

# RECRUITMENT

To remain competitive in an increasingly global and dynamic higher education and STEM landscape, Mines' community members of students, faculty and staff need to match the demographics of the populations from which it draws talent. We aim for Mines to match the demographics outlined on page nine in the Strategic Plan for DI&A. Mines began introducing new initiatives to improve recruiting using best practices in admissions, scholarship programming, financial aid and hiring of employees, to name a few.

## Looking back

The total student yield per year is the proportion of how many students enroll who were accepted into the institution. In 2010, the yield for all students was 26.5 percent, which has seen little change over the past decade, with 2020's yield at 26.9 percent. Focusing on first-year, non-transfer students' data shows changes in our applicant, accepted and enrollment pools, especially for female and underrepresented populations.

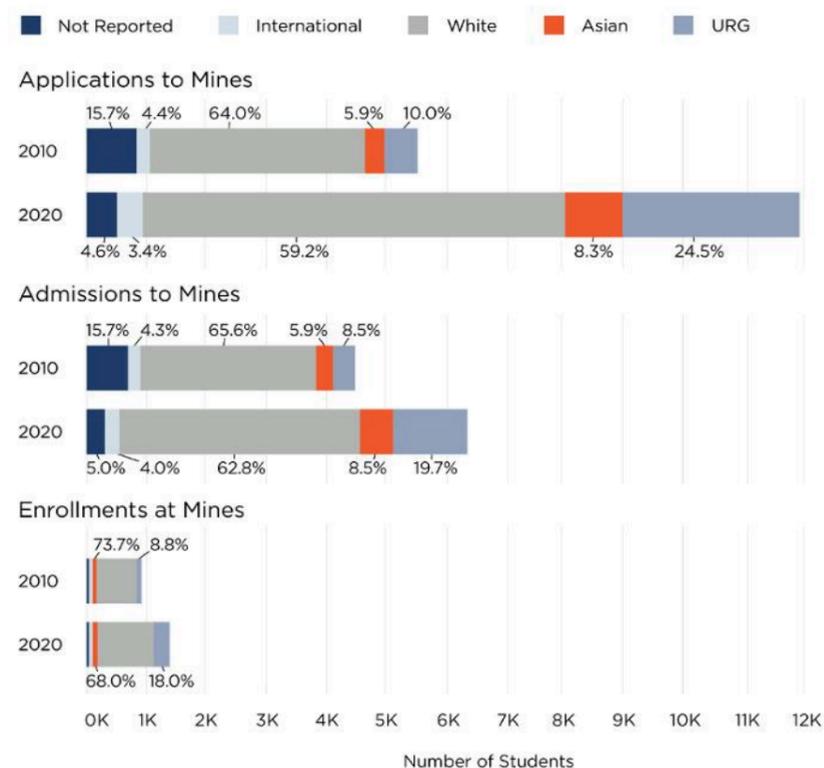
For example, WISEM's Vanguard Community of Scholars increases access to Mines for a selected number of high-performing, first-year, non-transfer undergraduate women. This program, established in 2019, was the first to serve female students at Mines by awarding scholarships to in-state and out-of-state students.

Vanguard Scholars from both 2019 and 2020 cohorts indicated their primary reasons for choosing Mines and which aspects about the program were strong (n=85):

- Opportunity to be part of a community of similar people: 77 percent
- \$5,000/year scholarship: 68 percent
- Professional development opportunities with women faculty: 66 percent

Data from the Vanguard Program inform which strategies are most effective in the recruiting process.

Figures 1, 2 highlight trends in the undergraduate first-year, non-transfer student applications to enrollments funnel between 2010 and 2020.



### Applications to enrollments trends of Mines first-year, non-transfer students, 2010 and 2020 by race/ethnicity

Figure 1: Depiction of the applications to enrollments funnel of first-year, non-transfer students at Mines compared between 2010 and 2020. These data are broken down by race and ethnicity, where underrepresented groups (URGs) include: American Indian/Alaskan Native, Black/African American, Hispanic, Multiple Races and Native Hawaiian/Pacific Islander. We observe over the past decade, representation of URGs has greatly increased in all portions of the funnel, not only in percentages but also in absolute numbers, as indicated by the x-axis.

### Applications to enrollments trends of Mines first-year, non-transfer students, 2010 and 2020 by gender

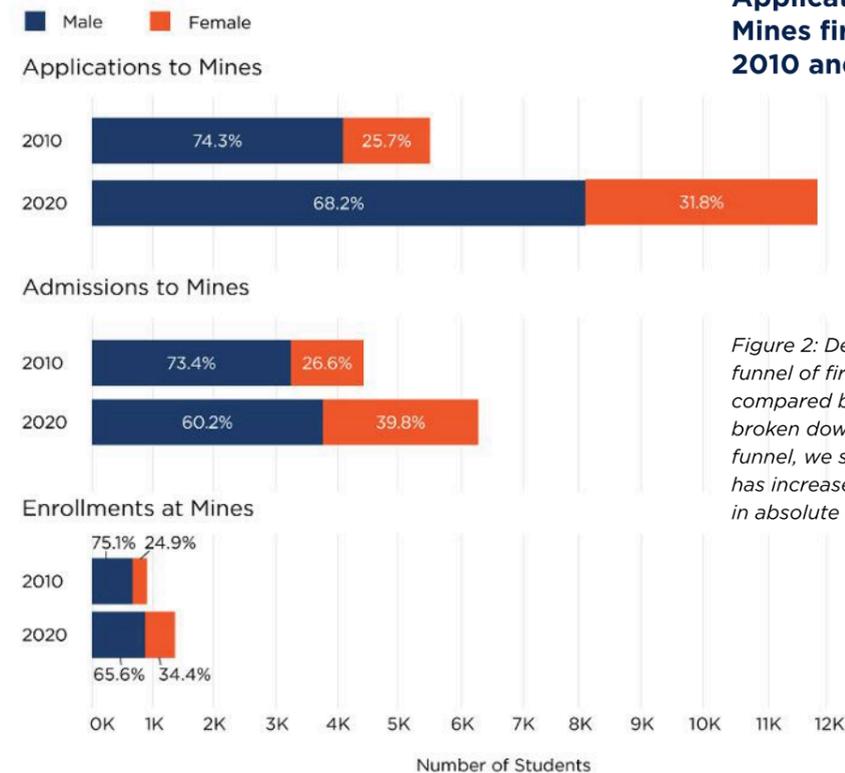


Figure 2: Depiction of the applications to enrollments funnel of first-year, non-transfer students at Mines compared between 2010 and 2020. These data are broken down by gender. Similar to the race/ethnicity funnel, we see that representation of female students has increased in the past decade both proportionally and in absolute numbers, as indicated on the x-axis.

## Takeaways: First-year, non-transfer undergraduate students

**Applications:** 5,522 applicants applied in 2010, compared to 11,866 in 2020. This is a 115 percent increase<sup>13</sup> in applications submitted over the 10-year period. Strides were made in the past decade to broaden recruitment efforts to reach the best talent. Those efforts are shown in the increase in female and underrepresented applicants.

- In 2010, 26 percent of applicants identified as female. In 2020, that increased to 32 percent, a 165 percent increase in female applications, outpacing the total rate of 115 percent over the 10-year period.
- In 2010, 10 percent of applicants were from URGs and 6 percent were Asian. In 2020, the percentage of applicants from URGs rose to 25 percent, a 427 percent increase in the total number of students. Asian applicants rose to eight percent.

**Admissions:** 4,477 students were admitted into Mines in 2010 (81 percent admittance rate) and 6,354 admitted in 2020 (54 percent admittance rate), a 42 percent increase in the number of students. The lower admittance rate in 2020 demonstrated the advantages of broadening the applicant pool, because it provided more opportunities for female and underrepresented students to apply. Additionally, it demonstrated that Mines has not changed admission standards.

- In 2010, 27 percent of admitted students identified as female. That percentage grew to 40 percent in 2020, a 112 percent increase in female admittance rates over the past decade.
- Racial/ethnic URGs comprised 8.5 percent of the total admitted students in 2010. Asian students comprised 6 percent of admitted students. In 2020, underrepresented and Asian students comprised 20 percent and 8.5 percent of admitted students, respectively. This yielded a 228 percent increase of underrepresented (not including Asian) students admitted into Mines.

<sup>13</sup> Calculation: 11,866 - 5,522 = 6,344. Then, 6,344/5,522 = 1.148\*100 = 115%.



**Enrollments:** 920 students enrolled in 2010 compared to 1,376 in 2020, a 50 percent increase over the past decade.

- In 2010, there were 25 percent female students enrolled at Mines. In 2020, this rose to 34 percent, for a 106 percent increase over the past 10 years.
- Nine percent of students who enrolled in 2010 identified as a member of a racial/ethnic URG. This rose to 18 percent in 2020, yielding a 205 percent increase. The absolute numbers remain small in comparison to the rest of the Mines population (less than 250 individuals in 2020), which is an area where Mines continues to improve.

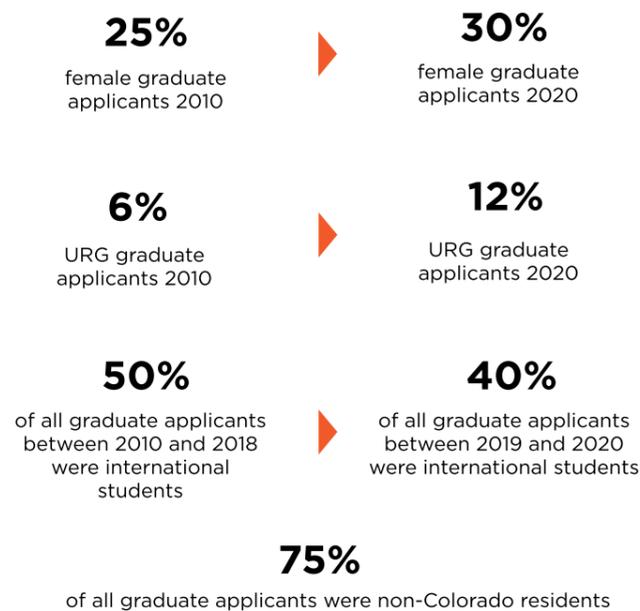
## Takeaways: Academic faculty, administrative faculty and classified staff recruitment (2016-2020)

The following data highlight key trends for employee recruitment at Mines, including academic faculty, administrative faculty and classified staff.

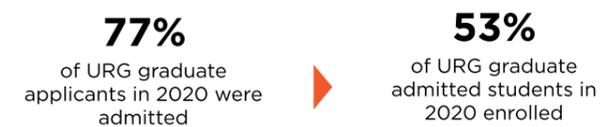
- For publicly posted positions for all classified staff, administrative and academic faculty positions, 33 percent of applicants identified as white female and 33 percent as white male.
- 50 percent of academic faculty applicant pools originated from white job seekers and 35 percent from Asian job seekers.
- 40 percent of academic faculty hires were female and represented 20 percent of the academic faculty applicant pool.
- Nine percent of academic faculty applicants identified with an underrepresented group.
- Administrative faculty/classified staff positions had 15.8 percent applications from underrepresented job seekers. Offers were accepted by 15.5 percent of underrepresented job seekers.
- Administrative faculty/classified staff applicants, 53 percent were female and 44 percent were male. 55 percent of positions offered were accepted by female applicants compared to 44 percent of male applicants.

## Takeaways: Degree-seeking graduate students (in-person and online)

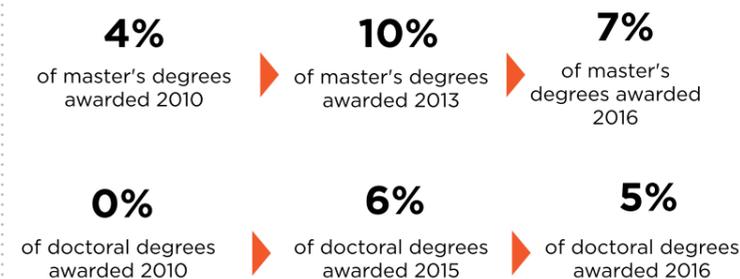
### ALL MINES APPLICANTS (2010-2020)



### URGs ADMITS AND ENROLLED (2020)



### DEGREES AWARDED TO URGs (2010-2016)



Compared to the National Science Foundation's (NSF) 2019 data tables on women, minorities and persons with disabilities in science and engineering<sup>14</sup>, STEM master's degree holders from URGs rose from 13 percent to 14.5 percent from 2010 to 2014, then dipped to 13 percent in 2016. This dip was seen among all racial and ethnic groups.

PhD recipients from underrepresented groups increased from 7 percent to 9 percent over that same time frame. These data show even during the years where Mines had the greatest proportion of graduate degrees awarded to students from URGs, we fell short compared to national data.

### DI&A Strategic Plan Recommendation

## Strategy for K-14 pipeline coordination and excellence

A large effort, spanning across multiple campus units to support the K-14 pipeline, is the proposal for a Mines K-12 Collaboratory (a collaborative laboratory). A team of Mines stakeholders developed a proposal in 2019, with further edits made in 2020. Mines leadership and the Foundation continue to explore ways to fund the effort. The Mines K-12 Collaboratory unites K-12 outreach efforts across campus to ensure Mines is a top-of-mind and first-choice university for prospective students. The Collaboratory supports Mines enrollment and admissions to recruit, educate and inspire students from all backgrounds. This strategy for K-12 outreach coordinates more efforts at higher grades while still connecting students throughout their academic careers (figure 3). For more information on the K-12 Collaboratory, contact Lori Kester, associate provost for enrollment management at lkester@mines.edu.

Mines Admissions has made great strides to address the historical challenges Mines experiences with recruiting and enrolling students from traditionally underrepresented populations. Admissions is developing a multicultural

student ambassador program to do just this. Their initial efforts included creating an informal ambassador network through the Society of Hispanic Professional Engineers (SHPE) and MEP to assist in the Spanish "Meet me at Mines" event. During the initial launch of this effort, a total of ten students participated as ambassadors.

Recruitment programs also target expanding the community college transfer programming. MEP and Undergraduate Admissions hosted an LSAMP Metro Denver STEM Alliance Transfer Workshop in March 2020. Participants included Arapahoe Community College, Community College of Aurora, Front Range Community College, Red Rocks Community College and Community College of Denver. Thirteen Metro Denver STEM Alliance students and seven staff were in attendance. The workshop included an overview of the CO-WY AMP grant, a Mines' student panel, a transfer information session, an overview of the Mines PATHS Program and tours of the Colorado Fuel Cell Center and Toberer Lab.

### Efforts throughout all grades in partner schools



Figure 3: Mines K-12 Collaboratory focuses efforts at higher grades as students progress through their primary and secondary education to increase yield.

<sup>14</sup> National Science Foundation | National Center for Science and Engineering Statistics (NCSES) | Women, Minorities, and Persons with Disabilities in Science and Engineering | Alexandria, VA | NSF 19-304 | March 08, 2019 | ncses.nsf.gov/pubs/nsf19304/digest/field-of-degree-minorities

Furthermore, Mines appointed Dr. Gus Greivel, a tenured academic faculty member, to improve the transfer pipeline initiatives on campus. Several transfer initiatives were accomplished in 2020, such as participating in the first-ever statewide degree with designation in Computer Science and two 4+1 signed articulation agreements with other universities throughout the state of Colorado. Mines worked directly with the Colorado Community College System (CCCS) to negotiate course transfer and other articulation agreements.

Mines has an opportunity to recruit directly from community colleges that are also Minority Serving Institutions (MSIs) to increase the number of URGs who

enroll. Figure 4 shows the MSI with the highest enrollment of Hispanic students who come to Mines transfer from the Community College of Denver (26 students over 10 years). The Community College of Aurora has the highest number of Black transfer students and second highest number of Hispanic students (16 and 21, respectively) for the past 10 years. Expanding beyond MSIs, Mines continues to enroll many transfer students from Red Rocks Community College. There have been more than 130 students from underrepresented groups who enrolled at Mines from Red Rocks Community College over the past 10 years. Mines has a great opportunity to engage these institutions to increase representation of URGs and bolster the K-14 pipeline.

**Top Colorado Minority Serving Institutions (MSIs) by incoming transfer students' race and ethnicity (2010-2020)**

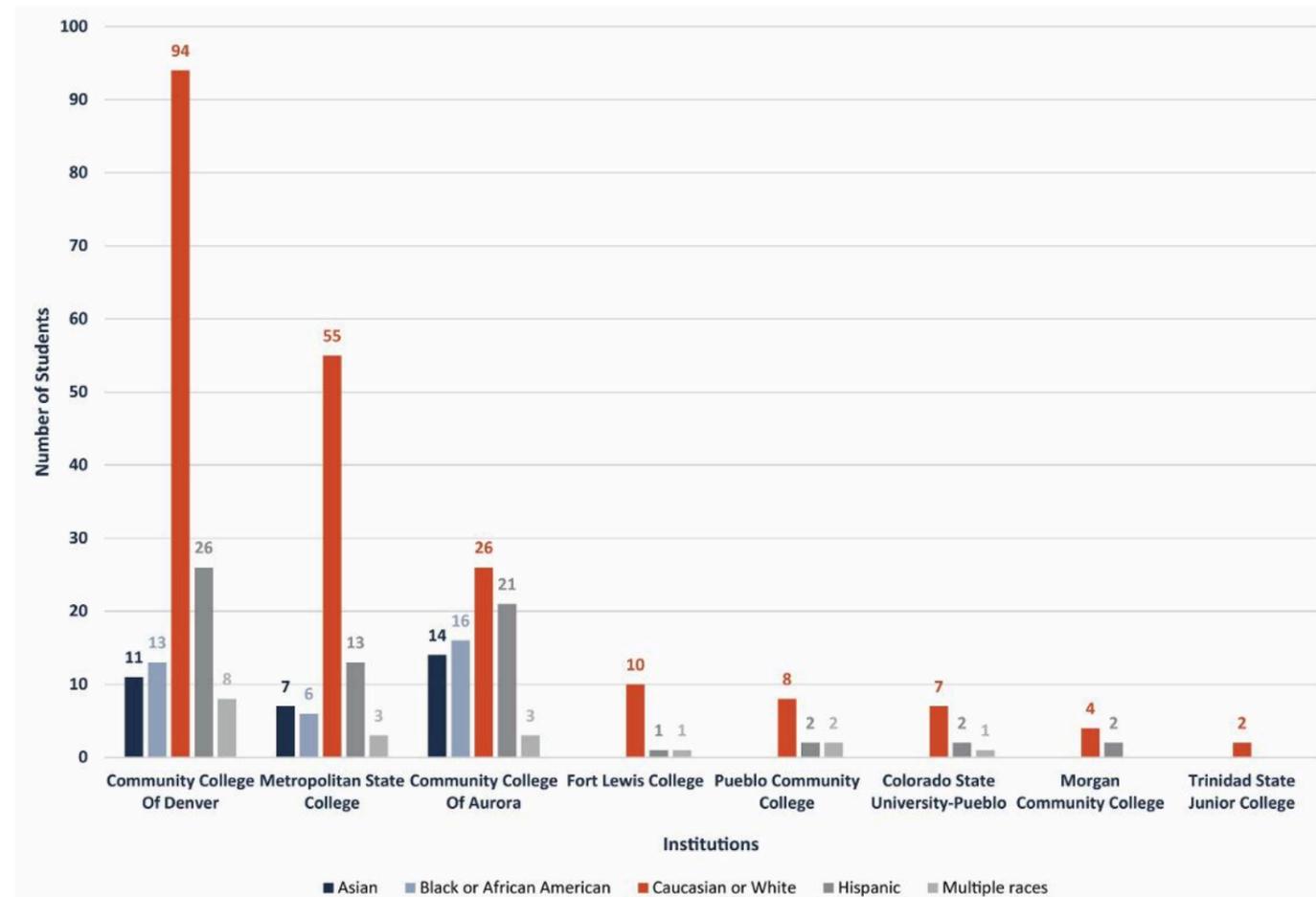


Figure 4: Number of transfer students, by race and ethnicity, attending Mines from the top Colorado MSIs. This graph does not include other non-MSIs that supply proportionally high numbers of underrepresented students, such as Red Rocks Community College.

**DI&A Strategic Plan Recommendation**

**Financially accessible and attractive to students with diverse backgrounds**

Assessing return on investment is increasingly important to the current generation of students. Ensuring they have minimal debt while being able to secure competitive salaries during their first years of employment is paramount to the accessibility and attractiveness of an institution. At Mines, of the 909 students in the 2019 graduating class, 451 students borrowed federal, state, institutional or private loans (about 50 percent of students) and yielded an average of \$30,983 in debt per borrower. Looking at federal loans only, average borrower debt was nearly \$22,000 per person. To provide the financial support to students and make Mines more accessible and attractive, the institution provides \$29 million per year of university resources for financial aid. There is \$6 million a year in scholarships currently funded by the Colorado School of Mines Foundation endowment.

Mines established Communities of Scholars as one way to provide financial support and a signature experience to

students. The Harvey Scholars are one example of the success of such communities (58 students in 2020). These communities are also leveraged to support student recruitment, such as the Vanguard Scholars Program (90 first- and second-year students). The Colorado Scholars Program are for Pell eligible, Colorado residents who met the merit scholarship criteria upon admission. They receive full tuition and fees while at Mines. There are 75 new students every year in the program. During the 2020-2021 cycle, there were 211 Colorado Scholars.

The Financial Aid office has also increased financial accessibility to high-potential students from underrepresented populations. They recently updated their award documents to include both English and Spanish to help explain the cost of attendance and a glossary of terminology.

**74%**

2020 Vanguard cohort said the \$5,000 scholarship significantly influenced their decision to attend Mines

**"The amount of financial aid received made it an affordable option, while the actual programs offered greater academic value than other schools I might have chosen that were cheaper."**

-2020 Vanguard Scholar

**DI&A Strategic Plan Recommendation**

**Coordinated campus strategy to recruit graduate students with diverse backgrounds**

Mines implemented a coordinated recruitment event in 2017, led by Dean Kaufman. Mines plans to be more proactive in recruiting top talent from programs such as the McNair<sup>15</sup> and GEM<sup>16</sup> Scholars. Graduate Admissions for all thesis programs and many master's non-thesis programs remain decentralized at Mines, where decisions are made by departments and individual faculty. It will be important to

include strategies for traditional thesis-based graduate programs that Admissions uses in their undergraduate application review and for the some of the master's non-thesis programs to minimize implicit bias in the admission processes. In 2020, Admissions was responsible for making decisions for a handful of master's non-thesis and certificate programs.

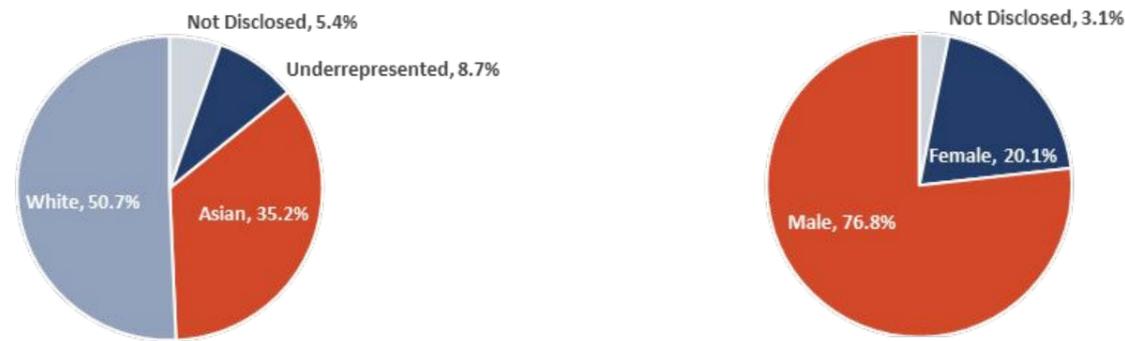
<sup>15</sup> mcnairscholars.com  
<sup>16</sup> gemfellowship.com

## Broaden the diversity of faculty and staff by continuing and institutionalizing hiring best practices

In 2017, Mines DI&A and Human Resources implemented HEx<sup>17</sup>. The program applies hiring best practices from the NSF ADVANCE program<sup>18</sup> whose goal is to broaden evidence-based strategies that promote equity for STEM academic workplaces. These best practices include requesting applicants submit a statement on contributions to DI&A and use of rubrics and strategies to mitigate

implicit bias for hiring committees. HEx first focused on tenured/tenure-track academic faculty hires in 2017 and extended to administrative faculty in 2018. Figure 5 shows the demographic breakdowns by race/ethnicity and gender for job seekers who applied to and accepted academic faculty positions.

### Applicants for open academic faculty positions by race/ethnicity and gender



### Offers accepted for open academic faculty positions by race/ethnicity and gender

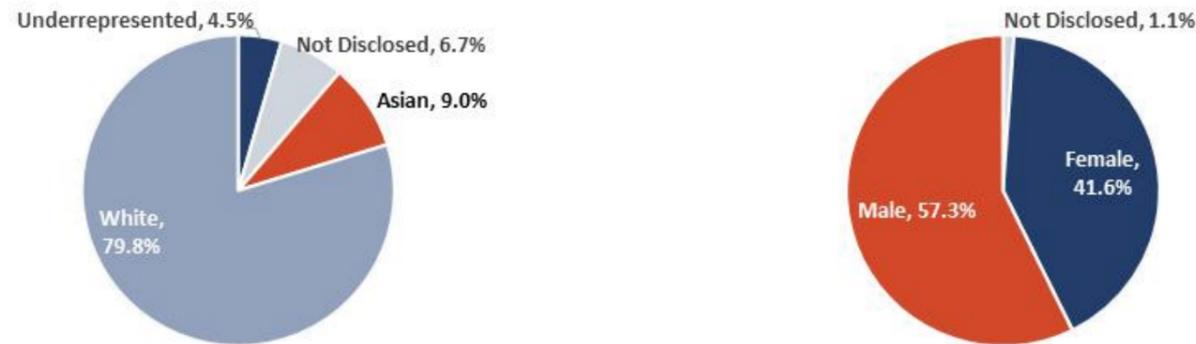


Figure 5: Percentage breakdowns (race/ethnicity and gender) of job seekers who applied to vs. accepted open academic faculty positions. Data do not include post-docs or direct appointments. Data do include tenured/tenure-track faculty, teaching faculty, affiliate faculty, research faculty, adjuncts and visiting scholars. Data span 2016 to the beginning of 2020. Graph does not include null values.

According to NSF's Survey of Earned Doctorates from 2015 to 2018<sup>19</sup>, white scientists comprised between 70 percent and 73 percent of the overall population. Hispanic STEM PhD degree holders made up 7 percent, Indigenous populations made up less than 1 percent, Asian PhD holders comprised between 10 percent and 11 percent, Black STEM PhD holders made up less than 6 percent and

multiracial populations comprised 3 percent. Compared to national data on STEM PhD holders, Mines' Asian applicants are very over-represented (35 percent), and all other communities of color continue to be underrepresented in the applicant pool for open academic faculty positions. In the coming years, Mines will focus efforts on strategies to broaden the applicant pool.

In contrast, Mines has proportionate representation of the demographics of Coloradans in applicants for administrative faculty and classified staff positions from 2016 to 2020. These same demographics translate into offers accepted. Mines will continue to update and employ best practices for minimizing bias in all hiring processes.

### Applicants for open administrative/staff positions by race/ethnicity and gender



### Offers accepted for open administrative/staff positions by race/ethnicity and gender

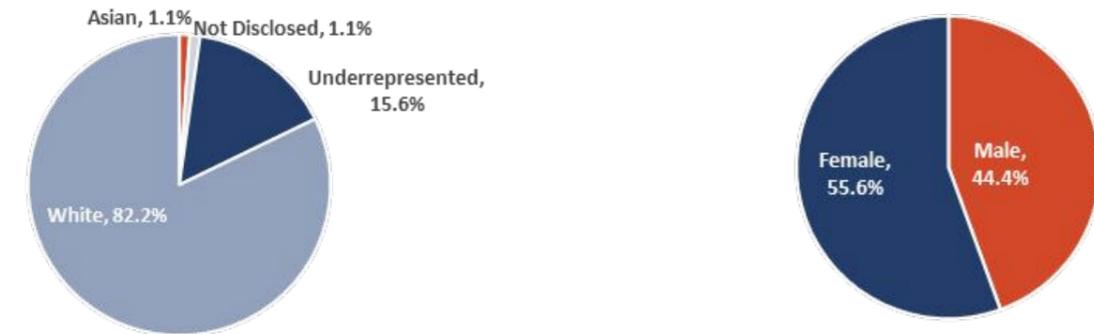


Figure 6: Pie charts show the breakdown percentages (by race/ethnicity and gender) of applications and job offers accepted for administrative faculty and classified staff positions from 2016 and 2020.

## Recruitment: On-going and future activities

- Grow **Community of Scholars** to enhance underrepresented student recruitment and examine program effectiveness
- **Expand K-12 recruitment**, including to rural and underserved high schools
- Officially **track LGBTQ+ data** to understand potential inequities
- Integrate best practices into **the graduate student recruitment process**
- Formalize **multicultural student ambassador program** for "Meet me at Mines" events
- Investigate **inclusive recruitment practices** across enrollment management and talent acquisition to improve outreach and engagement to underrepresented populations
- Leverage voluntary self-identification data from applicants to motivate **strategic searches and hiring decisions**
- Deploy hiring **inclusive technology tools**

<sup>17</sup> Hiring Excellence: mines.edu/diversity/hiring-excellence-hex/

<sup>18</sup> nsf.gov/funding/pgm\_summ.jsp?pims\_id=5383

<sup>19</sup> nsf.gov/statistics/srvydoctorates/