

BIPOC Retention: Strategies Promoting Undergraduate Retention (SPUR)

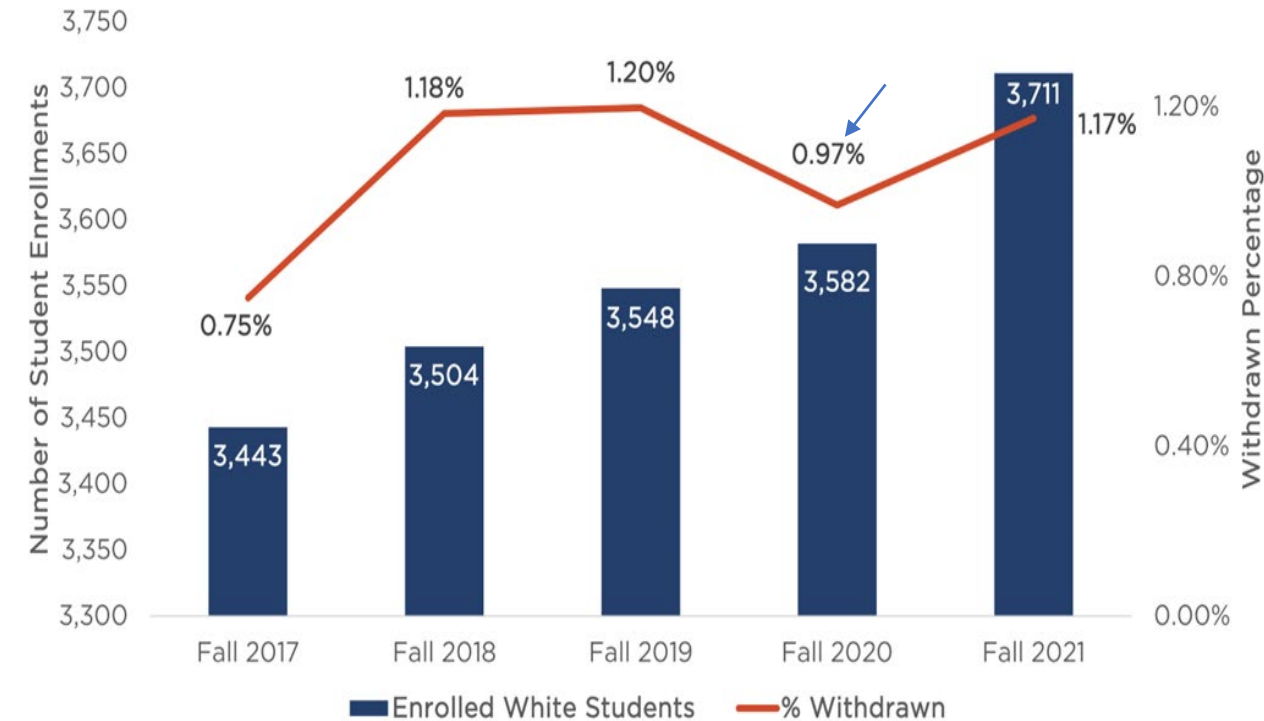
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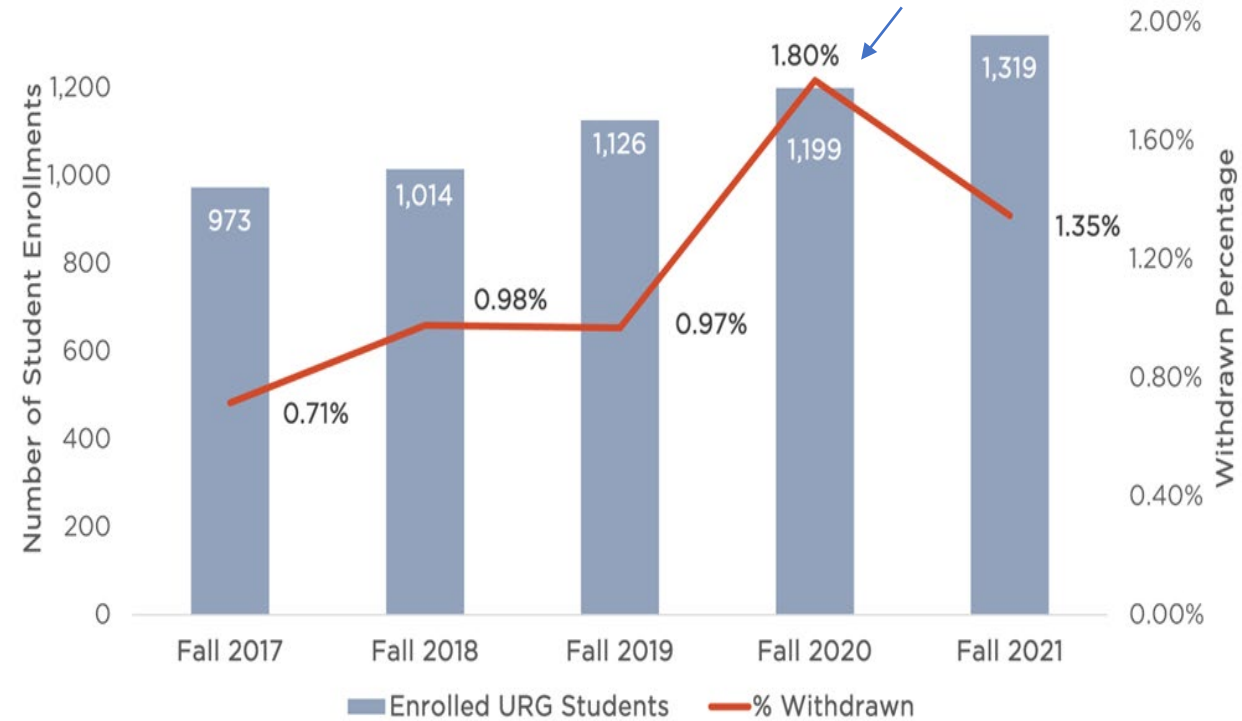
SPUR Initiative

Strategies Promoting Undergraduate Retention

Percentage of Withdrawn Undergraduate Students compared to Enrollments, White Students



Percentage of Withdrawn Undergraduate Students compared to Enrollments, Racial/Ethnic Marginalized Populations



SPUR Initiative


Strategies Promoting Undergraduate Retention

Motivation: The *SPUR* Initiative started when institutional research demonstrated the disparity in withdraw rates during COVID between BIPOC (black, indigenous, peoples of color) and White students. Mines, in partnership with Newmont Corporation, wanted to dig deeper to understand what factors are truly driving the reasons behind these data.

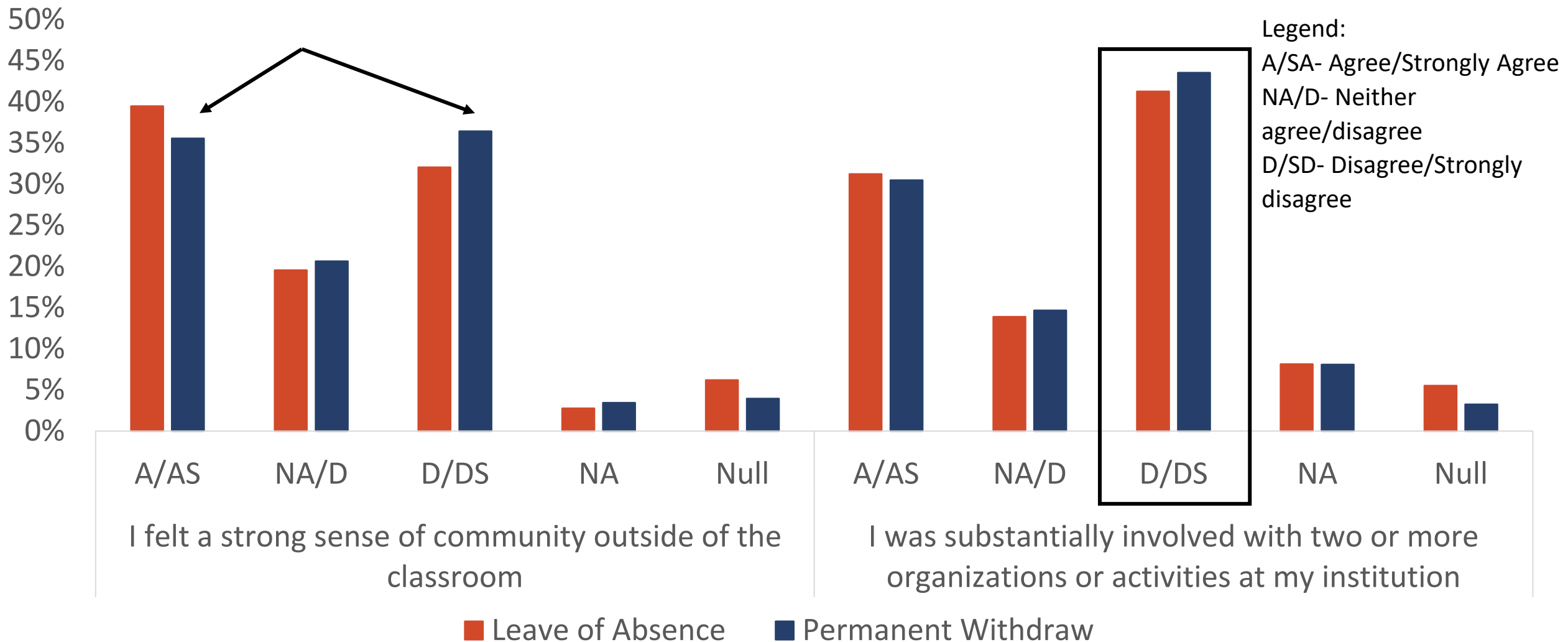
Vision: The *SPUR* Initiative's goal is to understand the reasons affecting student retention at Mines, focusing on those reasons causing challenges and/or barriers to BIPOC students. The results of the initiative can help Mines with future initiatives and programming that can create a campus climate where students feel less vulnerability to withdrawing.

Impact: The *SPUR* Initiative can have the broader impact of helping other institutions with similar retention challenges. It can advise on possible factors impacting student retention, programming and initiatives focused on BIPOC student retention and critical points where students are most vulnerable to withdrawing.

Project Objectives

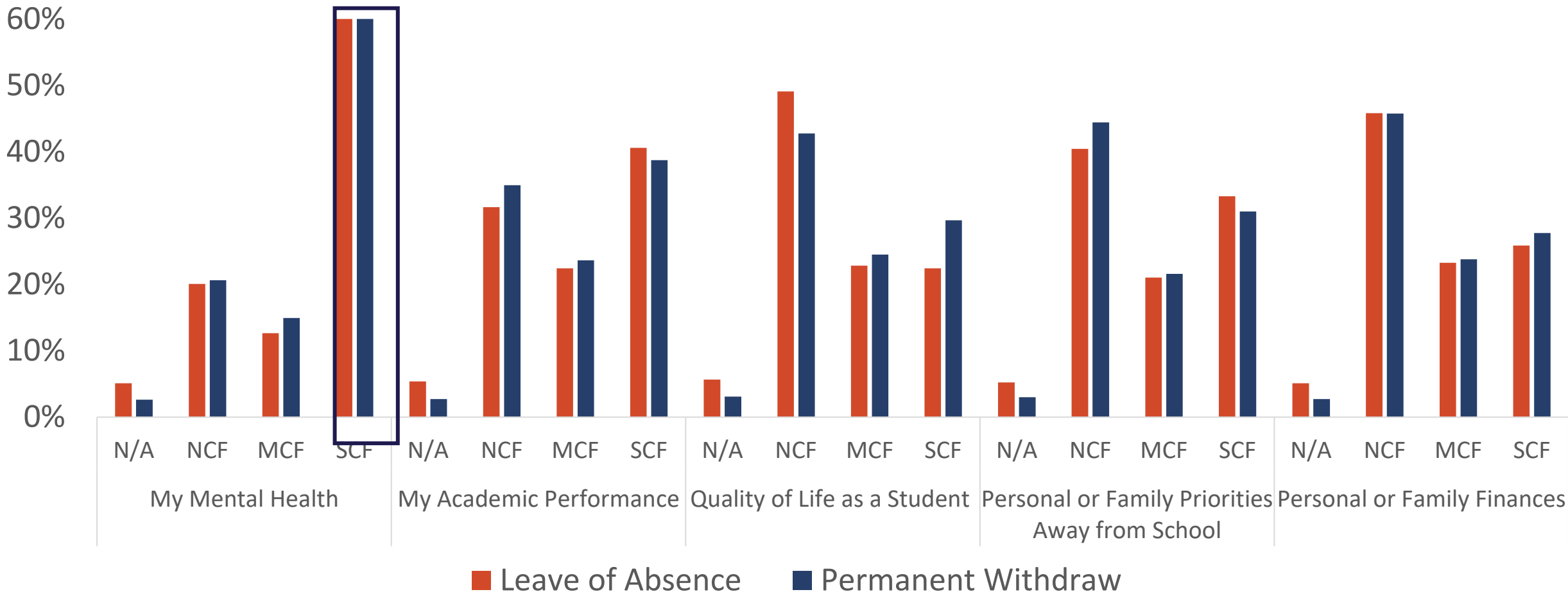
- Collect institutional data on factors related to retention
 - Admissions/enrollment data
 - Withdraw data
 - Counseling Center activity
- 
- Collect data about the student experience before, during and after attending Mines
 - Conversations with the Office of Student Life
 - Student experiences while at Mines → sense of belonging, impostor syndrome, stereotype threat?
 - How has Mines' programming, structures or academics impacted students (positive and negative)?
 - Identify critical transition points and factors impacting student retention based on data
 - Co-formulate strategies with leadership to address transition points and factors while leveraging Mines' existing structures and programming to increase student retention long-term, and disseminate information for broader STEM community

Withdraw Form *Level of Agreement* Statements Data



NCF- Not a Contributing Factor
MCF- Minor Contributing Factor
SCF- Strong Contributing Factor
N/A- Not Applicable

Withdraw Forms *Leaving Contributing Factors* Statement Data



Research Questions

- What are the reasons and experiences students have that influence them to withdraw or consider withdrawing from Mines?
 - What are the similarities and differences between different demographic groups and their reasons to withdraw?
- At what point in their academic career at Mines do students withdraw or consider withdrawing?
- How are sense of belonging and mental health associated with Mines students' decision to withdraw?
- How has COVID influenced withdraw trends between 2020 and 2022?

Data Collection

- Survey was open February 2023 through March 2023
- Survey asks open-ended questions about withdraw experiences, Likert-style questions, and demographics
- Survey questions informed by Mines counseling center, Multicultural Engineering Program, Diversity Inclusion & Access team and survey design experts

- LIKERT-STYLE ITEMS
 - 1) mental health (*13 items*)
 - 2) Sense of belonging/community (*6 items*)
 - 3) feelings about the institution of Mines (*5 items*)
 - 4) students' feelings about STEM (*4 items*)

Participant Demographics

Population	Count	Percentage
BIPOC	17	50%
Prefer Not to Respond (Race/Ethnicity)	2	6%
White	15	44%
Total	34 respondents	100%

Participant Demographics

Population	Count	Percentage
BIPOC	17	50%
Prefer Not to Respond (Race/Ethnicity)	2	6%
White	15	44%

Female	14	41%
Gender Fluid	5	15%
Male	13	38%
Prefer Not to Respond (Gender)	2	6%

Current Students	6	18%
Withdrawn Students	28	82%

Total	34 respondents	100%
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What are the reasons and experiences students have that influence them to withdraw or consider withdrawing from Mines?

Theme	Theme Description	Count, n=34	Quotes
Academic Reasons 35 incidents	Students describe issues with their instructors, obtaining help, and having expectations and preparations that didn't match what they needed for Mines	30 cases 	<p>"When I reached out to my professors directly, many of them did not care or offer to work with me to get through their class while I was struggling."</p> <p>"I had several experiences with professors who were at best apathetic to student's concerns and question, at worst, erratic and condescending."</p> <p>"First, I was not mentally prepared to focus as much time and energy as was necessary to do well in my classes."</p>
Mental Health 26 incidents	Students describe experiencing general or specific mental health symptoms	26 cases 	<p>"I have chronic depression. This pushed me over the edge, to the point where I was missing school because I could not feed myself let alone take care of myself."</p> <p>"Fell behind in my classes and life in general amidst mental health crisis involving ADHD medication and side effects, anxiety, and depression"</p> <p>"I started feeling depressed and developed panic attacks. The negative atmosphere on campus didn't help; either. With so many other students experiencing mental health issues, it was like an echo chamber for depression".</p>

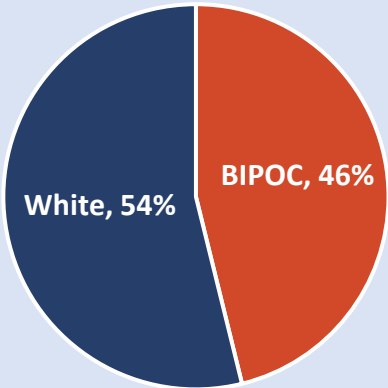
Incidents= unique qualitative data passages
Cases= unique individuals

What are the reasons and experiences students have that influence them to withdraw or consider withdrawing from Mines?

Theme	Theme Description	Count, n=34	Quotes						
Institutional Policies & Structures 21 incidents	Students describe different issues they experienced with various elements of the institution such as cost, dorm practices and how Mines deals with mental health	16 cases <table><tr><th>Race</th><th>Percentage</th></tr><tr><td>White</td><td>75%</td></tr><tr><td>BIPOC</td><td>25%</td></tr></table>	Race	Percentage	White	75%	BIPOC	25%	<p>“The second was the lack of financial aid for minority students on campus. Having to work part time and go to school meant I could only handle about 4 classes a semester- it was going to take me longer to graduate and cost more money in the long run because of the extended time.”</p> <p>"I also had trouble with my roommate. It would have been helpful if I were able to switch rooms, but that was not possible because all the dorms were full."</p> <p>“Clear disregard for student mental health on the part of administration”</p>
Race	Percentage								
White	75%								
BIPOC	25%								
Sense of Belonging 19 incidents	Students describe negative aspects of institutional culture that make them feel unsupported and uncared for	17 cases <table><tr><th>Race</th><th>Percentage</th></tr><tr><td>White</td><td>71%</td></tr><tr><td>BIPOC</td><td>29%</td></tr></table>	Race	Percentage	White	71%	BIPOC	29%	<p>“As a minority of multiple communities, not a lot of people understood me. Being disabled also made my experience vastly more difficult and I had to learn how to advocate for myself with debilitating disabilities. This all made my studies exponentially harder.”</p> <p>“In addition to all of this, I've had difficulties with [multiple campus departments], etc. where I had to fight so hard to be heard or empathized with in any compassion. ”</p>
Race	Percentage								
White	71%								
BIPOC	29%								

Incidents= unique qualitative data passages Cases= unique individuals

What are the reasons and experiences students have that influence them to withdraw or consider withdrawing from Mines?

Theme	Theme Description	Count, n=34	Quotes						
Social Reasons 14 incidents	Students describe social experiences with peers that made them feel harassed, rejected and caused them to lack a social life	<p>13 cases</p>  <table border="1"><thead><tr><th>Race/Ethnicity</th><th>Percentage</th></tr></thead><tbody><tr><td>White</td><td>54%</td></tr><tr><td>BIPOC</td><td>46%</td></tr></tbody></table>	Race/Ethnicity	Percentage	White	54%	BIPOC	46%	<p>“It was also difficult being a woman at Mines because I faced sexism from fellow male classmates and some belittlement for being a woman at an engineering school.”</p> <p>“...inability to cope with the massive amounts of entitlement from other students”</p> <p>“...being rejected from all the places I applied (student council, e days, research opportunities)”</p> <p>“I think just struggling to find a group of people I really connected with was my biggest issue. After I had had friend groups that didn't really work out with me it felt like there wasn't really anyone else in my year at mines that I wanted to make college memories with.”</p> <p>“Extreme social isolation from being denied from the sororities and people not engaging with me at social clubs”</p>
Race/Ethnicity	Percentage								
White	54%								
BIPOC	46%								

Incidents= unique qualitative data passages
Cases= unique individuals

Most Coded Reasons for Withdraw by Race/Ethnicity

BIPOC Students

Reason	Count
Academic Reasons	13
Mental Health	10
Social Reasons	6
Outside Factors	5
Sense of Belonging	5
Institutional Policies & Structures	4
COVID	3

White Students

Reason	Count
Academic Reasons	17
Mental Health	16
Sense of Belonging	12
Institutional Policies & Structures	12
Social Reasons	7
Outside Factors	5
COVID	4

Most Coded Reasons for Withdraw by Race/Ethnicity

BIPOC Students

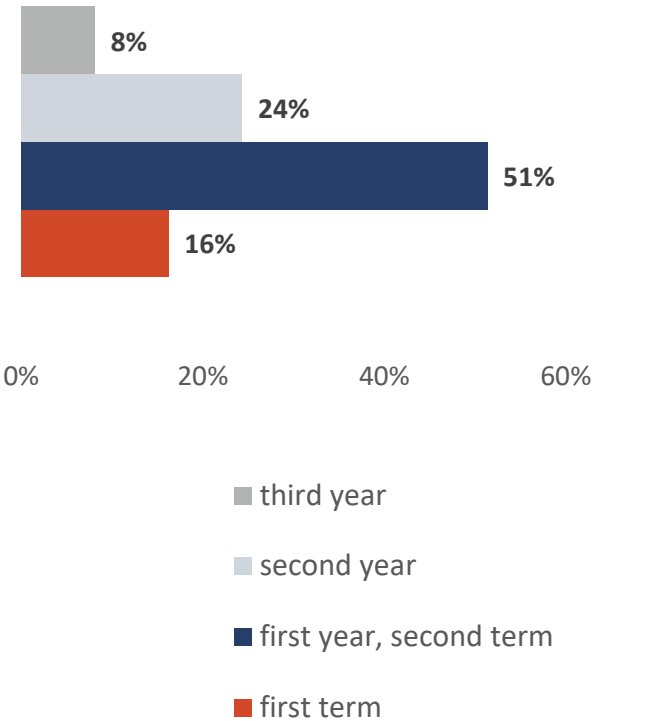
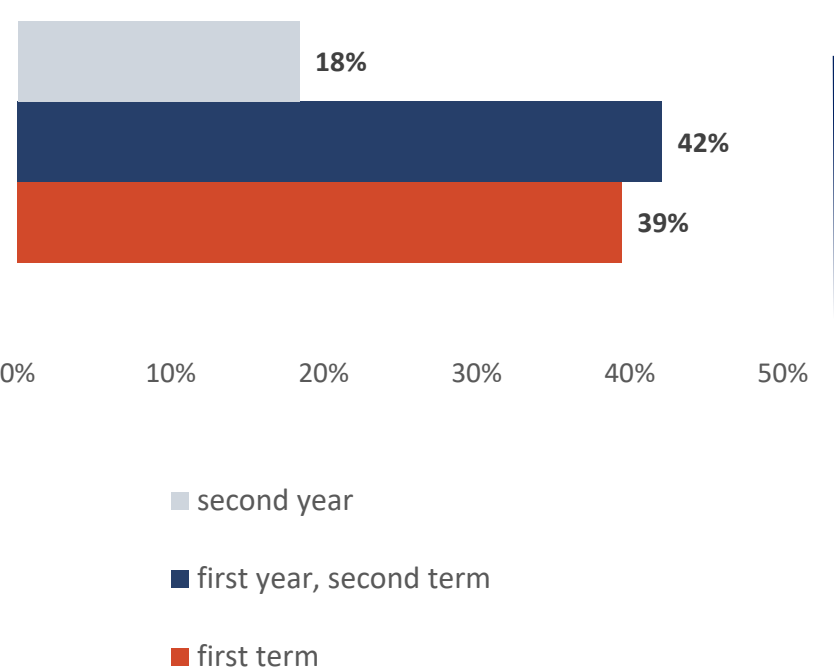
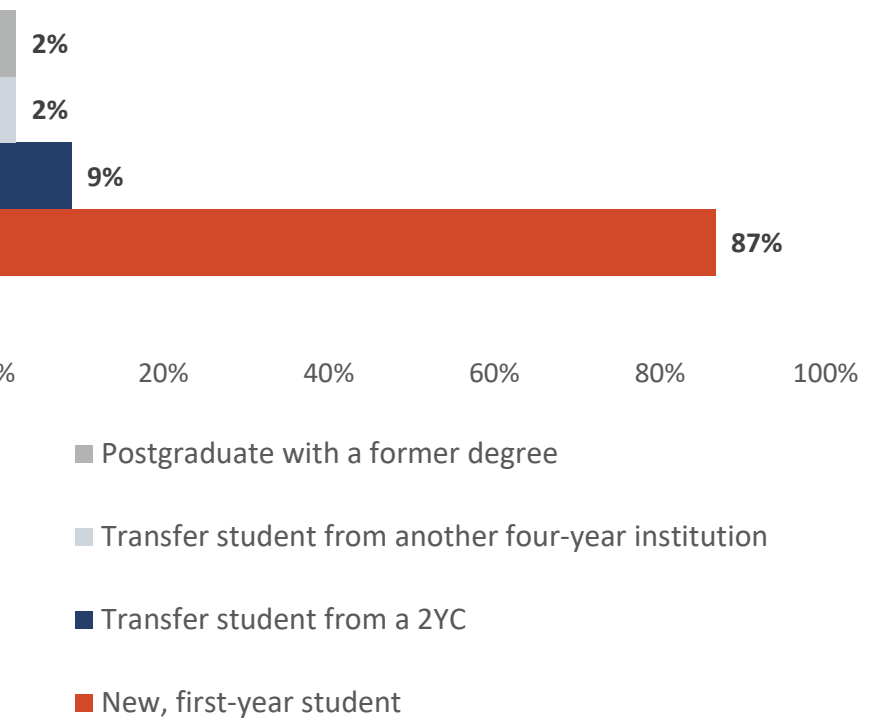
Reason	Count
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Mental Health	10
Social Reasons	6
Outside Factors	5
Sense of Belonging	5
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White Students

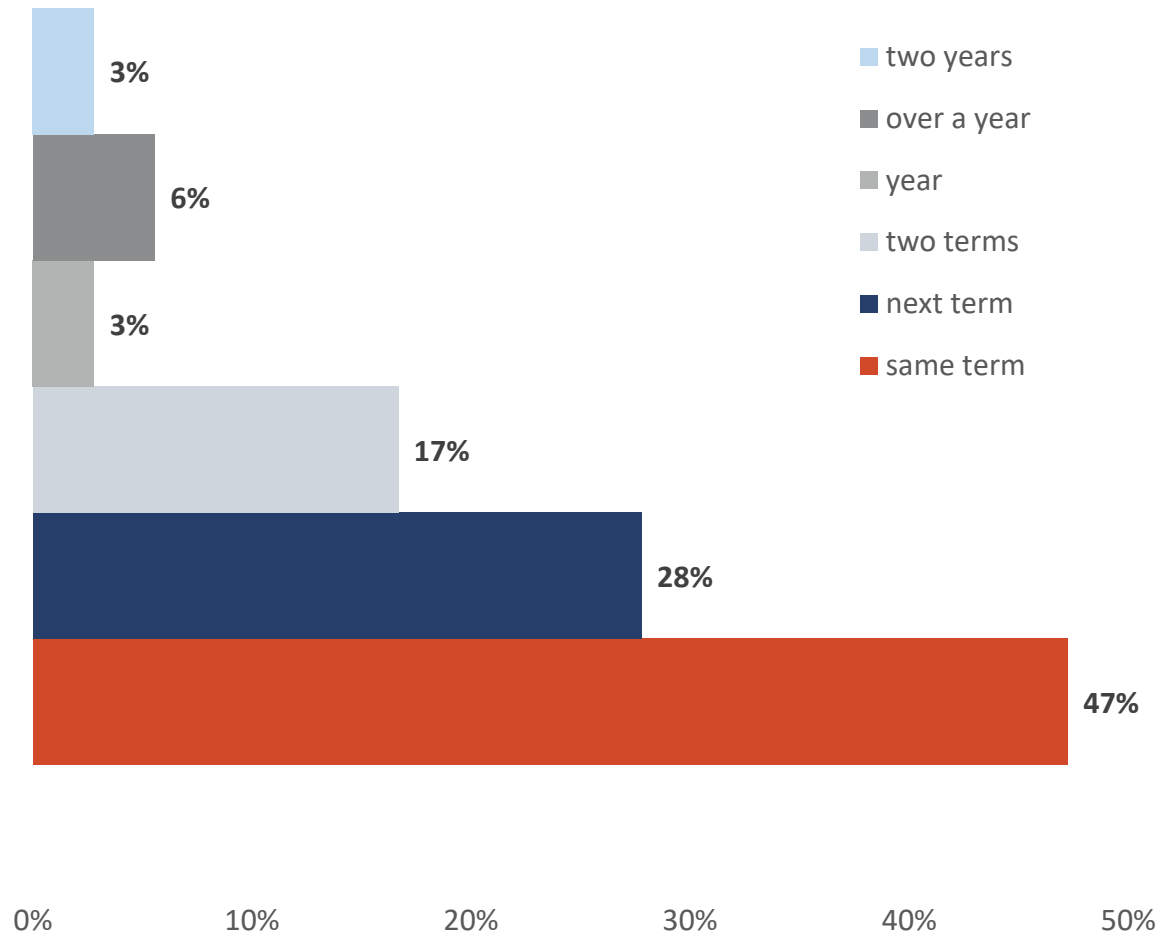
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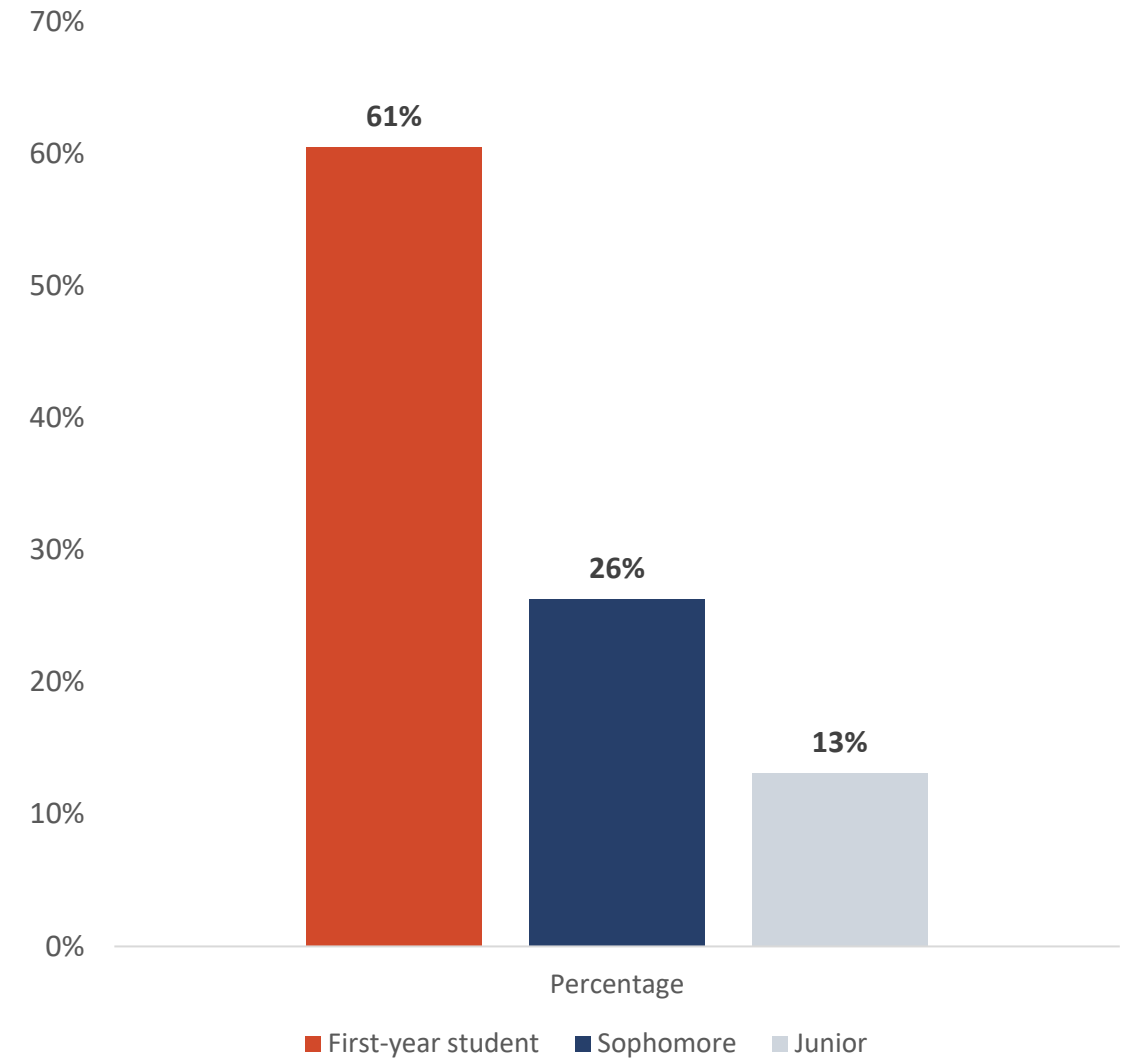
At what point in their academic career at Mines do students withdraw or consider withdrawing?



Time Frame Between When Students Consider Withdrawing and When they Actually Withdraw



Student Classifications for Student Withdraw Term



Implications



Because students describe experiences related to their academic environment and mental health, Mines has an opportunity to emphasize care for students as individuals



Engineering culture typically highlights elements, such as all-nighters and heavy course loads, that can exacerbate mental health for students



Infusing empathy in the classroom can have a positive effect on the student learning experience

- Promoting better rapport between instructors and students
- Contributing to an inclusive classroom culture
- Uplifting the importance of empathy for students themselves for successful engineering

Empathic Concern is Expressed by Professors Who:

“First semester, my mom had a brain tumor during finals week **and was likely going to die**. I told my teachers, and I still had to take my finals. I took them but I was mentally and physically exhausted from spending time at the hospital, running around to help my family, and trying to study. I did not do well on my [course] exam, and just barely got a D in the class. I asked my professor if there was anything I could do to prove that I knew the information, but I was in a situation that was out of my control and I needed help. **[Instructor name] did not help, gave me a D, and made me retake the class even though I should have passed.**”

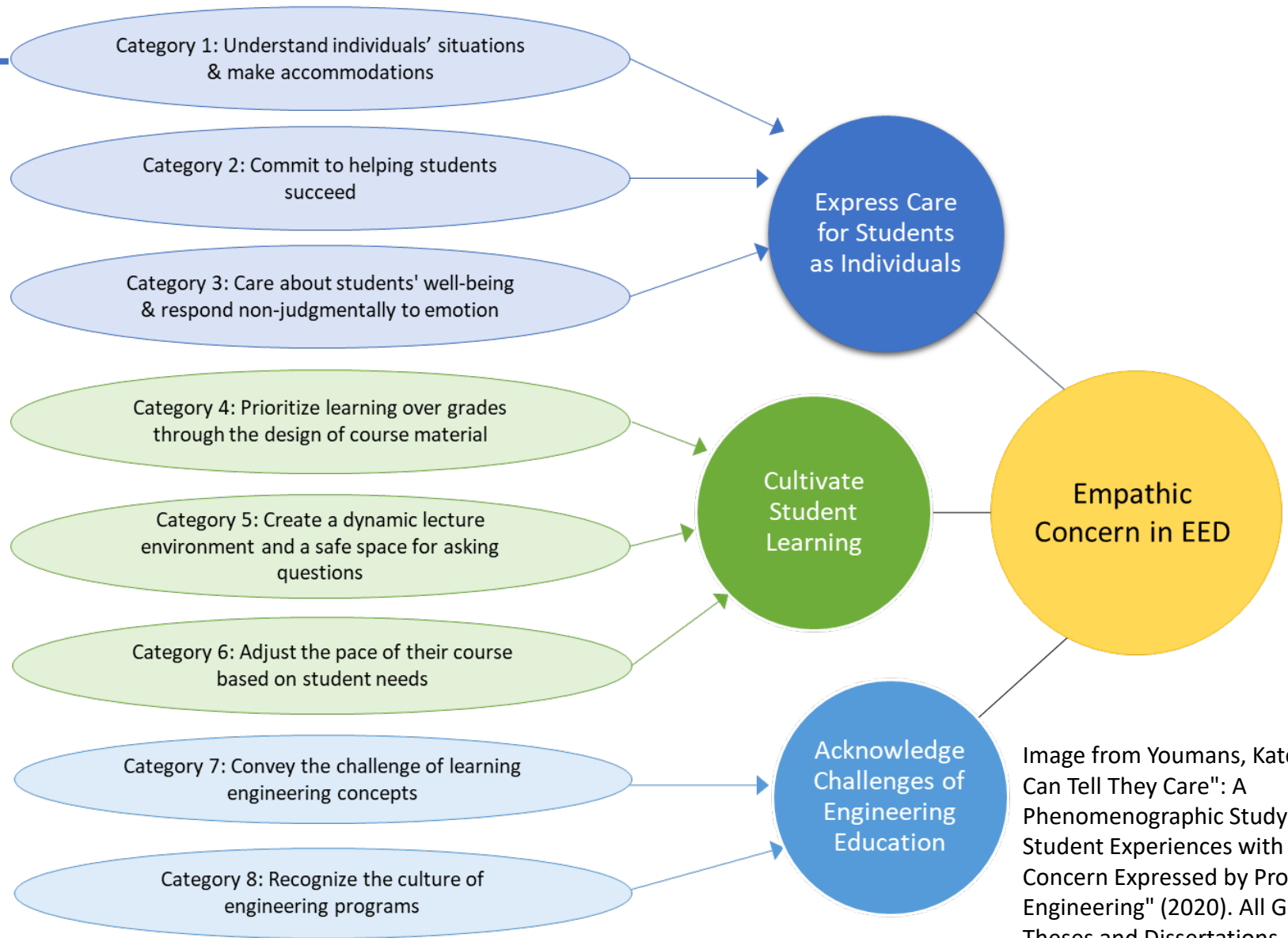


Image from Youmans, Kate, ""You Can Tell They Care": A Phenomenographic Study of Student Experiences with Empathic Concern Expressed by Professors in Engineering" (2020). All Graduate Theses and Dissertations. 7968.



Empathic Concern is Expressed by Professors Who:

"I really enjoyed [course name], but once I got to [course name] (Spring 2021), I had a really bad experience. **I felt like they started off too fast in the class. I could barely keep up, and it was very difficult for me to get the help that I needed during office hours because so many people also needed help, so I had very little time with the instructor helping me personally**"

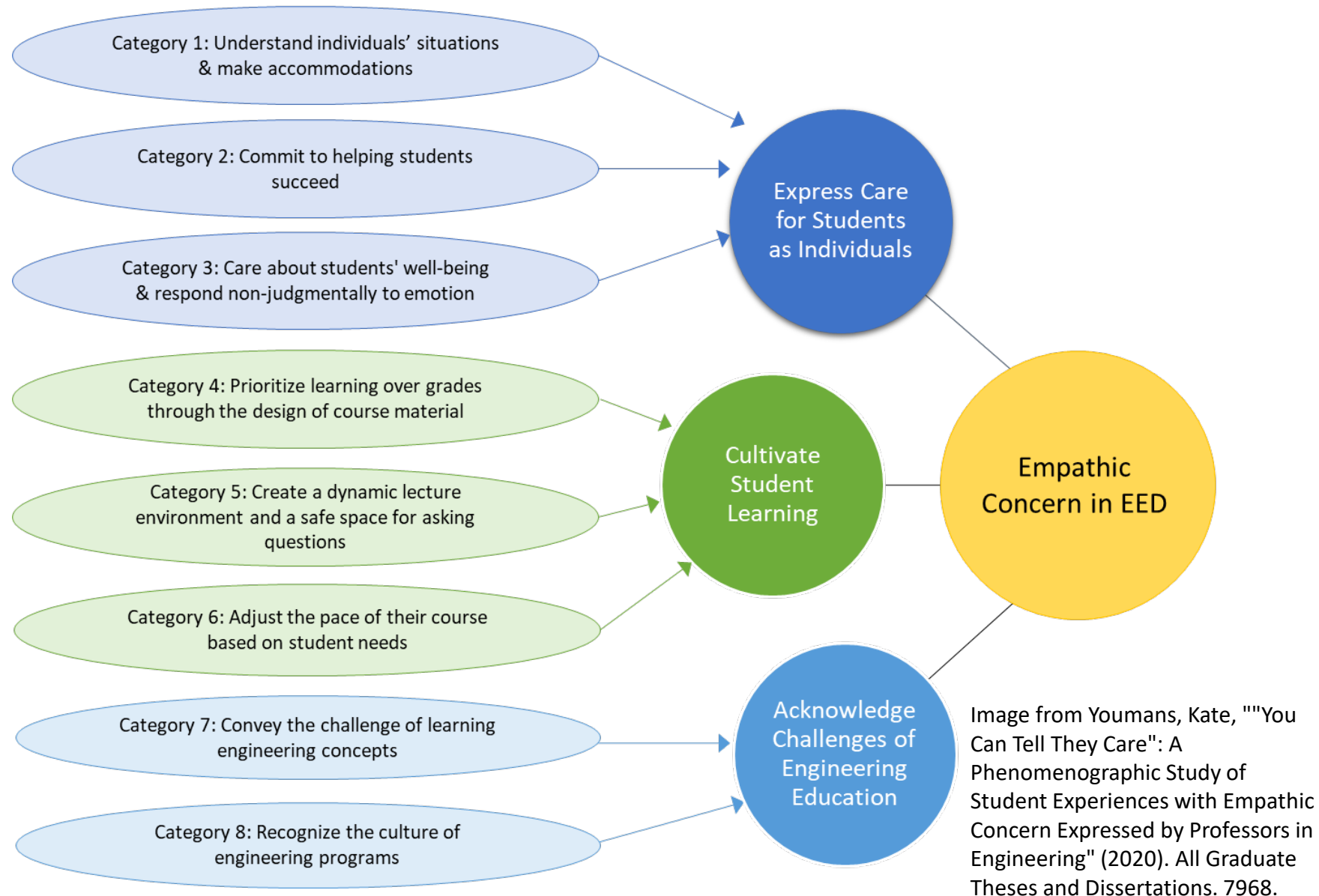
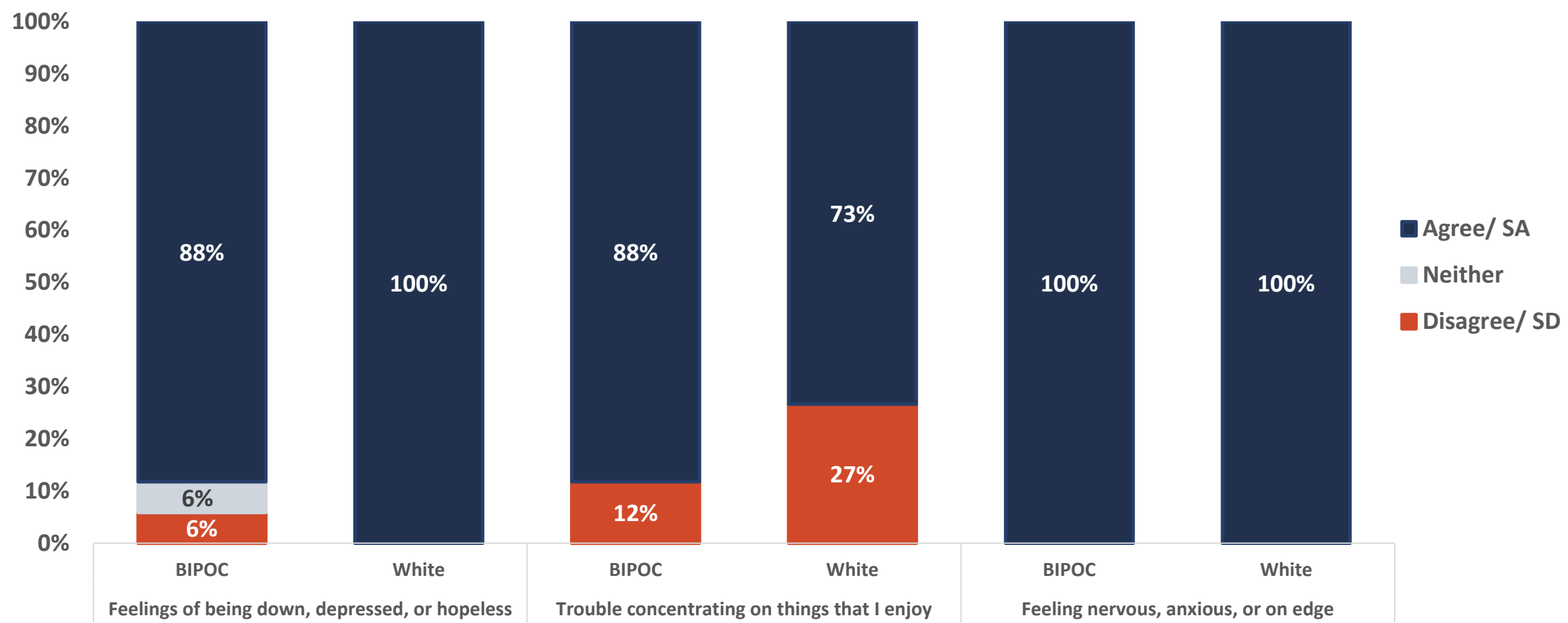


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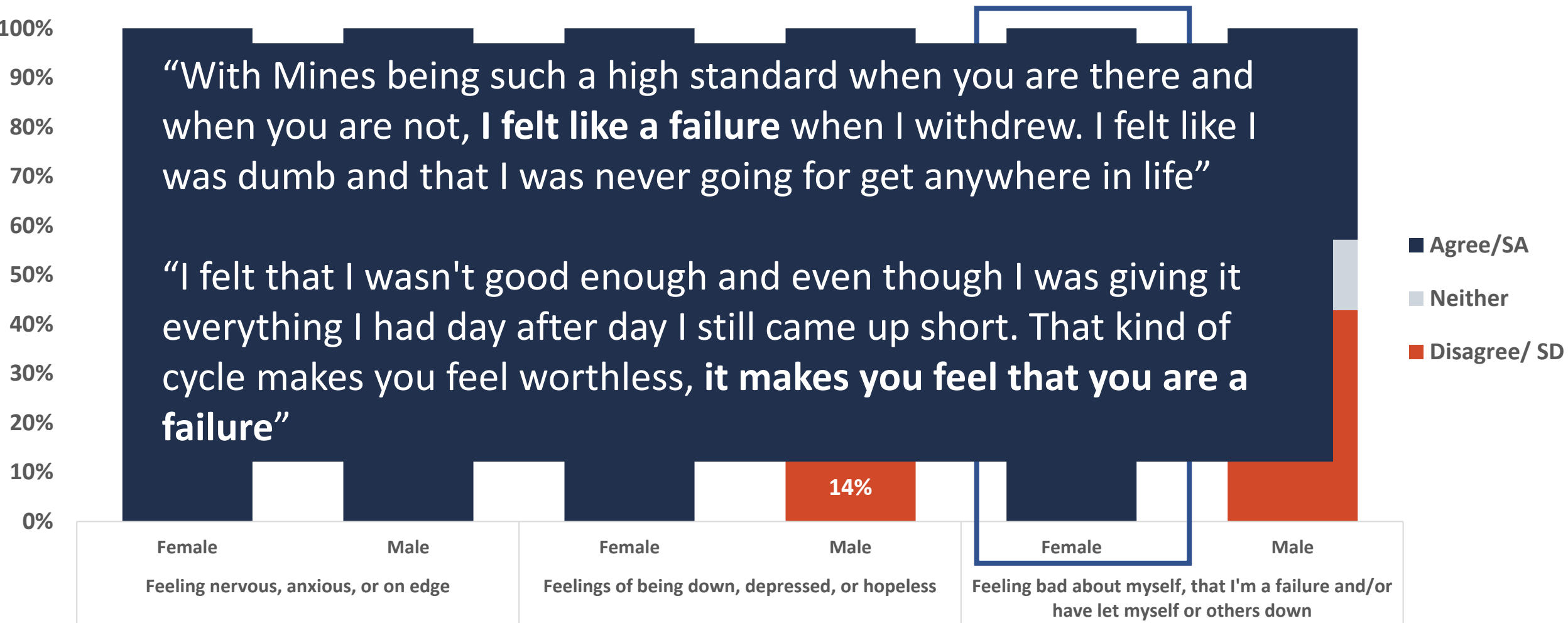
How are Sense of Belonging and Mental Health associated with Mines student decision to withdraw?

Mental Health Survey Items Most Impactful for Survey Respondents by Race/Ethnicity



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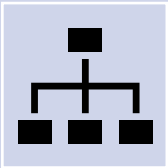
Mental Health Survey Items Most Impactful for BIPOC Survey Respondents by Gender Identity



Implications



The common experience of failure or feeling like a failure gives instructors an opportunity to prepare students for the **natural expectation of failure** that is apart of being an engineering, or any path within STEM



Five constructs believed to affect STEM students' achievement both directly and indirectly through their responses to failure

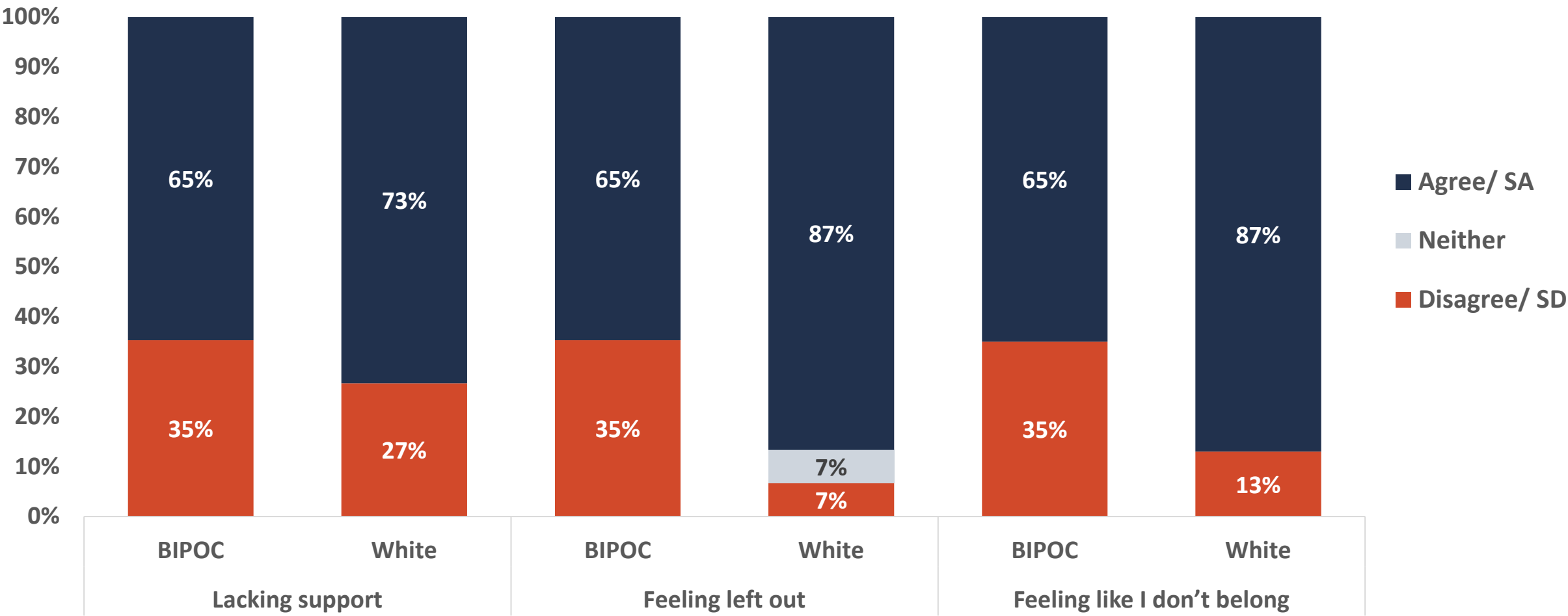
- Mindset
- Goal orientation
- Fear of failure
- Attributions
- Coping responses



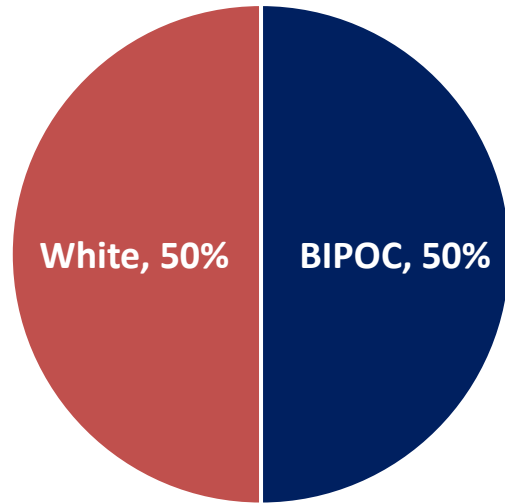
Failure is a valuable skill for students to experience and become successful in dealing with scientific barriers, which will be necessary throughout their professional careers

How are Sense of Belonging and Mental Health associated with Mines students' decision to withdraw?

Sense of Belonging and Community Survey Items by Survey Respondent Race/Ethnicity



Total Coded Incidents for how Students Experience(d) Belonging & Community, n=32

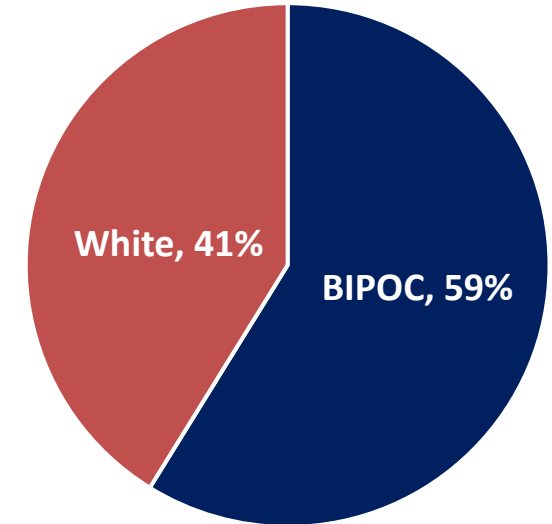


Students experienced belonging & community most within dorms, MEP (Multicultural Engineering Program) and work-study jobs

“My roommates (for the time I was at Mines) were very supportive and connected me to a part of the Mines community.”

I was apart of MEP which was crucial to my success and sense of belonging on campus. I had friends and support through the programs of MEP such as SHIPE and NSBE.

Total Coded Incidents for how Students Lack(ed) Belonging & Community, n=17



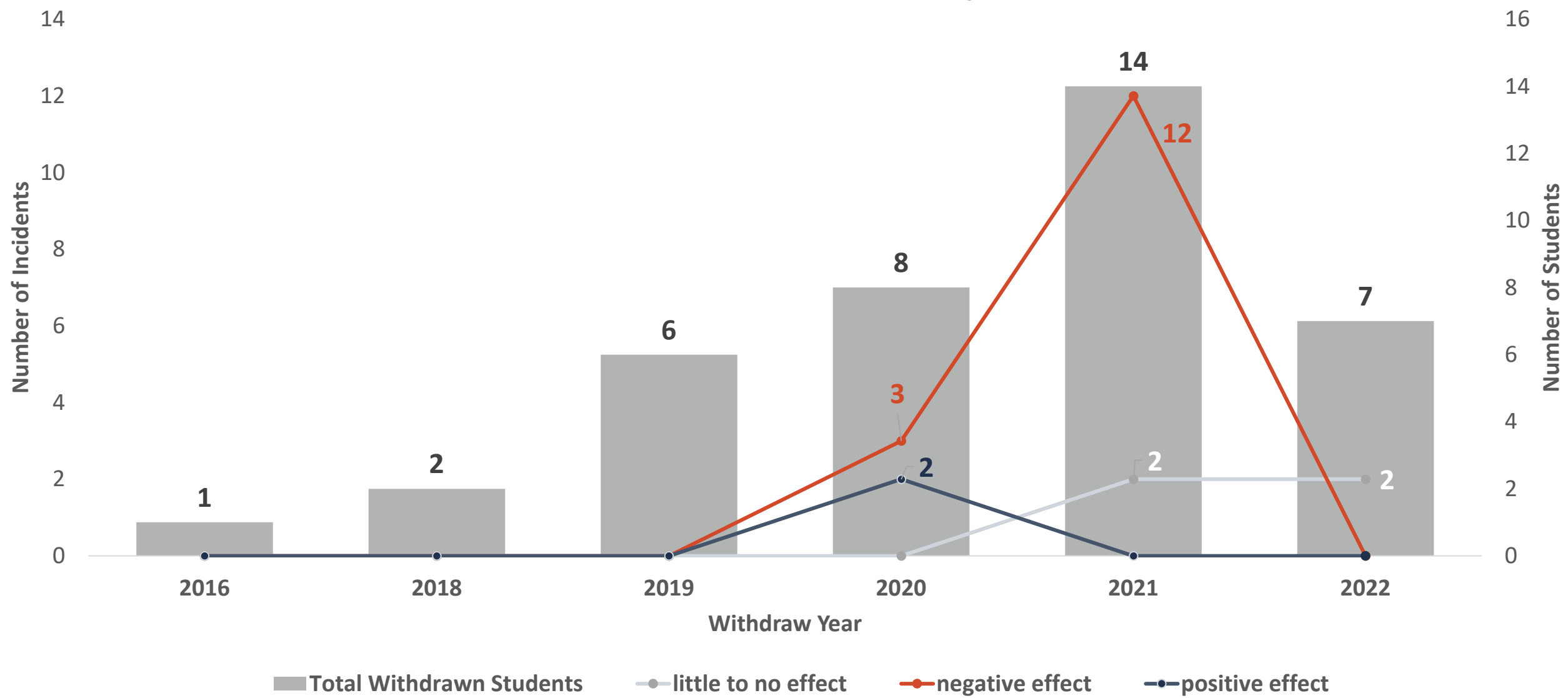
Students describe a lack of belonging & community most because of their identity and not feeling connected to the Mines community overall

Being a black female, I felt as if I didn't have support and like I wasn't connected to everyone else at mines. I only had a few friends and advisors that made me feel supported.

I did not feel supported, connected, or a part of the Mines community at any point during my time studying at mines

How has COVID influenced withdraw trends between 2020 and 2022?

Total Coded Incidents to How COVID Affected Students by Withdraw Year, n=17



Recommendations

Review current workshop offerings for opportunities to infuse empathy into classrooms, address failure and prioritize mental health and self-care

Practical ways to include empathy, like gathering feedback and flexibility in schedules

Encouraging students to disclose conditions that may affect learning and including mental health support in syllabi

Sharing personal stories of failure and encouraging a growth mindset



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Segment of first year courses, like CSM 101/201 and/or design courses, that discuss mental health and failure

Strategies for handling early feelings of burn-out, failure, and exacerbated mental health conditions

Facilitating conversations around stress management and time management strategies, allowing students to help each other

Panels to include Mines students who discuss ways they have experienced and overcome failure



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Complementing existing programming

CASA Bounce Back and local partners *Untapped*

Counseling center workshop on failure and feeling like a failure

Mechanisms to catch struggling students



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Section II: Rate your Agreement

(Part 1 of 3) The following describes things you may have experienced during your time as a Mines student. We ask these to understand the role of mental health on your college experience. This helps us support our students.

Please indicate your level of agreement with the following statements. During my time at Mines, I experience(d):

	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable - this item does not apply to my experience
Feelings of being down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble falling or staying asleep, or sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite, overeating, and/or disliking my body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling bad about myself, that I'm a failure and/or have let myself or others down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble concentrating on things that I enjoy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling nervous, anxious, or on edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Y of ment	Maslow's hierarchy of needs



Thank you to our donors, Newmont Corporation!!!

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