they have for diversity – with a focus on faculty reaction to their work environment, especially during the tenure and promotion process.

Survey questions asked about respondents' background information such as professor rank, years at the institution, tenure track status, turnover intentions, description of the obstacles and challenges (if any) associated with the tenure/promotion process, and interest in a follow-up study. In addition, there were demographic questions that inquired about faculty respondents' intersecting identities such as participants' sex, age, sexual orientation, race, marital status, number of dependents, number of years as a tenure-track professor, and number of years as a tenure-track professor in the current institution were included in the survey. The study was validated with a pilot group of engineering faculty and confirmatory factor analysis (for the quantitative component of the survey). Tran et al. (2024) present detailed psychometric properties associated with the survey validation process.

Sample

Our study sample was restricted to only "R1" higher education institutions because faculty from R1 institutions are most likely to employ tenure-track engineering professors. We surveyed both undergraduate and graduate-level faculty, with nine hundred seventy-one responding to the nine open-ended questions (n=971), a 79% response rate of the 1,223

[DOI: 10.61882/johepal.6.3.92]

faculty that opened the survey link. Looking at the demographic breakdown of the data, 77.65% of the open-ended respondents were men, while women represented 22.35%. Breaking down these percentages even further by race, 55% of the respondents were White men, 2% were Black men, 3% were Hispanic men, and 15% were Asian men. Additionally, the breakdown of women was 17% White women, 0.1% Black women, 2% Hispanic women, and 3% Asian women. The demographics of the survey respondents generally mirrored the population with the exception that most respondents were full faculty. Specifically, 63% of the respondents identified as full professors, while 37% identified as associate professors and below. Our findings should be interpreted with this caveat in mind.

To understand the experience of underrepresented faculty and the perception of their colleagues, we inquire about their experiences and perceptions of their work environment, especially as associated with engineering faculty receiving tenure/promotion (paying special attention to how the tenure and promotion process interacts with issues of diversity and inclusion). To understand this, we directly ask our national sample of engineering faculty to provide open-ended responses to the following questions,

1. What are the key diversity concerns specific to your department/subject specialty?
2. If you are considering leaving your career and/or job, what are the reasons?
3. Describe any barriers or challenges that are associated with engineering faculty receiving tenure and promotion at your institution in the following areas: research, funding, service, teaching, and other.

Qualitative Content Analysis

We conducted a qualitative content analysis of our 971 faculty participants' responses to the survey's open-ended questions and identified several emerging themes. To promote the credibility of the findings, referential adequacy was performed. This process includes archiving a portion of the data, then having two researchers analyze the remaining data to establish preliminary findings. Afterward, the researchers return to the archive data for analysis to confirm those findings (Tochin, 2006). In addition to the referential adequacy, two additional cycles of coding were conducted: open and axial coding. For the open coding process, a list was developed from the constructs of the open-ended questions, and the framework guided researchers in searching for patterns throughout the process (Saldaña, 2016). The second round of coding established a sense of categorical, thematic, and conceptual organization from the first round of coding (Saldaña, 2016). With axial coding, researchers utilized the analytic tactic of clusters to identify pattern codes (Ravitch & Carl, 2016). Through the axial coding process, patterns from the codes were developed to explore the data context and the relationships that connect excerpts with the context of the diversity and equity of the tenure and promotion process. The researchers coded the data independently for both cycles of coding, discussing points of disagreement after the first cycle. The dialogue resulted in an agreement to focus on simplified yet readily apparent overarching trends.

Responses were separated and loaded into Dedoose, a data analysis program. The coding process included inductive and deductive coding strategies (Saldaña, 2016), resulting in a codebook that was developed by trends in the participant findings and informed by the

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theoretical framework of the study. Additionally, several techniques were used to facilitate trustworthiness within the team and the data. The research team engaged in conversations about themes and findings across the data collection, analysis, and processes, which contributed to fruitful discussions and understanding of race and gender dynamics highlighted in the findings.

Positionality

All authors of this study are scholars of color, two Asian men (a graduate student and a faculty), a Latina woman (a postdoctoral researcher), and a Black man (faculty). The first author is a leading expert in human resources (HR) issues in education and approaches this work from an HR workplace inclusion lens. The remainder of the team specialize in equity work in higher education. Together, the team produces scholarship to help promote a sense of belonging among the educational workforce, especially for those who have been historically marginalized.

Research Findings

To address why the underrepresentation of marginalized faculty of color remains stubbornly present despite institutions' public signaling of their values for diversity and inclusion, we analyzed written responses to the open-ended survey questions. Interpretated through the lens of diversity resistance framework, three key thematic patterns emerged from our analysis in response to our research question; they include 1) attributing the problems to a lack of "faculty pipeline", 2) the inequitable distribution of undervalued service, and 3) peer resistance to institutional diversity and inclusion efforts. These findings further explore how the diversity resistance framework can explain the persistence of exclusive workplace environments for racially minoritized engineering faculty pursuing tenure.

Attributing the Problem to a Lack of "Faculty Pipeline"

Faculty respondents pointed to a weak pipeline as justification for the lack of diversity in the engineering professoriate. In discussing this pipeline narrative, participants spoke with detached certainty, treating the low numbers of women and underrepresented people of color in engineering faculty roles as simply a fact of life rather than a systemic problem. This perspective was the most cited diversity concern expressed by faculty across racial and gender backgrounds. Respondents commented, "[t]here are not so many qualified minority candidates, which is something we should address in our workforce development," or "[p]ercentages of female and URMs [underrepresented minorities] are too low." These statements often relayed a degree of acceptance and, at times, resignation to the idea that nothing can be done by the institution to change the status quo as the problem is larger than the institution.

Other respondents like Dr. Martinez, a Latino male Assistant Professor from California noted, "[o]ur subdiscipline (Mechanical Engineering) is not very popular amongst women. This is the main problem in attracting and recruiting female faculty and students. This is a cultural issue that must be addressed very early on in our K-12 system and society as a whole." Dr. Martinez's statement underscores the fact that the faculty pipeline issues begin before college enrollment and that it will take a concerted effort from a wide variety of stakeholders to gain full participation in engineering.

[DOI: 10.61882/johepal.6.3.92]

Similarly, Dr. Andrews, a Black male Assistant Professor from Colorado, gives his perspective concerning the degree of pipeline issues many institutions face.

> We do not have ethnic diversity in our faculty or our programs. As part of a Black Lives Matter statement that I created for my department this past summer, I highlighted the fact that we have only 80 black students in our majors, consisting of more than 2200 students in total. Our program also struggles to recruit LatinX students to our major, and we trail percentage-wise with respect to the overall LatinX population in our state.

Dr. Andrews seeks to address the severe underrepresentation and increase participation in ways that are aligned with the commitments that were made by departments and institutions in the aftermath of the George Floyd killing over the previous summer.

Dr. Morris, a White male Associate Professor from Indiana, makes a common pipeline argument,

> We just don't have a big pipeline of URM faculty candidates, and even less whose research is likely to earn tenure. Unfortunately, this problem goes down many levels -- there isn't a big pipeline at the Ph.D. level because there isn't a big pipeline at the undergraduate level because there isn't a big enough pipeline at the K-12 level.

The comments of Dr. Morris mirror many other responses we received that seem to acknowledge that diversity is an issue worthy of attention but note that little can be done at the tenure track faculty level because of the lack of a sufficient pipeline. In other words, increasing diversity is outside the control of the unit and perhaps even outside the entire field of engineering field academia.

In Dr. Martinez, Dr. Andrew, and Dr. Morris's comments, there is a belief that to increase diversity within the engineering faculty ranks, interests must be cultivated earlier to create a strong pipeline. This perspective fails to acknowledge the centrality of cultural, racial, and gender identities and their influence on the perception of to what extent the work environment is welcoming, how enhancing that sentiment could not only retain the limited number of underrepresented people that are here but create supportive experiences to attract others like them.

Another related argument concerning the lack of a credible talent pool suggests that faculty members from underrepresented backgrounds are indeed actively recruited to other prestigious institutions. A White full professor and administrator from Texas, Dr. Miller, had this perspective on the recruitment process, based on his experience with the issue over the past few years:

> It is super challenging to hire good, underrepresented faculty, because the competition is so tough, and we are in a college town, not a big city (two body problems). When I chaired a faculty search in the last cycle, the one candidate I really wanted had a great interview with us, we made every effort to impress his wife, but he had 13 offers and went to a top 5 school. We make offers to good women, but our success rate is not as high as we want due to two reasons. And they might come, and their husband is elsewhere, and then they wind up leaving

[DOI: 10.61882/johepal.6.3.92]

> to join them after some years. Even when we make the husband a faculty offer, we sometimes lose them.

Dr. Miller noted the efforts his unit made to put forth an attractive offer. Still, it is not clear that his unit put the same effort into understanding how they could be a more attractive destination for racially underrepresented faculty beyond the offer itself Additionally, this highlights Burke and Black (1997)'s diversity resistance of backlash, as emphasized in Wiggins-Romesburg and Githens (2018) work.

On a different note, a White male distinguished professor, Dr. Russo, described how smaller institutions often get poached for their talent. He wrote:

> When we hire a female (or an underrepresented minority) and they are awarded a CAREER grant and receive tenure, they are heavily recruited by more well-known universities. So elite universities solve their diversity problem by recruiting successful young faculty from lesser universities. They do not grow them internally.

Many respondents acknowledged the challenging nature of diversifying the faculty and student composition in a notoriously representatively stagnated field. These responses pointed to the intense competition, as well as the imbalance in prestige and financial resources between institutions that can make recruiting and retaining diverse faculty far more challenging of those with less of each.

Dr. Wells, a white male Full Professor from Georgia spoke about the challenges of competition for scarce labor but includes a dimension of the perception of a lack of performance excellence in his reflection.

> We have had success in attracting diverse candidates for interviews. We have had mixed results in convincing each person offered a job to accept it. This is likely due to a small pool and intense competition to attract these people among universities. In addition, we have had some minority faculty fail to achieve tenure in the last ten years. When a university hires a minority candidate and invests five years in them and they fail to achieve tenure, it is a tremendous loss for all involved. I am convinced this action was not directly due to discrimination in the tenure committees. Rather, I believe that these candidates did not have adequate preparation to compete for funding effectively, and the university failed to see this early on and mitigate it with training."

Dr. Well's comment underscores the importance of providing support to retain underrepresented faculty after you have successfully recruited them. Retention is as important as recruitment in terms of maintaining a diverse faculty. It also highlights the critical role of mentorship for career development and success.

Inequitable with Distribution of Undervalued Service

Institutional practices and norms were also identified as reinforcing resistance to diversity and inclusion. Specifically, Engineering faculty of color respondents consistently voiced frustration with the service component of tenure-track faculty jobs. Specifically, they reported having to take on a disproportionate burden of service, often as the

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representatives on diversity committees because of their underrepresentation within their department. For example, Dr. Rosalia, a Latina full professor from the East Coast, said:

> The main challenge regarding service is that I'm the only Latinx professor in my department and one of the few in the college; hence, I feel the pressure to be the Latinx voice in multiple places and have been used as a "token" passing a lot of extra work that doesn't get recognized.

As the “token” Latinx faculty in the department, there are a lot of unspoken expectations regarding the perspectives she must take and the roles that she must perform. Dr. Johnson, a White female full professor from Wisconsin, said that women and individuals from underrepresented backgrounds must take on the bulk of the work within the department regarding the needed service. She explained:

> Although most junior faculty are sheltered from significant service obligations, incidental service expectations of women and underrepresented faculty members take up significant time and are not "counted" in any way (e.g., being the only woman on the faculty in the department as an assistant professor substantially increased the amount of time I spent mentoring students compared to my male colleagues, and when male faculty encountered tears, they immediately sent the student down the hall to talk to me).

Dr. Johnson has assumed the role of mentor and the motherlike figure for students in the department. She has become the person that male faculty send the students to for guidance, sort out their feelings, and navigate their emotions, as if the men are not capable of providing similar support.

Dr. Grace, a White female Associate professor from Kentucky, shared her experience as an Assistant professor when she was bogged down in service work.

> As a female engineer, I have been asked to serve on many committees - one time as an assistant professor I had 12 committees to which I'd been assigned - I tried to cut it to 6 and the Dean walked to my office to tell me why I needed to be on those committees. So, I had less time to work on research - my male colleagues are typically on one or two committees as assistant professors.

Dr. Rose’s experience is an extreme example and hopefully not typical, given that the problem there is less awareness of and sensitivity to overloading women and underrepresented people of color with service. In addition to women faculty facing increased pressure to take additional service obligations, Dr. Grace reminds us that this may be worse for women of color given that women of any race are often compelled to carry additional service obligations. However, Dr. Shift, another White female Associate professor, suggests that although the trend at her institution may be less severe than in Dr. Grace’s case, it still exists, by sharing that "[i]n most cases, untenured tenure-track faculty are exempted from significant service responsibilities. Nonetheless, some tasks dilute the time the faculty requires to work on proposals and papers. The inability to say ‘No’ by junior faculty also tends to exacerbate the problem." She reminds us that in many instances faculty feel that they cannot say “No” to being overloaded with service, despite carrying a disproportionate share because of their vulnerable status as junior untenured faculty.

[DOI: 10.61882/johepal.6.3.92]

The inequitable distributions of service these engineering faculty members faced, specifically women and faculty of color in their department, demonstrate access and legitimacy within the diversity resistance framework. Within this paradigm, access and legitimacy are defined as "celebrating differences and ties business necessity to legitimacy by matching the demographic composition of the workforce with that of consumer markets" (Wiggins-Romesburg & Githens, 2018, p. 185). Unfortunately, our participants show that this often gets translated into issues ranging from tokenization to inequitable distribution of undervalued services.

Peer Resistance to Institutional Diversity and Inclusion Efforts

Negative reactions to diversity and inclusion efforts were also evident from the faculty respondents. Specifically, numerous faculty respondents stated their opposition to even including questions about the topic in our survey inquiring about work climate. Those who pushed back against our questions often asked why they were necessary or failed to see the relevance of understanding diversity in relation to tenure and the work environment. Some argued that there was already diversity in their department and little to no change was needed, and others outright attributed their institutions' implementation of diversity efforts as discriminatory. Most of the faculty members who voiced their frustration with diversity and inclusion efforts identified as White men. Resistance to diversifying the engineering field had these primary roots in our respondent's opinions: Perception that *1) underrepresented groups are favored* and are *2) not allowed to fail like everyone else*.

Underrepresented Groups Are Favored

Respondents who oppose diversity efforts often reported that women, Black, and Hispanic faculty were favored by the institution and the administration primarily for the diversity they bring. Dr. Jones, a White male, full professor from the Midwest said,

> This survey did not provide a place to provide a summary, so I will do it here. At my university, if you are not a woman or a minority, you do not have a chance to be considered for any sort of administrative position. My dean has specifically stated this to me. Rather than being color blind, my institution actively discriminates against White males, in violation of state law. We have had minorities granted tenure upon hiring when non-minorities with stronger records were not. This leads to frustration from the faculty who are held to a different set of standards.

Dr. Jones concluded that faculty from underrepresented racial groups were held to a more favorable standard than White faculty when it came to hiring and promotion. Others also agreed with the notion of faculty from underrepresented groups receiving favorable treatment. These respondents argue that the true discrimination is not *against* but *for* underrepresented minorities, and so, increasing diversity inevitably means displacing talented, qualified White people with others whose chief attribute is their diversity rather than their talent or credentials.

Dr. Meyers, a tenured, White male professor from Florida, shared how he felt the focus on diversity has made the workplace unfairly unbalanced in favor of women, Blacks, and Hispanics in engineering.

[DOI: 10.61882/johepal.6.3.92]

Tenure Track Process: Black & Hispanic Faculty

> … diversity number of faculty for underrepresented groups are closely monitored in academia, especially in a public university. That puts pressure to hire and retain faculty (candidates) from these groups making them in high demand. Hence, they are more favorably reviewed in hiring and promotion evaluations. Salaries well-above the average are offered to hire female faculty. A female faculty has been given a $10K raise just to retain her and to maintain the "ratio." I understand that there has been a historical problem, but the solution is currently reduced to a numbers game, punishing the ones who have not created the problem. Researchers investigating diversity issues should look at this severe side effect. Hence, I would like to clarify that when I respond "disagree" to the diversity-related questions below, I mean that persons from underrepresented groups are evaluated more favorably, not the other way around.

This response suggests that Dr. Meyer's institution has been responding to challenges in diversity with policies and procedures that are creating feelings of alienation and perceptions of "reverse discrimination" in the process. Deep systemic issues, such as those that sustain racial underrepresentation, require intentional, strategic and thoughtful responses, short cut solutions don't solve the problem and indeed can create a different set of issues.

Dr. Stevenson, a White male full professor, shared his perspective,

> In the department, diversity is being given importance because it plays in the hands of admins (more check boxes for their contracts, means more money in their pockets!), which unfortunately leads to putting unqualified people in places of power just because of diversity! The other impact is that due to the above, well-qualified people get a stigma that they didn't earn the position, again because of diversity advantage."

Dr. Stevenson believes that administrators receive additional money by recruiting and retaining women, Black, and Hispanic faculty. However, it is unclear how increasing faculty diversity puts more money in the pockets of administrators or the source of these funds. Has the president or provost provided financial incentives to promote this agenda?

Those faulty peers who expressed resistance to faculty diversity often implied that women, Blacks, and Hispanics were often valued for their demographic diversity rather and were relatively unqualified compared to their competition. Dr. Lewis, an Associate professor from South Carolina, expressed concerns that qualified individuals were being crowded out for the sake of diversity. Specifically, sharing:

> I think we have a good level of diversity in many aspects. However, I worry that diversity expectations also mean that good candidates do not get hired because they do not add to the diversity of the department. A bigger issue is really the balance of technical specialties within the department.

To underrepresented faculty of color, comments such as these can read as red herring arguments, which are designed to distract and pull the conversation away from the topic of

[DOI: 10.61882/johepal.6.3.92]

diversifying the faculty. It is conceivable that organizations can balance the technical specialties within the department while also diversifying if both of those issues are valued.

In sum, the perspectives of Drs. Jones, Meyers, and Stevenson represent resistance (maximum resistance and minimum integration) within the diversity resistance framework. These professors voiced the importance of how their department would include "unqualified" faculty members for the sake of diversity. Their perspectives coincide with reinforcing the exclusive status quo and resisting diversity.

Not Allowed to Fail Like Everyone Else

Faculty peers who resist institutional efforts to diversify the engineering faculty also argued that when women, Black, and Hispanic faculty are hired, they often receive excessive institutional support to the point they almost guaranteed to succeed. Meanwhile, they argue, White male faculty, for example, must succeed solely on their own merit. Dr. Hawkins, a White male Associate Professor from New York, wrote the following comment about racial diversity shielding Black and Hispanic faculty from having to earn tenure in the same ways that their White and Asian counterparts do,

> Departmental and university politics dictate who goes up and when they go up for tenure and promotion. Diversity faculty have zero chance of not being promoted or not receiving tenure. Except for LBGTQ faculty, who are still discriminated against. Non-diversity faculty are expendable and easily replaceable.

Dr. Hawkin's comment illustrates how faculty might perceive underrepresented faculty get an unfair advantage, signaling opposition to diversity efforts. From this reflection, we are left to wonder how this might play out procedurally when faculty typically votes on tenure and promotion in a process that should be shielded from administrative interference.

Dr. Parker, a White male Full Professor from Virginia, stated, "We have completely abandoned rigor in our undergraduate, and increasingly in our graduate program in the belief that a challenging curriculum will 'scare away' women and minorities." Comments like this are problematic racial and gender stereotypes that imply women and minorities are not as intellectually or academically capable as White men. A statement like Dr. Parker's can be interpreted as discrimination prevention (high resistance and low integration) within the diversity resistance framework. This type of perspective suggests that the rigor places the onus on women and minoritized individuals to assimilate into the system rather than shifting the culture of the defined "rigor" to be more inclusive of diverse viewpoints and values (Wiggins-Romesburg & Githens, 2018). A more critical reading recognizes the harmful deficit perspectives this narrative perpetuates (e.g., why assume the abandonment of "rigor" was meant for this purpose?). It is important to understand that these sentiments and assumptions perpetuate the negative environments that underrepresented faculty members have endured since the beginning of their faculty journey.

Discussion

This study analyzed responses to nine open-ended survey questions to address the underrepresentation of marginalized faculty of color in engineering. The research question

[DOI: 10.61882/johepal.6.3.92]

stemmed from the open-ended survey questions of how we reconcile the fact that R1 higher education institutions outwardly and publicly express a desire to diversify, yet racial underrepresentation persists in their tenure-tracked engineering faculty ranks. This study's contributions include using a large national dataset of engineering faculty to understand the underrepresentation of women, Black, and Hispanic engineering faculty and using diversity resistance as a framework for understanding faculty perspectives on increasing diversity.

Qualitative findings from our study suggest three main themes that the participants identified as the key diversity concerns related to their department and subject specialty. The first 1) was the attribution of the lack of diverse candidates in the pipeline as the problem. With this theme, respondents attributed the underrepresentation of faculty of color to a lack of participation and interest in engineering at the K12, undergraduate, and graduate levels as the source of the diversity challenges. Additionally, respondents argued that high-performing engineering faculty from underrepresented backgrounds are highly sought after by prestigious universities, which makes diversification challenging for other institutions. This argument suggests resistance to diversity is because of larger societal macro-forces, and that people from diverse racial backgrounds themselves appear not to be interested or engage with the field early in the pipeline.

The second and third (2 and 3) themes were related to respondents' critiques of institutional diversity and inclusion efforts, which we divided between those who critique the objective and goals to diversify the faculty and those who agree that the focus is important but critique the institution's lack of intention and effective execution of their efforts. In other words, there is a contingent of faculty who believe that the focus on diversity is wrong and inappropriate. These faculty allege reverse discrimination, and unfair advantage is given to underrepresented faculty of color and women at every stage and critique diversity efforts for those reasons. This behavior towards upholding the status quo exemplifies the resistance paradigm's components of maximum resistance and minimum integration (Wiggins-Romesburg & Githen, 2018).

Conversely, some agree with diversity efforts in principle but believe that these efforts do not receive enough intentionality, financial support, and follow-through to be successful. Along racial lines, White faculty were split, with approximately half supporting the focus on diversity vs. those that did not. Among faculty of color, while almost all supported the organizational emphasis on diversifying the faculty, some questioned whether the institution was serious about the focus, and a smaller number were neutral about it (arguing things are fine as they are). The criticism of seriousness was about implying that institutions that value diversity merely highlight performative diversity efforts to appear concerned for public relations and virtue signaling purposes. Both structural and personnel were cited as sources of resistance, where there is high resistance and low integration, due to the fact that the diversity efforts are being implemented, but for the actual work to be done, it is prioritized as a low priority.

The field of higher education has often operated in an exclusive manner, from admission selection criteria to competitive environments in areas such as scholarly publications, grant funding and promotions. The idea that not everyone can participate is fundamentally contrary to the philosophy of inclusion. In recent years, there has been an increase in resistance to diversity and inclusive effort from entities such as states and

[DOI: 10.61882/johepal.6.3.92]

policymakers (Chronicle Staff, 2025). This resistance affects diversification efforts in higher education through avenues such as mandated removal of references to DEI in public-facing documents or forcing DEI units to be defunded and shut down altogether, some of these efforts have been reflected in Texas and Florida. For example, Texas's Senate Bill 17 (SB 17) prohibits public higher education institutions from maintaining DEI departments, to banning DEI training and diversity statements. Yet our work adds to the trend identified by recent scholarship (Abrica & Oliver Andrew, 2025) suggesting that resistance not only originates from outside of higher education, but from some faculty within the walls of the institutions as well. Indeed, this study adds to a sparse body of literature on diversity resistance in organizations (Wiggens-Romesburg & Githens, 2018) to specifically explain the persistence of the underrepresentation of faculty of color in engineering academia. This work extends prior research on STEM faculty diversification by relying on the theoretical framework of diversity resistance, from the broader human resources management literature, to frame our analysis of responses to our national sample of engineer faculty to understand their perspectives on barriers to institutional diversity and inclusion, especially during the tenure process.

From our study, we learned that tension exists between those who desire more diversity and those who oppose it, with neither appearing happy with the current state of affairs. For the former, diversity efforts are often perceived as performative, lacking intention to make a real difference, while to the latter, they are seen as discriminatory, providing an unfair advantage to those from underrepresented, marginalized backgrounds. At the end of the day, most people have a deeply held value of wanting to be treated fairly and, therefore, desire to work in an environment where workers receive such treatment. But the question becomes: *What does that look like in the work setting?* And *why do both promoters and resisters of diversity feel that the environment is currently not fair?*

To manage and respond to the resistance to diversity and inclusion efforts, the workforce must understand how having a more diverse faculty benefits organizational performance and quality. This seems to be the heart of the questions posed by those who position themselves in opposition to diversity efforts. Specifically, they question and criticize the overall merit of diversity initiatives and how they are implemented. Research has suggested that when diversity initiatives neglect emphasizing the innovation and growth that can result from improved diversity, pro-diversity sentiments of the workforce tend not to improve (Dobbin & Kalev, 2016). This is especially the case when there is a lack of acknowledgment and addressing of pre-existing structural and systemic exclusion (Wiggins-Romseburg & Githens, 2018).

Much of the institution's challenge in diversifying the faculty in engineering is because they are a house divided. Many engineering faculty still hold a deep ambivalence toward inclusion. They argue that being more inclusive means watering down the rigor of classes, degree programs, hiring processes, and the tenure and promotion process, juxtaposing equity with excellence (Tran & Platt, 2023). However, it is clear that equity and excellence can, and often do coexist an increase overall quality. Indeed, as mentioned earlier, the foundation of higher education prestige is exclusion. Our respondents who oppose diversity efforts seemed to hold resentment for what they perceive as special treatment of women or racial minorities, with much of the resentment focusing on the perception that their colleagues who are women and/or are from racially minoritized backgrounds are

[DOI: 10.61882/johepal.6.3.92]

underqualified for faculty roles, promotion, and administrative roles. In a study of 665 tenured engineering faculty conducted two decades ago, Jackson (2004) disproved stereotypical assumptions by revealing that Black and Hispanic faculty demonstrated productivity rates virtually identical to those of White male faculty members.

It appears there is a general lack of understanding of the benefits and institutional barriers associated with diversity from those who resist it. In this context that prioritizes a colorblind commitment to academic excellence and has a reputation for being culturally irresponsive, it is no wonder that talented Black and Hispanic engineers who would make amazing faculty either choose not to pursue Ph.D. degrees or are difficult to recruit and retain into the engineer professoriate. It is also no surprise that current engineering faculty often report microaggressions and toxic work environments.

As mentioned in Wiggins-Romesburg and Githens (2018), "resistance is a natural reaction to change; it should be anticipated, honored, and integrated into the change process" (Brazzel, 2014; Gold, 2008; Hill, 2009). As expected, several faculties in this study voiced their resistance to diversity integration. Dialogue should occur with these individuals to understand their concerns and provide them meaningful support to facilitate their movement from the resistance paradigm towards integration and learning and understand the benefits of being diverse and inclusive within their department in light of the increasing importance of diversity for advantages in competitiveness. This requires intentionality and communication.

Conclusion

In this paper, we sought to understand how we reconcile the fact that many "R1" higher education institutions outwardly and publicly express a desire to diversify, yet racial underrepresentation persists in tenure-tracked engineering faculty ranks. We leverage the framework of diversity resistance to analyze faculty reactions to their tenure process in our investigation for the answer. Findings from our study suggest that the underrepresentation persists in part because racially marginalized faculty often feel that the institution is not a place that welcomes them, and their concerns and challenges are often perceived by others to be self-inflicted (Olmos et al., 2023; Shavaran et al., 2022). Those who oppose diversity initiatives in the engineering context seem to see society as post-racial, with assumptions that enacting tenure processes as they exist represents a form of merit screening (Gosztyla et al., 2021). Much like the broader society of the United States, these individuals often interpret their actions and workplace policies from an individualist perspective. These individuals often saw the institutions' approach to diversity as a form of "reverse discrimination" (e.g., hiring or promoting an underqualified person from a racially marginalized background as opposed to a qualified person who is not from such a background). If this is true, this seems to suggest that institutions may not be addressing the root causes of the problem of underrepresentation (e.g., identifying how policies and practices are systematically excluding certain groups of people and intentionally working to remove those barriers) but rather taking short cuts (e.g., making sure the next hire belongs to an underrepresented group) that are often illegal and promote resentment from other faculty.

[DOI: 10.61882/johepal.6.3.92]

Developing and sustaining an inclusive work environment that is attractive and cultivates a sense of belonging for all to improve the diversity of the engineering profession requires managing change that people are often uncomfortable with (Amer et al., 2024; Rainey & Tylor, 2024). One such change is the organization's members' development of stronger cultural competency. Accomplishing this begins with the need to understand the perspectives of the faculty and administration, which is what this study sought to highlight. Given the tension between different perspectives, data, and communication can help illuminate misunderstandings and illuminate inequity where inequity exists. Everyone's institution will be at a different place in their journey towards inclusiveness, and as a result, institutions must operate and develop based on their position. For example, if half of the faculty body does not believe in the value of diversity, then rushing diversity initiatives for implementation are doomed to fail due to the lack of buy-in. Yes, more pathways and expanded pipelines should be needed to attract diverse individuals into the engineering profession. However, internal work also needs to be done to ensure that when they arrive at the institutions, they are not disproportionately driven out by an exclusionary climate. If this is not accomplished, we should expect to continue to see their stubborn underrepresentation despite higher education's clarion call for diversity.

Limitations

Like all these studies, our work has limitations that are worth considering. First, the study was conducted during a sensitive time-period (i.e., 2020 and 2021) for racial unrest in the United States, amidst a global worldwide COVID-pandemic. As a result, responses may be influenced by this contextual timeframe. Second, as mentioned earlier, a large percentage (63%) of our respondents were full faculty, and it is important to interpret findings with that consideration in mind. Finally, the data source for this work was based on qualitative open-ended responses to a series of survey questions. It is important to note that that each response was limited in relative to other deeper qualitative methods such as qualitative interviews. However, what the study lacked in depth in examination, it made up for in the identification of salient trends among the breadth of responses (n= 971 responses).

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