2022

CLIMATE CULTURE REPORT

Prepared by the College of Engineering
Diversity, Equity, and Inclusion
Subcommittee on College Climate
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UK College of
Engineering

COLLEGE OF ENGINEERING CLIMATE SURVEY REPORT: SPRING 2022

Prepared by the College of Engineering Diversity, Equity, and Inclusion Subcommittee on College Climate

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EXECUTIVE SUMMARY

In late January 2021, the Diversity and Inclusion Committee of the College sent a survey out to faculty, staff, and students in the College to assess collective well-being and the climate of the College. This report presents and assesses data related to the College's climate and, to a certain extent, its culture. The data lead to a number of important findings and recommendations for action that the College can take to develop a supportive environment where everyone can contribute fully to the mission of the College and benefit fully by being a member of the College. These findings and recommendations are as follows:

- Across the College, there is a good understanding of what Diversity means in terms of the demographics of our various populations, but the understanding of Equity and Inclusion and how those factors shape climate and culture appears weaker. Recurring opportunities for professional development in the areas of Equity and Inclusion should be made available for faculty, staff, and students and professional development in these areas for administrators should be required.

- The social and professional network that conveys support and opportunity among faculty members has eroded during pandemic sequestration. Attention must be given to getting pre-tenure faculty back on track towards promotion, mentoring and networking activities need to be restored if not strengthened beyond pre-pandemic levels, and a recommitment to communication through the chain of command needs to be made.

- Survey responses from staff indicate that they can be made to feel inferior to faculty and that opportunities for career progression are limited. A benchmarking exercise examining practices at other academic and non-academic institutions to yield new ideas and approaches for staff participation in governance and staff career progression is needed.

- Students understand that there are reporting mechanisms for them to express concerns about peers, instructors, and administration, but they do not know how to access them, nor do they trust that their reports will lead to action. Reporting structures should be examined to determine accessibility by students, how students are educated on these reporting structures should be examined to determine their effectiveness, and how feedback and loop-closing happens with complainants should be examined to determine if it is effective.

- DE&I fatigue has set in for some in the College community, and some (majority male community members) are expressing frustration over marginalization. These factors must be taken in by DE&I leadership at the College and University levels and used to help shape our internal training, education, and awareness efforts.

- Care and intentionality must be brought to our engagement with international students, staff, and faculty in the College. The national political tenor and rising geopolitical tensions contribute to anxiety and diminish the sense of belonging for some of our international community members. Special efforts must be made to help them connect with the supportive networks they need for academic and professional success.

- Gender bias remains stubbornly persistent in parts of the Engineering culture, and efforts to raise awareness and lower the tolerance for both implicit and explicit instances of gender bias are needed. This appears to be especially relevant to our undergraduate academic experience.

- Recently, the University commissioned 17 work groups and invested considerable material resources to support Diversity, Equity, and Inclusion across campus. The College should ensure that it is connected to these efforts so that our community benefits fully from its activities. A review of these efforts by the College DE&I committee is a logical first step in this regard.

- The national political climate is affecting perceptions related to free speech and personal safety. The College should reinforce the University's stance on freedom of speech as well as its limits. Similarly, the College needs to affirm with its community members that with the bounds set by law and University Rules, no aspect of personal politics is a condition that restricts one from full participation in the College or any of the activities it supports.

INTRODUCTION

In late January 2021, the Diversity and Inclusion committee of the College sent a survey out to faculty, staff, and students in the College to develop data to assess collective well-being and the climate of the College. Those data were collected and assessed. Some of those data and the resulting assessment were published in the Spring of 2021 in the College of Engineering's Wellness Survey Report. This report collects and assesses data related to the College's climate and, to a certain extent, its culture. The data and the assessment point to several recommendations for action that the College can take to develop a supportive environment where everyone can contribute fully to the mission of the College and benefit fully by being a member of the College.

Over the past 18 months, COVID-19, social unrest, and a contentious national election increased individual and collective anxiety everywhere. On campus, budget cuts, the pivot to virtual learning and the protests related to policing, the deaths of Black citizens such as Brianna Taylor, George Floyd, and Ahmaud Arbery, and an increase in Asian hate crime added to the discord. These factors were amplified in a University community organized around developing and mastering understanding through inquiry and discussion. Additionally, they were infused with different and sometimes conflicting perspectives as well as the inexperience and angst of youth. As a result, the environment at the University has become challenging in ways that affect the academic performance of students, the job performance of faculty and staff, social engagement (and the fulfillment derived from it), overall mental and physical well-being, and the foundational components of institutional effectiveness—trust and respect.

Some of the most important support structures in large universities, like the University of Kentucky, are the local academic communities—Colleges and departments and their interpenetrating network of peers and peer groups, colleagues, mentors, and friends. Departments and Colleges are constructed as organizational divisions, but they have very distinctive cultures organized around unique intellectual themes, teaching and research norms, perspectives, traditions, and histories. Culture tends to evolve gradually over time. Departments and Colleges also have distinctive climates associated with them. Climate refers to the atmosphere of the unit or how individuals feel about the unit day-to-day, week-to-week, or month-to-month. Climate can change rapidly based on internal factors such as changes in leadership or resource allocations. It can also change based on external factors such as the job market for graduates or ebbs and flows in extramural research funding.

Departments and Colleges are also the academic home base for faculty, staff, and students. Individuals identify closely with their home base and derive support from it. In a pressure-packed academic meritocracy, this support can be crucial to individual success and the accomplishment needed for professional advancement.

It is well known that individuals from varying gender, ethnic and racial identities experience and perceive the culture and climate differently. To understand differences in perceptions and experiences among these groups, the College of Engineering Diversity Equity and Inclusion Committee conducted a College-wide survey in the Spring of 2021. The survey touched on issues pertaining mainly to department and College climate but also addressed issues of culture. The following report describes the findings and places those findings into a context to help the engineering community sustain a culture and climate that allows all individuals to participate fully in the mission of the College and benefit just as fully from that participation.

OUR COLLEGE DEMOGRAPHICS

The following tabular data characterize the demographic make-up of the College of Engineering at present.

Table 1: College of Engineering student gender, student survey population gender, and % of student body responding to the survey in each gender group.

	COE Student Population	% of total populations	Number of survey responses	% of survey responses
Male	2559	77.4%	303	11.8%
Female	731	21.9%	128	17.5%
Transgender	NA	NA	6	NA
Nonbinary	NA	NA	6	NA
Genderqueer	NA	NA	1	NA
Gender non-conforming	NA	NA	3	NA
Genderfluid	NA	NA	3	NA
Agender	NA	NA	3	NA

The percentage survey response rate is calculated by dividing the number of survey responses by the total number of students in that population.

Table 2: College of Engineering student race data, student survey population race data, and % students responding to the survey from each race.

	COE Student Population	% of total populations	Number of survey responses	% of survey responses
BIPOC	270	8.2%	128	47.4%
White	2898	87.6%	252	8.7%
Asian	139	3.7%	51	36.7%
Total	3307	100%	431	13.1%

BIPOC includes American Indian/Alaskan Native, Black or African American, Hispanic or Latinx, and multi-racial.

Table 3: College of Engineering faculty gender data, faculty survey gender data, and percentage of faculty responding to the survey from each gender.

	Total among College of Engineering faculty	% of total faculty population	Number of faculty survey responses	% of survey responses
Male*	134	78.4%	57	43%
Female*	37	21.6%	24	65%
Queer**	NA	NA	1	NA
Prefer not to answer	NA	NA	5	NA

*Gender demographics may change due to those who prefer not to answer.
**Some survey respondents reported a gender that was not collected by the College.

Table 4: College of Engineering race/ethnicity, survey population, and the survey response rate for faculty.

	Total among College of Engineering faculty	% of total faculty population	Number of faculty survey responses	% of survey responses
BIPOC	9	5.3%	7	78%
White	115	67.3%	55	48%
Asian	47	27.5%	14	30%
Prefer not to answer	NA	NA	10	NA

Race/ethnicity demographics may change due to those who prefer not to answer this question in the survey.

Table 5: College of Engineering gender, survey population, and the survey response rate for staff.

	Total among College of Engineering staff	% of total staff population	Number of staff survey responses	% of survey responses
Male*	94	51.6%	43	43.9%
Female*	88	48.4%	39	44.3%
Queer**	NA	NA	1	NA
Total	182	100%	83	45.6%

Gender demographics may change due to those who prefer not to answer.
**Some survey respondents reported a gender that was not collected by the College.*

Table 6: College of Engineering race/ethnicity, survey population, and the survey response rate for staff.

	Total among College of Engineering staff	% of total staff population	Number of staff survey responses	% of survey responses
BIPOC	5	2.7%	2	40.0%
White	162	89.0%	73	45.1%
Asian	15	8.3%	1	6.7%
Total	182	100%	86	47.3%

*race/ethnicity demographics does not total to 86 because 10 people prefer not to answer this question in the survey.

DATA COLLECTION AND ANALYSIS

The College of Engineering Diversity, Equity and Inclusion Committee (DEI) prepared and administered an on-line survey in January and February 2021. Quantitative and qualitative responses were collected from faculty, staff, and students. The survey asked respondents to identify their gender, ethnic group, and status (faculty, staff, or student). No other personally-identifying information was collected or requested.

Quantitative responses were those in which respondents indicated their extent of agreement or disagreement with a statement using a five-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). These responses were aggregated and averaged, and comparisons were made among respondent groups.

Qualitative responses were those in which respondents provided written comments to various questions and prompts. Qualitative responses provided context for quantitative responses and provided detailed examples.

Some demographic populations in the College are small in number, which makes some groups more identifiable than others. Therefore, some groups were combined. For example, Black, Indigenous, a person of color (BIPOC) was used to group Black, Latinx,

Pacific Islanders, and Indigenous people. In comparing data across gender identity, analyses were limited to comparing male and female-identified survey participants. While we recognize that gender is not binary, the small response numbers from community members who identify as non-binary, transgender, or gender fluid did not allow for statistical comparison. Additionally, the data were only sorted at the College level (no departmental identification was collected) to ensure groups of respondents were large enough so that individual responses could not be identified.

Statistical significance across subpopulations was determined using an independent sample t-test with $p < 0.05$. When comparing across faculty, staff, and student populations, all statistically significant differences were reported compared to the faculty population responses. In comparing differences across race/ethnicity, all significant differences were reported compared to the White community members.

CLIMATE SURVEY

Overview. The data on departmental climate were collected using an adaptation of the Diversity Engagement Survey (DES) . The DES is a reliable and valid survey to assess institutional inclusion and engagement as the diagnostic for climate. For faculty and staff in this study, the word "institution" was replaced with "department" throughout the survey referring to the academic administrative unit to which the respondent was a member. For students, the word "institution" was replaced with "engineering faculty and staff." The survey assessed eight domains of inclusion and engagement. These are described below.

The individual items included in the survey can be found in Appendix A.

With respect to College culture and environment, all groups in the survey, including faculty, staff, and students, responded positively, with mean scores above neutral for each category (Figure 1).
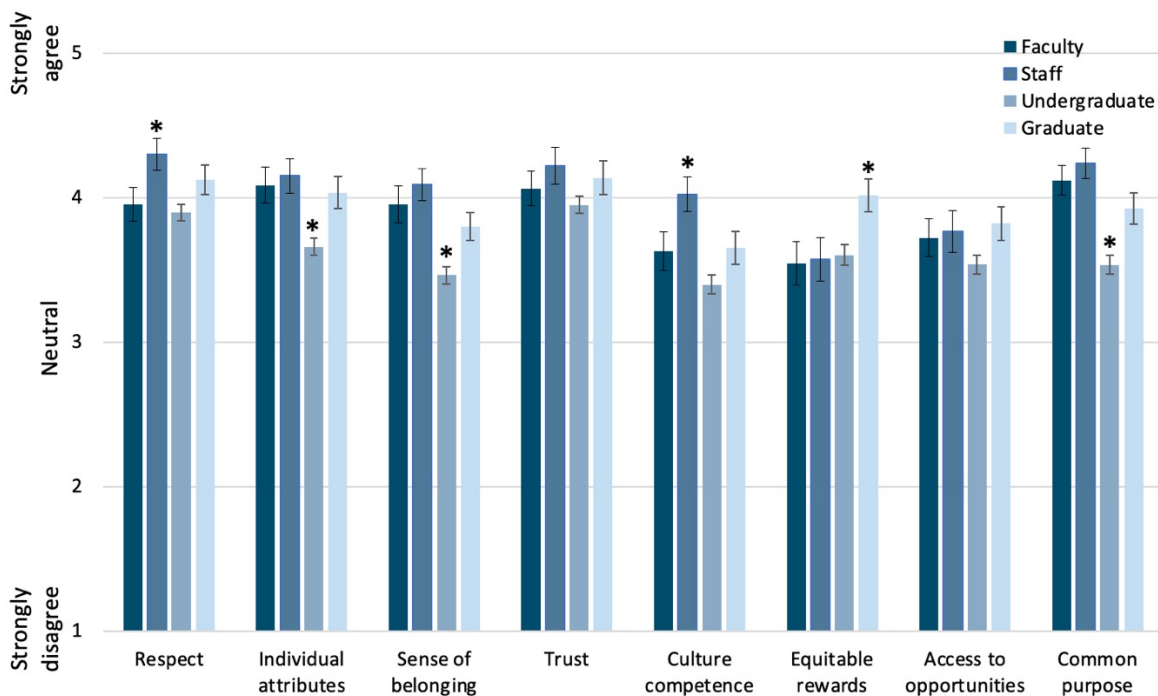

Figure 1. Department climate response for faculty, undergraduate, and graduate students. The notation * indicates a statistically significant difference (p < 0.05) when compared to the faculty population.

[1]Person, Sharina D., et al. "Measuring diversity and inclusion in academic medicine: the diversity engagement survey (DES). "*Academic medicine: journal of the Association of American Medical Colleges* 90.12 (2015): 1675.

Figure 1 shows quantitative responses for faculty, staff, undergraduate and graduate students to the climate survey. In this survey, there were 22 separate responses collected from each respondent, which were grouped based on thematic similarity into eight response groupings, as shown in the Figure. These groupings are:

- **Respect:** Individuals believe that there is respect among peers and colleagues and respect for them by the College;
- **Individual attributes:** Individuals believe that individual attributes are acknowledged and valued by peers, colleagues, and the College;
- **Sense of belonging:** Individuals feel as though they are a part of the College community and have a stake in its success;
- **Trust:** Individuals trust one another, individuals trust the College, and individuals believe the College trusts them;
- **Cultural Competence:** Individuals believe that the College and College community conduct their affairs with awareness of and respect for cultural differences;
- **Equitable Rewards:** Individuals believe that recognition and compensation are allocated equitably;
- **Access to Opportunities:** Individuals believe that access to professional opportunities is open and fair;
- **Common Purpose:** Individuals have a shared sense of purpose with the College community.

Faculty responses. Faculty response scores were highest for common purpose, individual attributes, and trust. Faculty members are typically long-serving and integral to the tripartite teaching/research/service mission, and have both formal and informal roles in College governance. The teaching and research portfolios of R1 institutions are collections of faculty experts, each of whom has deep expertise in a very focused subspecialty within their academic department. Universities are built around their faculties, and in many respects, they are built for their faculties and faculty success. For faculty to rate common purpose highly is congruent with the idea that universities are organized around their faculty. However, it may be argued that a high rating for common purpose by faculty is merely a reflection of the main structural attribute of the University—that faculty are the core element of the University.

Trust and an appreciation of individual attributes arise from individuals in a community more so than as products of system or organizational structure. Trust is an essential ingredient for organizational efficiency and success. Appreciating and acknowledging individual attributes is the genesis of goodwill that is also key to the efficiency and success of an organization. These high response grouping rates suggest that faculty believe their community is comprised of trustworthy and empathetic colleagues, and that is an optimistic signal for the College.

Faculty scores were lowest for cultural competence, equitable rewards, and access to opportunities. In particular, faculty members believe that departments and the College can manage diversity more effectively, and more support should be provided for working with diverse groups and in cross-cultural situations. An interpretation of these results, which is derived from broader observations of the College, is that intentions are good and willingness to support diversity is present within the College community, but the individual skills and administrative mechanisms needed to turn good intentions into supportive actions are lacking. This is an area where immediate attention is needed, and recommended actions are presented in the recommendations and conclusion section of this report.

Low scores for equitable rewards and access to opportunities are concerns to be examined further. A budget cut in FY21 eliminated salary increases during a time when faculty were coping with the burden of sustaining both virtual and in-person instruction as well as other COIVD-related dislocations that impacted normal work. COVID impacts disrupted professional networking, mentoring relationships, social-professional interactions, and opportunities for career progression. Pre-tenure faculty have been especially impacted. Multi-year tenure clock delays are intended to protect pre-tenure faculty but other anecdotal evidence suggests that delays may be perceived as dragging out a challenging time in the career of an academic.

Narrative comments from faculty articulated concerns over transparency in decision-making and as it relates handling of implicit bias and microaggressions (Appendix B). These comments reflect a lack of communication or poor communication along administrative pathways. Communication is a perennial challenge in academic environments, and the physical separation created to mitigate COVID spread limited formal communications to electronic modes. and This significantly dampened informal communication channels. These comments reinforce the need to be deliberate and intentional about communication and skew organizational practice towards overcommunication.

These comments also reinforce the need for professional development for faculty, staff, and students in the College, focusing on the Equity and Inclusion issues that promote a supportive climate and lead to a culture of enablement for all. As leaders, for whom DE&I competency is now an expected leadership skill, professional development for College and department administrators should be mandatory.

Staff Responses. Staff response scores were highest for common purpose and trust, similar to the faculty response profile. Unlike faculty, staff rated respect more highly than individual attributes, although both response groupings were rated highly.

University operations have become exceedingly complex, requiring expertise in business and finance, accounting and auditing, law, counseling, facilities management, information technology, human resources, and more. The expertise needed to operate a large public University is well beyond the expertise, and the ability of the faculty to manage, and thus staff fill the need for specialized administrative and technical expertise. Many staff are on the front lines in the tripartite mission of the University and can see how their work contributes to the success of the institution. Their sense of common purpose with the institution and their colleagues is as strong as that of the faculty, if not stronger.

Trust and respect are essential elements of success in managing the complex demands placed on University staff. Many universities, including the University of Kentucky, depend upon decentralized administrative and business operations to support the University mission. This requires staff to coordinate their work both vertically and horizontally. Academic and fiscal calendars set rigid timelines and require that work be completed at pace. As work flows from one office to the next and from one staff member to another, trust and respect are key ingredients to ensure that workflow is timely, accurate, and advances the operation of the University. It is encouraging that these two response groups rate highly and are an indicator of the high quality of staff in the College.

Staff scores were lowest for equitable rewards and access to opportunities. This mirrored faculty response scores, which were also lower. Lower scores in these response groups could reflect both short-term COVID impacts, which are similar to those described for faculty earlier and long-term structural issues, particularly for staff at universities. The decentralized operations used by large universities spread staff support across the University, locating many staff with the activities or operations they support. This staffing approach does not create robust career progression ladders that allow for professional advancement. More normally, if a staff member seeks to advance, they must usually move to another unit within the University. This may increase compensation for the staff member and expand their skill and experience, but it also creates an experience and knowledge deficit in the unit the staff member leaves. This is a significant operational inefficiency in the decentralized staffing model and forces many staff to make difficult professional (and sometimes personal) choices simply to pursue career progression.

Narrative comments from staff respondents indicate a perception of inferior class status compared to faculty (Appendix B). Unfortunately, perception is reality in this case. Historical precedent affords governance rights within the University to faculty in a way that does not exist for staff. This stands in contrast to the fact that the agile administration of the University is more dependent than ever on specialized and substantial support from staff. Aggravating the situation is a weak or absent career progression ladder that recognizes the professional development and professional accomplishment of staff and enables them to be increasingly effective in supporting the University's mission.

Undergraduate Student Responses. Overall, response scores from undergraduate students were similar to or lower than scores for faculty and staff respondents. Undergraduate student scores were statistically lower than scores of faculty members for respect for individual attributes, sense of belonging, and common purpose response groups.

The highest response scores for undergraduate students were for trust, respect, and recognition of individual attributes. The lowest scores for undergraduates were for cultural competence and a sense of belonging. Specifically, undergraduate students responded with a lower level of agreement that they are valued, recognized, and cared about in the department. They feel they are less connected to the department, have fewer opportunities to contribute to the department environment, and feel less involved as an integral part of the department.

As a group of respondents, undergraduate student respondents are distinguished by the fact that they are in their formative years as people and professionals. They are coping with the demands of rigorous engineering coursework, and some are facing academic adversity for the first time. Their accumulated experience is smallest among the groups surveyed, and their sense of common purpose may not be fully developed. An understanding of and attachment to the discipline is still tentative for some, and their sense of belonging to the profession and possibly to the University is still developing.

Narrative comments brought forward several notable concerns that suggest a need for near-term action.

First, despite messaging campaigns from the University, students indicate that they do not know how to report specific concerns about their peers, their instructors, or the administration to the University (Appendix B). Some responses indicate that whereas students know about reporting mechanisms, they do not necessarily trust that reporting will lead to action. This is frustrating to students because they feel they do not have a voice in shaping the academic environment, or worse, that their voice is being deliberately suppressed.

While there has been at least one recent high-profile instance of student complaints being ignored or suppressed, this is not the policy of the University. In fact, student input related to protecting the interests of diverse students has led to considerable action and considerable investment by the University in resources for financial aid, counseling, student organizations, and social justice research.

The situation can be different for input that results in corrective or disciplinary action for individual students, staff, or faculty. In these cases, the rights of the respondent to complaints or criticism may be protected by University policy or by law. The subsequent due process that leads to corrective or disciplinary action may not be disclosed publicly. The unfortunate consequence is that complainants or others aware of the complaint may not know that correction or discipline has been applied, giving the appearance that complaints are ignored or suppressed.

Teacher Course Evaluations commonly referred to as TCEs, also appear to be a source of mystery and frustration for some students who do not know what is done with the information collected (Appendix B). While it is the policy of the College of Engineering for Chairs to review TCE feedback with their faculty, and TCE data are to inform the biannual performance evaluations, merit increase recommendations, and promotion and tenure decisions, it is not clear that these policies are uniformly enforced. Some faculty are diligent in responding and reacting to TCE input, but there is also evidence that others are not. This is an area where a recommitment to existing policy should be examined.

Second, women students, whose representation among both students and faculty remains in the low 20 percent range, continue to face headwinds in the engineering environment. Narrative comments show that women face both implicit and, more frustratingly, instances of explicit bias in the learning environment (Appendix B). Explicit bias is centered on instances of derogatory comments directed at women students from both faculty instructors and their male student peers. Additionally, like other historically marginalized underrepresented groups, when women students are asked to respond or participate as individuals in the academic setting, they often feel that they are representing their entire gender and that their performance will be used to judge all women engineering students.

A bright spot here is the role of affinity groups (Appendix B). The Society for Women Engineers has been one of the strongest and largest student affinity groups in the College for many years. It creates community for a minority population in the College and is an essential source of support through a curriculum that is rigorous without the headwinds of persistent gender bias. Affinity groups for other minority populations in the College exist but need stronger participation and stronger resourcing to provide the community and support needed to assure success.

Third, narrative comments indicate that Diversity, Equity, and Inclusion fatigue has developed for some students (Appendix B). This seems to be particularly true for majority men students who do not see their place in the articulation of DE&I planning. Allowing this circumstance to persist is fundamentally contrary to the central objectives of Equity and Inclusion. It represents a collective failure to think and act broadly enough about what these objectives mean in our community. We need to be more intentional in formulating our motivations for Equity and Inclusion and forecasting how the actions that derive from those motivations will manifest in our community. We must also be more intentional about identifying and striving for benefits of Equity and Inclusion work that benefit everyone in the College community.

Finally, COVID and the University's use of virtual instruction and sequestration during the 2020-2021 academic year to protect the health of the University community negatively impacted the social and professional fabric of the College. Students, staff, and faculty were all affected, but students appeared to be particularly so. Social, academic and professional interactions were predominantly virtual and traditional modes of interpersonal engagement disappeared. The loss of opportunities for engagement resulted in the loss of opportunities for community building and the support that comes along with that. During the 2020-2021 academic year, the predominant form of student engagement with the College was through virtual instruction, making a tough curriculum even tougher. The narrative comments from students make clear that the shared experience that "Engineering is a really hard major" is well below what is needed to create a supportive and sustaining academic community. The idea that engineering is an antisocial discipline filled with introverts is inaccurate.

Graduate Student Responses. Graduate student response scores were significantly higher than undergraduate scores for recognition of individual attributes, sense of belonging, equitable reward and recognition, access to opportunity, and common purpose. In many respects, the trends in graduate student responses align more with faculty members than undergraduate students. Graduate students are more confident that their accomplishments are well compensated, and there are opportunities to engage in service and community outreach.

Graduate students have reason to be more secure in themselves professionally. They have attained major professional accomplishment in earning a bachelors degree and have been admitted to the University for graduate studies, where they are

pursuing their passion for science or technology and deepening their understanding and expertise. They can be reasonably assured that their hard work will be rewarded with a career trajectory that will enable them to reach the very top of their chosen field.

Unlike graduate students in other parts of the University, all Engineering Ph.D. students and most MS students have their tuition paid by a fellowship, research, or teaching assistantship, and they earn a stipend that covers living expenses. They normally enjoy close supervision and mentoring by their dissertation advisor, and they can be reasonably assured that they will spend no more than 5 years before earning a Ph.D.

A sense of belonging and cultural competence were the lowest response scores for graduate students. This may reflect the fact that a large fraction of graduate students are international. While many graduate students socialize with and derive support from others from their home countries, it is easy to understand that they may feel that some Americans and the prevailing American culture is not always attuned to their needs and their sense of belonging in the larger University community and beyond may be weaker.

PERCEPTION OF DEPARTMENT CLIMATE BY GENDER IDENTITY

According to the survey, men and women report differences in the climate of the Engineering community. While that is not a surprise, women tend to rate the climate more favorably than men. Specifically, women reported a higher recognition of individual attributes, sense of belonging, access to opportunities, and feeling of common purpose **(Figure 2)**.

Responses to individual items in the survey that were statistically greater for women than men (p < 0.1) were:

- In my job, my opinion matters (p = 0.063)
- There is someone in the department that cares about me as an individual (p = 0.001)
- There is someone in my department who encourages my development (p = 0.003)
- I consider at least one of my co-workers to be a trusted friend (p = 0.000)

These responses are encouraging for women in engineering and suggest that the College demonstrates important aspects of gender inclusion as a community.
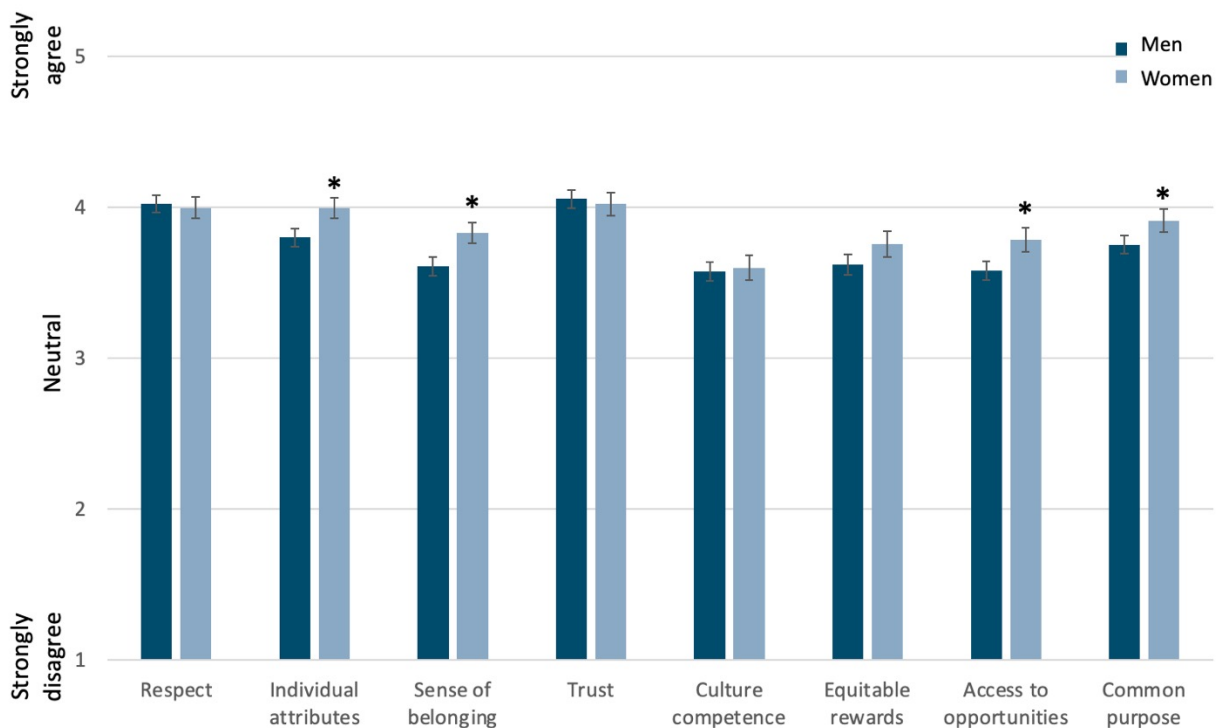

Figure 2. Department climate response for all survey respondents separated by gender identity. The notation * indicates a statistically significant difference (p < 0.05) when across the two populations.

An examination of responses among community subpopulations reveals a more nuanced situation and highlights where work is needed. While there were no significant differences by gender identified by the graduate student population, women faculty members and women staff feel more recognition of individual attributes, a higher sense of belonging, and adequate access to opportunities compared to men faculty and staff groups. However, female faculty showed a statistically lower level of confidence that concerns about discrimination would be handled properly. Female undergraduate students reported less confidence in the department's intolerance towards harassment. In fact, narrative comments from female students indicate intolerance and harassment from male students and intolerance and lack of respect from some male faculty members. Among students, it is possible that these attitudes were developed prior to coming into the College and that not enough is being done within the Engineering curricular and co-curricular experience to remold these attitudes. Among faculty, several factors may be at work. First, some male faculty members are from cultures where patriarchal hierarchy is stronger than it tends to be in American culture, and that may affect their engagement with women in the academic setting in a way that women perceive negatively. Secondly, and more broadly, gender bias against women remains stubbornly persistent in some parts of the Engineering culture. Despite explicit efforts to reshape the working and learning environment through training and example, evidence collected in this survey shows that this bias continues to manifest in both implicit and explicit forms for both students and faculty.

PERCEPTION OF DEPARTMENTAL CLIMATE BY RACE/ETHNIC IDENTITY

Members of different races and ethnicities experience the climate in the College somewhat differently. When compared across all survey respondents, Asian community members reported a higher sense of common purpose compared to White and BIPOC members (Figure 3).
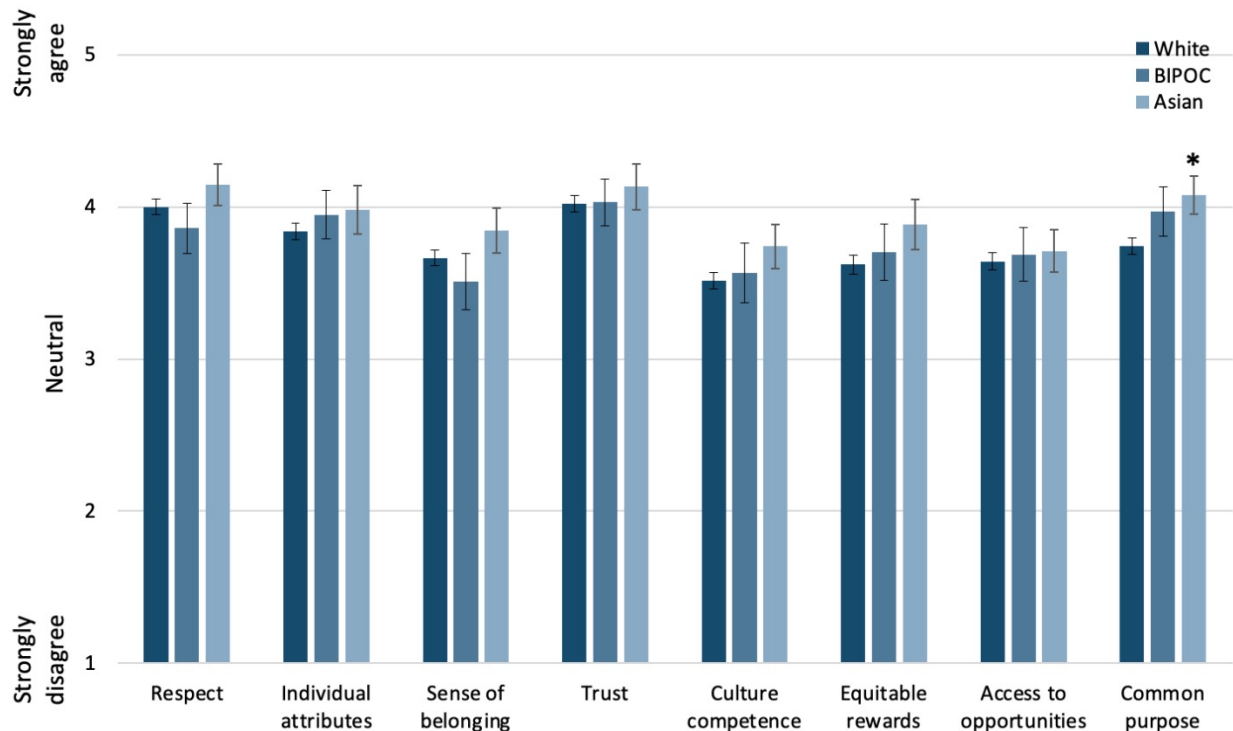

Figure 3. Department climate response for all survey respondents separated by race and ethnicity. The notation * indicates a statistically significant difference (p < 0.05) when compared to White survey respondents.

An examination of responses among community subpopulations shows that there were no significant differences for the faculty member respondents of different races or ethnicities. Due to the small number of Asian and BIPOC staff members, differences across races and ethnicities for staff respondents were statistically inconclusive. Compared to White undergraduate students, Asian undergraduate student responses rated higher for respect, recognition of individual attributes, sense of belonging, trust, cultural competence, and common purpose (Figure 4). The Asian community in the US was significantly impacted by several significant episodes of violence directed at it in 2020. The survey responses must be viewed as encouraging signs of resiliency in the wake of those events.
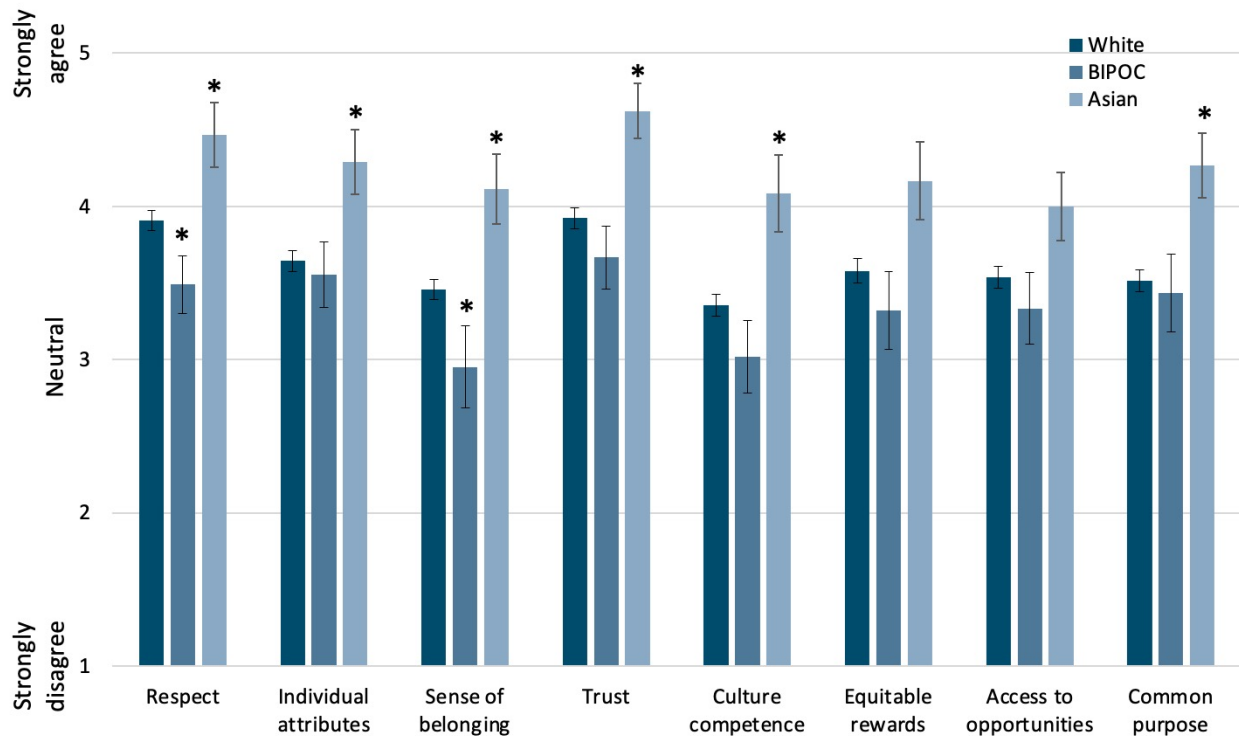
Figure 4. Department climate response for undergraduate survey respondents separated by race and ethnicity. The notation * indicates a statistically significant difference (p < 0.05) when compared to White undergraduate respondents.

BIPOC undergraduate students reported lower levels of respect and sense of belonging when compared to White undergraduate students. In particular, BIPOC students feel less confident that their departments are managing diversity effectively and have trust issues with their co-workers in the department. The University experienced a period of significant unrest in the wake of the George Floyd and Brionna Taylor killings in 2020, and this gave way to criticism that the University was not doing enough to support the success of Black students, staff, and faculty. Considerable work has been done at the intersection of University operations and social justice for the UK community, but survey responses suggest that efforts so far have not resolved accumulated mistrust—at least not among Engineering undergraduate students of color.

In terms of race/ethnicity differences in responses, Asian graduate student responses were statistically higher for a sense of common purpose than White graduate students **(Figure 5)**. Otherwise, responses for Asian graduate students were statistically similar to White students. This appears to be another instance of resiliency in the Asian student community, which was in an unsettled state through the period of violence, boycotts, and rhetoric affecting the Asian and Asian business community in 2020.
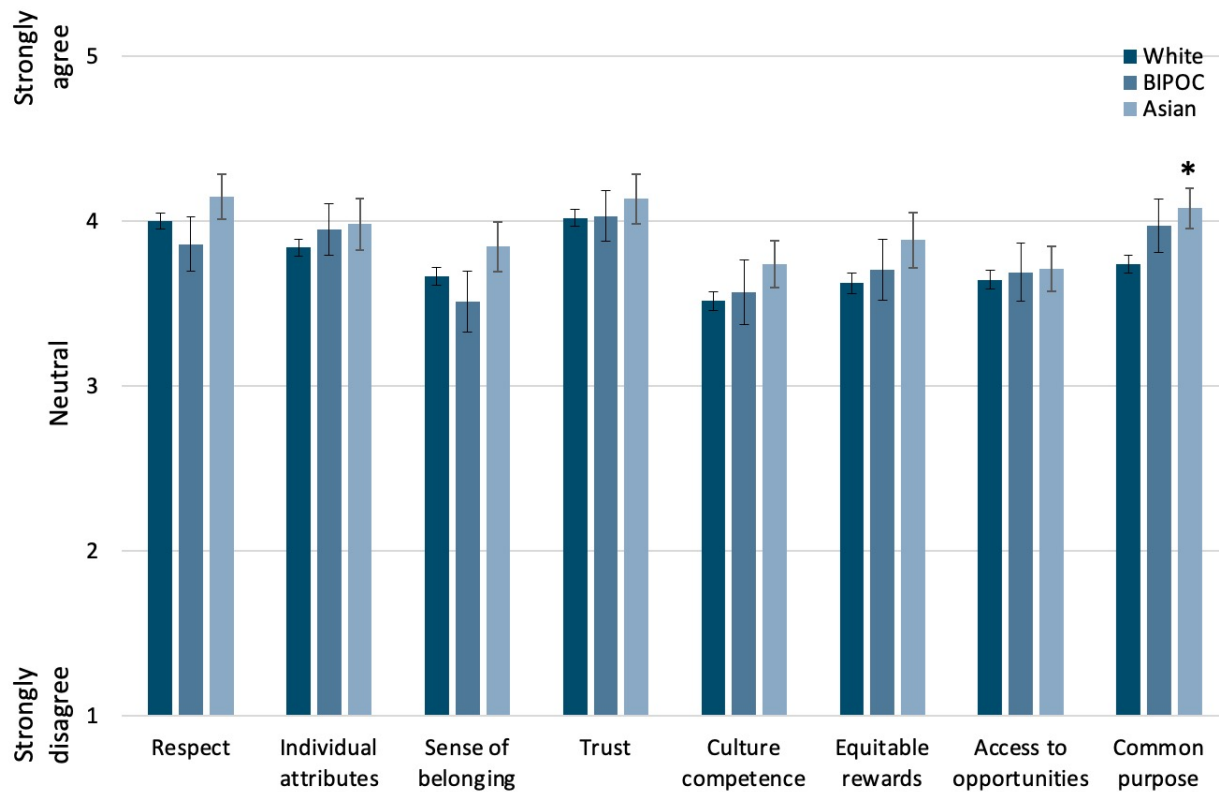
Figure 5. Department climate response for graduate survey respondents separated by race and ethnicity. The notation * indicates a statistically significant difference (p < 0.05) when compared to White graduate respondents.

This points to the importance of providing students with opportunities to build community with other engineering students that share core cultural and social identity values. For instance, student affinity groups such as the National Society for Black Engineers, Society of Women Engineers, Society of Hispanic Professional Engineers, and STEMgiQueers provide opportunities for students to gather and create community with their engineering peers.

IMPACT OF THE POLITICAL CLIMATE ON SAFETY

The Fall of 2020 was a time of unprecedented stress for many due to the daily impacts of COVID-19, racial unrest triggered by the death of George Floyd, as well as the heightened political climate surrounding the presidential election. Survey respondents were asked a series of questions to gauge their level of concern regarding personal safety, family safety, sense of value, and the impact of the political climate on job efficiency. Each item was evaluated on a Likert-scale from 1 (Strongly disagree) to 5 (Strongly agree). Data summarized for faculty, staff, and students can be seen in **Figure 6.**
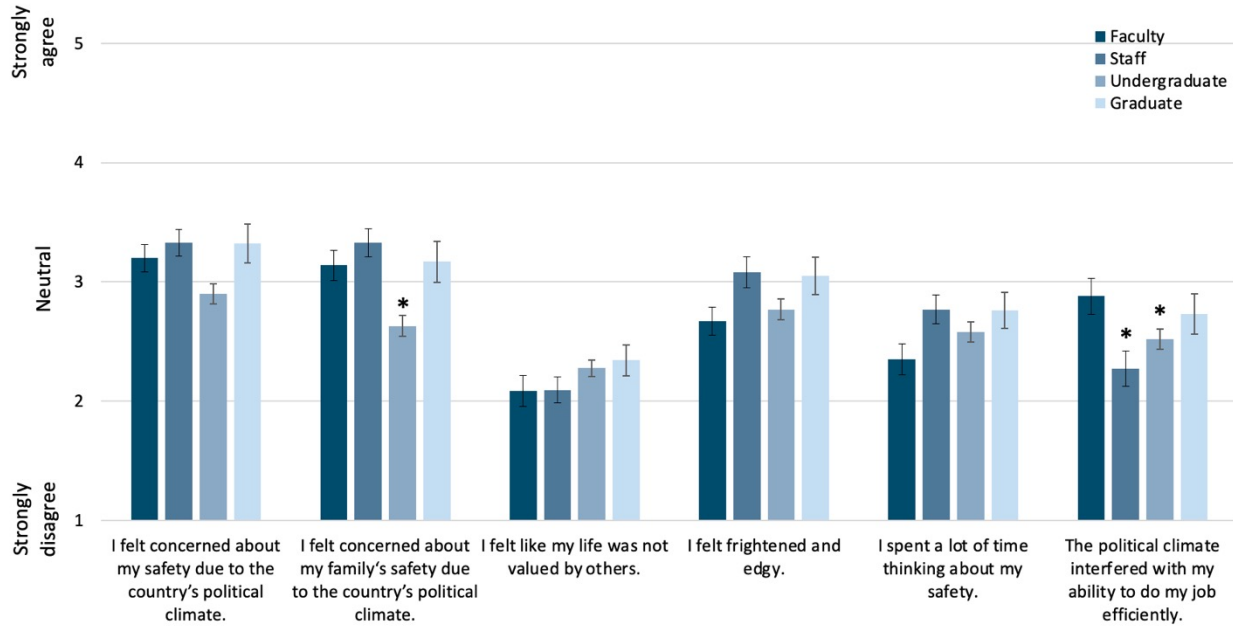

Figure 6. Impact of the political climate on safety for faculty, staff, undergraduate and graduate students. The notation * indicates a statistically significant difference (p < 0.05) when compared to the faculty population. (Note that these questions were asked in the negative so that a "good" response is "disagree" as opposed to earlier questions.)

Respondents across faculty, staff, and student groups expressed similar levels of concern about their individual safety due to the country's political climate, the extent to which they felt like their lives were valued by others, feeling frightened and edgy, and spending a lot of time thinking about individual safety. Of note, undergraduate students indicated they were less concerned about their family's safety due to the country's political climate compared to faculty, staff, and graduate students. Also, staff and undergraduate students reported lower agreement with the statement that the political climate interfered with their ability to do their job efficiently.

PERCEPTIONS OF SAFETY BY GENDER IDENTITY

When examining the global safety data by gender, women faculty, staff, and students were more concerned about their personal safety and the safety of their family due to the country's political climate compared to their male counterparts **(Figure 7)**.
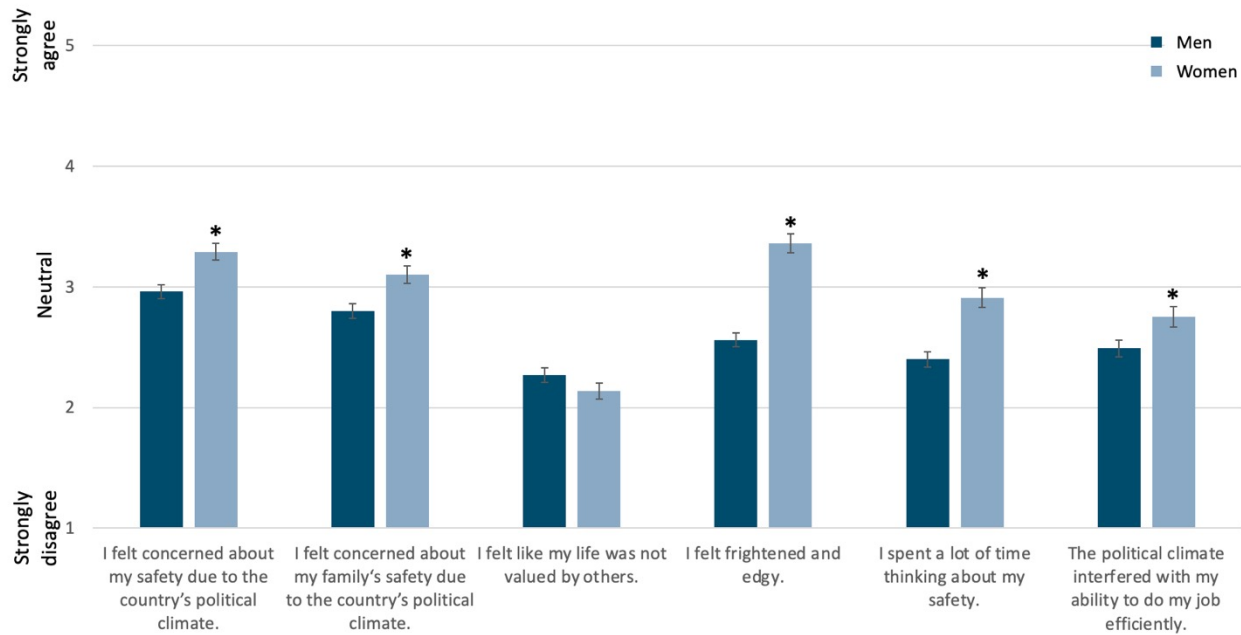

Figure 7. Impact of the political climate on safety for all survey respondents separated by gender identity. The notation * indicates a statistically significant difference (p < 0.05) when across the two populations.**

Women also indicated they felt more frightened and edgy and spent a lot of time thinking about their safety. They also felt that the political climate interfered with their ability to do their job efficiently, more so than men. Looking only at faculty, the same trends were seen between men and women, except that there was no significant difference between the genders when asked if the political climate interfered with their ability to do their job efficiently. The same trends were also seen between men and women undergraduate and graduate students, except there was no significant difference between the genders related to concern about their family's safety due to the political climate. Men and women staff responded similarly across all areas pertaining to global safety, and no significant differences were seen in the response values.

PERCEPTIONS OF SAFETY BY RACE AND ETHNICITY

Examining the data by race and ethnicity, BIPOC and Asian faculty members felt more concerned about their personal safety and the safety of their family when compared to White faculty members **(Figure 8)**.
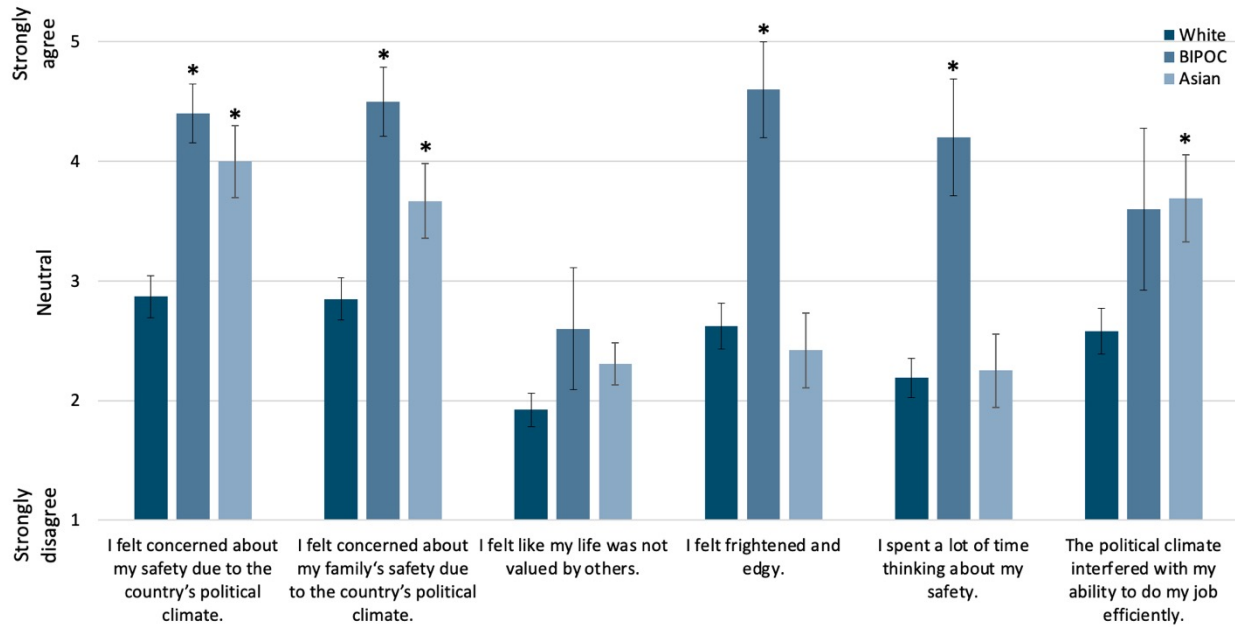

Figure 8. Impact of the political climate on safety for faculty survey respondents separated by race/ethnicity. The notation * indicates a statistically significant difference ($p < 0.05$) when compared to White faculty respondents.

This is likely due to the political and racial unrest across the country at the time the survey responses were collected, as well as the increase in Asian hate crimes across the country. BIPOC faculty members were more likely to feel frightened and edgy and spent a lot of time thinking about their safety. Both BIPOC and Asian faculty members felt that the political climate interfered with their ability to do their job effectively.
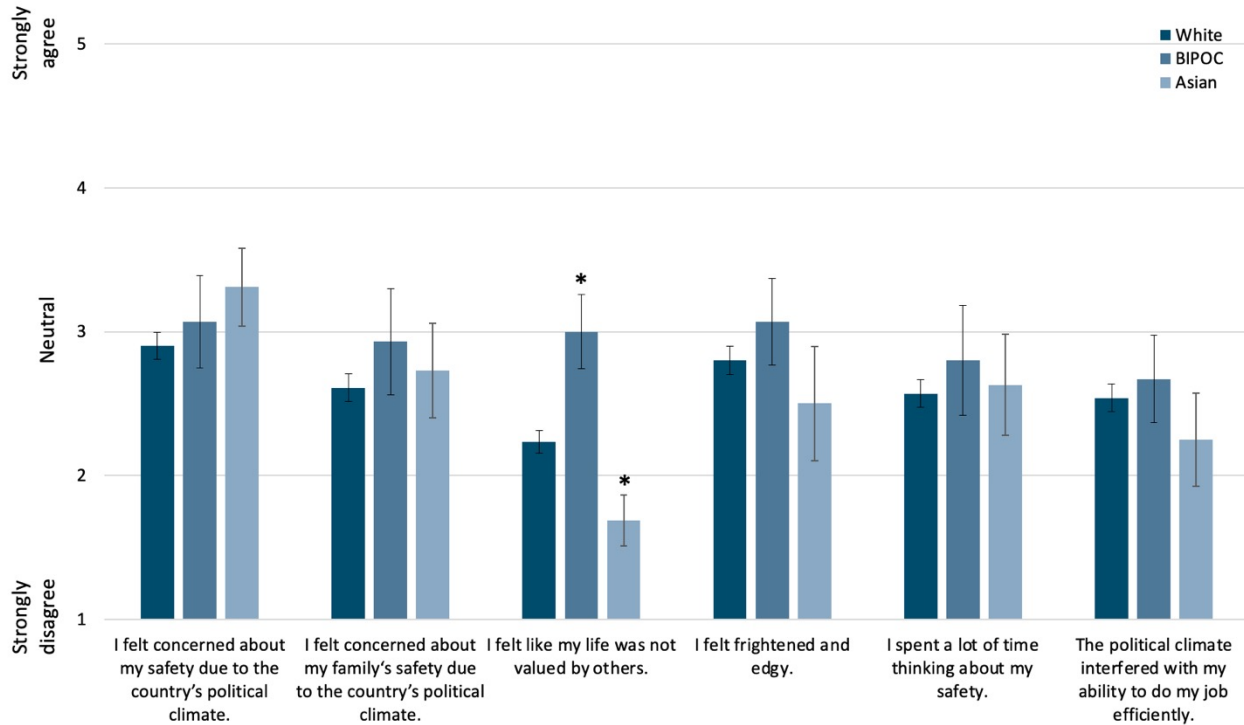
Figure 9. Impact of the political climate on safety for undergraduate survey respondents separated by race/ethnicity. The notation * indicates a statistically significant difference (p < 0.05) when compared to White undergraduate respondents.

Results for undergraduate students as separated by race and ethnicity are shown in Figure 9.

In the undergraduate student population, Asian students had similar responses to White students across all measures, except their response was lower for the statement "I felt like my life was not valued by others." Concerningly, BIPOC undergraduate students had a higher response to this statement, likely due to the political and racial unrest throughout the country at the time of the survey.
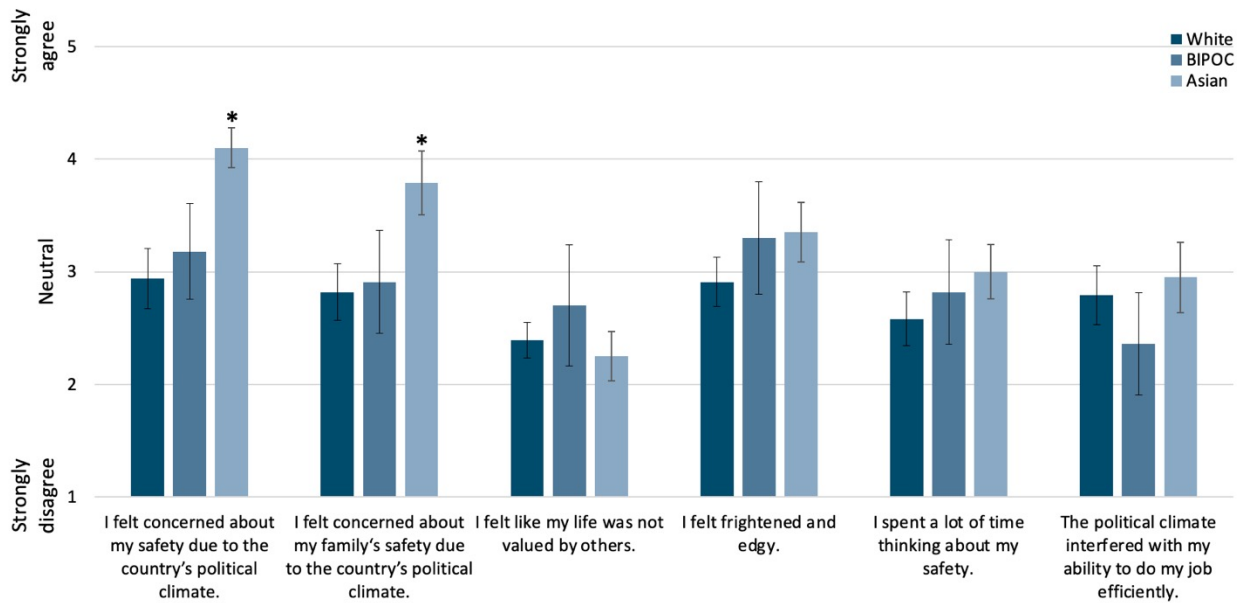
Figure 10. Impact of the political climate on safety for graduate survey respondents separated by race/ethnicity. The notation * indicates a statistically significant difference (p < 0.05) when compared to White graduate respondents.

In looking at the impact of the political climate on safety for graduate students, there were no differences across the White and BIPOC student populations (Figure 10). This is likely due to the high proportion of international students within the graduate student population. International students were not likely to be as directly impacted by the racial and political unrest throughout the country at this time. Asian graduate students were more concerned about their safety and the safety of their families. This could be due to the increase in Asian hate crimes across the United States after the start of the COVID-19 pandemic.

Results from this survey highlight the importance of recognizing the impact of the country's political and racial climate on the ability of our community members to function at their highest level.

CONCLUSIONS AND RECOMMENDATIONS

- Across the College, there is a good understanding of what Diversity means in terms of the demographics of our various populations. Understanding Equity and Inclusion and how those factors shape climate and culture appears weaker. Recurring opportunities for professional development in the areas of Equity and Inclusion that directly affect the College climate and culture should be made available for faculty, staff, and students. They should be made mandatory for College and Department administrators.

- The social and professional network that conveys support and opportunity among faculty members must be rehabilitated. Attention must be given to getting pre-tenure faculty back on track towards promotion where that is needed, and mentoring and networking activities need to be restored if not strengthened beyond pre-pandemic levels. A recommitment to communication through the chain of command needs to be made to address comments related to the lack of transparency in decision-making.

- Survey responses from staff indicate that they feel inferior to faculty and that opportunities for career progression are limited. These are both very real issues. Staff are now included in College faculty and staff meetings, but opportunities for staff participation in the shared governance model must be more clearly defined. A benchmarking exercise examining practices at other academic and non-academic institutions to yield new ideas and approaches for staff participation in governance and staff career progression is needed.

- Students, both undergraduate and graduate, understand that there are reporting mechanisms for them to express concerns about peers, instructors, and administration, but they do not know how to access them, nor do they trust that their reports will lead to action. Reporting structures should be examined to determine accessibility by students, how students are educated on these reporting structures should be examined to determine their effectiveness, and how feedback and loop-closing happens with complainants should be examined to determine if it is effective.

- DE&I fatigue has set in for some individuals in the College community, including students, staff, and faculty, and some majority men are expressing frustration over marginalization. These factors must be taken in by DE&I leadership at the College and University levels and used to help shape our internal training, education, and awareness efforts.

- Care and intentionality must be brought to our engagement with international students, staff, and faculty in the College. The national political tenor and rising geopolitical tensions contribute to anxiety and diminish the sense of belonging for some of our international community members. Special efforts must be made to help them connect with the supportive networks they need for academic and professional success.

- Gender bias remains stubbornly persistent in parts of the Engineering culture, and efforts to raise awareness and lower the tolerance for both implicit and explicit instances of gender bias are needed. This appears to be especially relevant to our undergraduate academic experience.

- Recently, the University commissioned 17 work groups and invested considerable material resources to support Diversity, Equity, and Inclusion across campus. The College should ensure that it is connected to these efforts to ensure that our community benefits fully from its activities. A review of these efforts by the College DE&I committee is a logical first step in this regard.

- The national political climate affects perceptions related to free speech and personal safety. The College should reinforce the University's stance on freedom of speech as well as its limits. Similarly, the College needs to affirm with its community members that with the bounds set by law and University Rules, no aspect of personal politics is a condition that restricts one from full participation in the College or any of the activities it supports.

APPENDIX A. ITEMS FROM THE DIVERSITY ENGAGEMENT SURVEY

Engagement and Inclusion Factor	Item Description
Common Purpose	• I feel that my work or studies contribute to the mission of my department. • I feel connected to the vision, mission, and values of my department.
Access to Opportunity	• This last year, I have had opportunities in my job to develop professionally. • There is someone in my department who encourages my development.
Equitable Reward and Recognition	• I receive recognition and praise for my good work similar to others who do good work in my department. • In my department, I am confident that my accomplishments are compensated similar to others who have achieved their goals.
Cultural Competence	• In my department, I have opportunities to work successfully in settings with diverse colleagues. • I believe my department manages diversity effectively. • In my department, I receive support for working with diverse groups and working in cross-cultural situations. • In my department, there are opportunities for me to engage in service and community outreach.
Trust	• I trust my department to be fair to all employees and students. • If I raised a concern about discrimination, I am confident that my department would do what is right. • I believe that in my department harassment is not tolerated.
Sense of Belonging	• At work/school, my opinions matter. • I consider at least one of my co-workers to be a trusted friend. • I feel that I am an integral part of my department.
Respect	• The leadership of my department is committed to treating people respectfully. • In my department, I experience respect among individuals and groups with various cultural differences. • I believe that my department reflects a culture of civility.

APPENDIX B. SUMMARY OF SURVEY NARRATIVE RESPONSES

Faculty

- Regarding the suggestion of policies, procedures, or approaches that would help improve the sense of community, several faculty members raised the issues about the lack of transparency. Quoted comments from faculty members:

    "Increased transparency in decision-making, personal reflection, and discussion regarding implicit biases and microaggressions"

    "I am a big proponent of transparency. I believe that we are better off when everyone knows what decisions are being made and why. It is easier to feel like part of a healthy community when it doesn't feel like things are being hidden."

    "Transparency. When you are honest and open with people, they tend to trust you. When you are silent, others make assumptions many of which are untrue."

- Some comments expressed the source of stressors being the national and international politics.

    "There is a fear that stating one's belief could result in negative consequences in regards to employment and promotion decisions."

Staff

- Several staff members raised concerns about classism in the workplace.

    "The top-down hierarchy. Lack of communication and inclusiveness for staff."

    "If you have an idea in my department that is not what the boss likes, then your idea is killed…"

    "If the supervisors are in a bad mood, we all have a bad day. Our environment is controlled…"

    "Employees should be able to evaluate supervisors. We have no voice…"

    "Classism from faculty to staff is an issue in my department…"

- Some of the comments show concerns about unclear promotion and rewards, and lack of opportunities.

    "Clear path for staff advancement, promotions, raises/compensation within the College or University as a whole…"

    "Having more chances to postdoctoral scholars since they have already been trained well. "

Students

- In general, frustration about not being able to attend social activities and lack of communication with classmates and professors during the pandemic.

- Mental health

  "…I lost one friend this summer to this program, and it plunged him so deep into a mental state that he took his own life. He told me that 2 months before. Being here makes me wonder what it really costs and if it's worth it…."

  "I talked to a professor in trust about my mental health and they made fun of me..."

- Students experienced a difficult environment for female engineers. (Interestingly, the female responses from the quantitative survey do not show these.)

  "…there is a blatant disregard for the effort and time that women put into becoming engineers. It is no easier for them to walk the same path as males… due to the stereotypes that persist… sexism exists in our communities…"

  "… isolation/different treatment by my peers for being a female."

  "…When I make a mistake, I feel like I am letting down female engineers everywhere…I have had male classmates talk to me like I'm stupid, or just straight up ignore me…"

  "…I really want to see more female faculty and staff. I personally don't have any female role models for my career path…"

  "…One of the boys in the group repeatedly made sexist comments about women, and at one point brought up how ugly women from a specific country were… nobody in the room stood up to him or told him this was not okay…"

- Teaching. There are some voices about the quality of teaching regarding the accessibility of professors, professors' responsibility, and unorganized and outdated lecture materials, etc. Students also suggested College be more serious about the teaching evaluation reviews and act accordingly.

  "Ensure that professors have a roadmap for their semester and aren't just throwing projects together last second so students don't have to guess what their next move is…"

  "…require teachers to teach and put effort into their material instead of using the same thing from 20 years ago."

- There are some opinions that expressed hostility to diversity.

    "…let the students, minorities, and everyone be known and recognized by their individual character and achievements and have less focus on the culture or race."

    "…I think that we need to not focus on culture or race, whether you're white, black, Asian, Mexican, American, Indian, Chinese, etc. nobody needs to have an advantage getting into College…"

    "Stop looking at students based on the "diversity" that they bring to the program. Start looking at them based on their overall character and merit…"

    "…when the constant narrative of diversity is pushed, that only divides the community by making everyone look at each other based on things they have no control over (like their skin color and sex)."

Some suggestions to improve DEI – From all groups

"I believe a required diversity and inclusion training for all faculty, staff, and students would contribute to a sense of respect between individuals." – Undergraduate Student

"Freshman and sophomore assigned group work could be tailored to ensure as many teams as possible have mixtures of gender and ethnicity." – Undergraduate Student

"Giving students statistics on women and minorities in engineering early on." – Undergraduate Student

"It would be beneficial for the College to have male individuals to help advocate for women in engineering so that it's not constantly on the women in the College of engineering to advocate for themselves." – Undergraduate Student

"…providing support to clubs and programs that help provide a community like those in SWE, SHPE, and NSBE is a great way to start improving the culture overall…" – Undergraduate Student

"The bottom-up leadership approach to respect different opinions and views to promote diversity and global scholarship." - faculty

"More awareness of rights for incoming international students." – Graduate Student