

**URGE Demographic Data for University of Tennessee,
Department of Earth & Planetary Sciences**

This document includes findings by the **URGE Pod, U of Tennessee Department of Earth & Planetary Sciences**, on demographic data (public and internal facing), stated goals for representation, and/or proposals to collect and report demographic data at the **University of Tennessee**. Information provided here was either available publicly through websites or available from committee representations within the department.

Demographic Data at UTK

The University of Tennessee-Knoxville (UTK) provides demographic data through the Office of Institutional Research and Assessment (OIRA). Annually, a factbook is published that provides demographic trends in student enrollment and staff/faculty. Additionally, the statewide University of Tennessee (UT) System provides comparative demographic data through the data dashboard. Both resources can be accessed at the links below:

- **UTK ORIA:** <https://oira.utk.edu/reporting/fact-book/>
- **UT System Data:** <https://data.tennessee.edu/enrollment/>

Note: Some of the data are not open to the public or not available to everyone at UTK or UT.

Current Undergraduate, Graduate, and Faculty Demographics for UTK (via [UTK Factbook](#))

- [5-year undergraduate enrollment trends by race](#) (excl. international)
- [5-year trend of Bachelor’s degrees by race](#) (excl. international)
- [5-year graduate enrollment trends by race](#) (excl. international)
- [5-year trend of Master’s degrees by race](#) (excl. international)
- [5-year trend of Doctoral/highest degrees by race](#) (exc. international)
- [5-year full time instructional faculty trends by race](#) (excl. international)
- [Distribution of all employees by race](#) (excl. international)

Demographic Data from Our University and Department

At UTK, Black student enrollment has declined over 5 years (Fig. 1), while overall enrollments have gone up (Fig. 2). In F2016, Black students made up 6.4% of the overall student population. In F2020, that number was down to 5.5% (-0.18% per year). Our peer institutions had Black students enrolled at a rate of 6.8% as of F2018. Our aspirational peer institutions saw Black

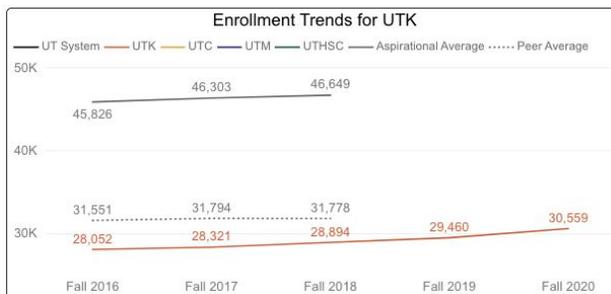


Fig. 1 Total student enrollment at UTK (orange) compared with aspirational peer (solid) and peer (dotted) averages. Source: <https://data.tennessee.edu/enrollment/>

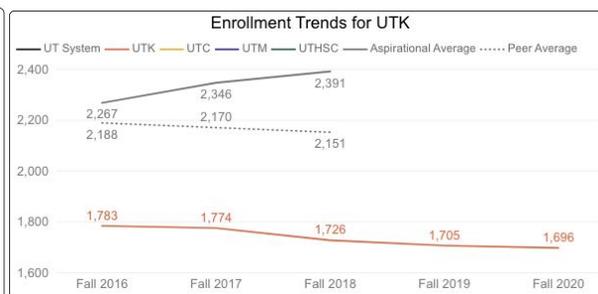


Fig. 2 Black student enrollment at UTK (orange) compared with aspirational peer (solid) and peer (dotted) averages. Source: <https://data.tennessee.edu/enrollment/>

student enrollments grow 2.6% per year from 2016 to 2018, as UTK’s overall Black enrollment declined.

These university demographic data can be compared with the population of residents of the State of Tennessee. UTK derives 78% of its undergraduate population from Tennessee. Although the rate of Hispanic or Latino students at UTK closely matches the percent represented in the general TN population (Fig. 3), and national percentages (Fig. 4), Black enrollment is underrepresented by over 10%, despite the State having more Black/African American people than the national average.

Race and Hispanic Origin	
White alone, percent	78.4%
Black or African American alone, percent (a)	17.1%
American Indian and Alaska Native alone, percent (a)	0.5%
Asian alone, percent (a)	2.0%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%
Two or More Races, percent	2.0%
Hispanic or Latino, percent (b)	5.7%
White alone, not Hispanic or Latino, percent	73.5%

Fig. 3 Percent of Tennessee population (estimated) by race and Hispanic origin, 2019. Source: <https://www.census.gov/quickfactsfactdashboard/TN/PST045219>

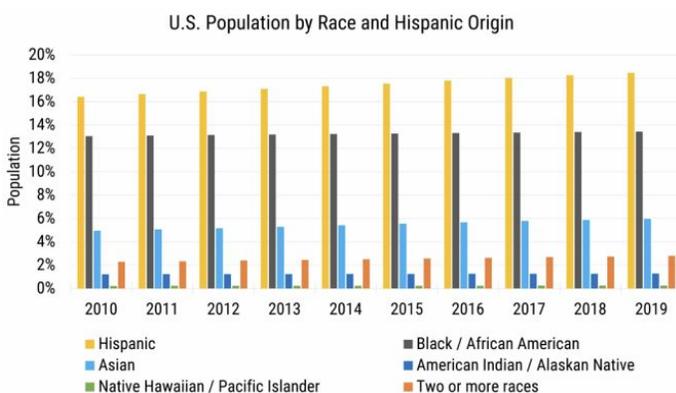


Fig. 4 Percent of US total population by race and Hispanic origin, 2010-2019. Source: https://www.americangeosciences.org/sites/default/files/DB_2020-023-DiversityInTheGeosciences.pdf

Our Department is committed to diversity and inclusion (see, for reference, current analyses and statements in the Strategic Plan, discussed below, <https://eps.utk.edu/docs/Strategic%20Plan.pdf> and <https://eps.utk.edu/docs/EPSDiversityStatement.pdf>). However, until relatively recently, the Earth and Planetary Sciences community at UTK had not fully embraced or implemented official policies to evaluate, address and consciously change our culture toward a more just, diverse, and inclusive community. In the EPS Department’s 2012 Strategic Plan, the only mention of diversity was in the following statement regarding the Department’s guiding values, i.e., “Professionalism, cooperation, and respect for individuals and for gender/racial/ethnic diversity.” There was no specific mention of diversity or inclusion in the EPS mid-cycle self-study document, dated September 2016. Since the 2016 mid-cycle review process, the Department has been working very hard to increase transparency, communicate and create a culture where everyone is treated equally and respectfully, regardless of gender or race or any other distinctions. Strides have been made regarding gender representation, and we have made inroads. However, these efforts are merely the beginning. Regarding racial representation, our department is lagging behind peer, aspirational, and national peers, despite our best intentions (described below).

In terms of race, 77% of our undergraduate student population with declared geology majors are white (non-Hispanic). As of Fall 2018, African American, Hispanic, and international students

made up 5%, 4%, and 4%, respectively, of our undergraduate student geology majors. The fraction of self-identified white students in our undergraduate program has decreased slightly from 87% in 2013. The graduate student population is dominated by white (non-Hispanics). In Fall 2018 only, 4% of graduate students were international, and only 1% identified as either African American or Asian (Fig. 5). A total of 77% of all graduate applications to the Department over the same period were predominately from white students, with less than 10% coming from BIPOC students (Fig. 5). Within the graduate program from 2014-2019, there have been more women BIPOC students enrolled in our Masters program (Fig. 6). In the past decade, only one in 65 Ph.D. EPS students who completed their degrees belong to an underrepresented minority group.

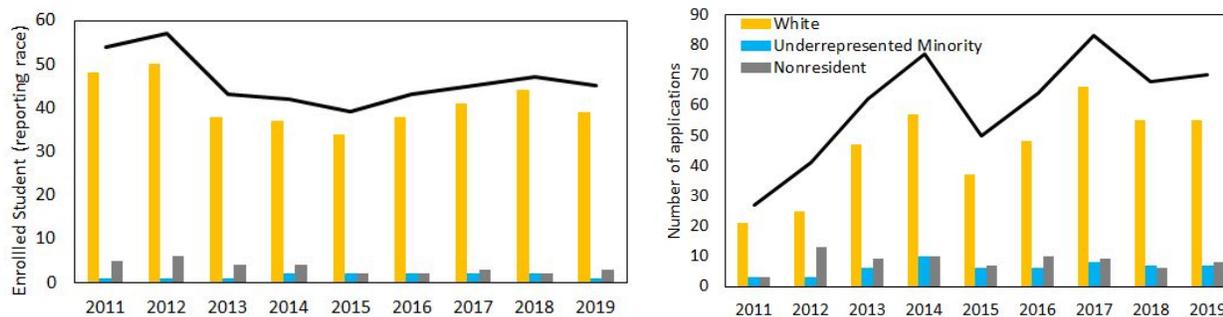


Fig. 5 EPS application and enrollment data (2011 - 2019): (Left) All applications received to the graduate program. (Right) All enrolled students who reported race. Blue = all underrepresented minority students.

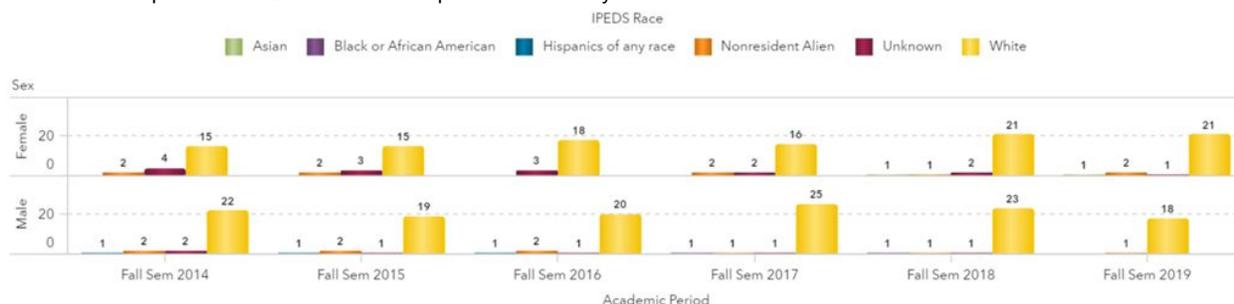


Fig. 6 Minority representation within EPS graduate programs from 2014 - 2019 based on gender. Overall, during this period, more female minority students have been in the program than male minority students.

Comparison of EPS to the US Geosciences as a Whole

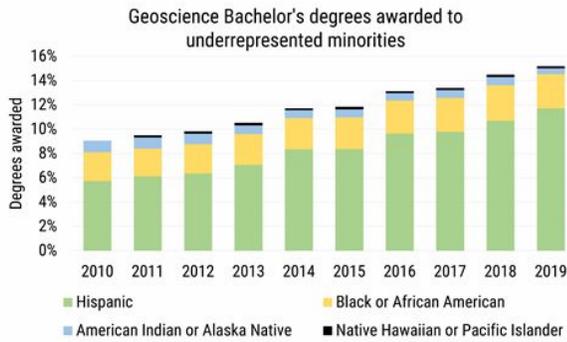
Data were collected from the American Geosciences Institute (AGI) for the number of degrees awarded to underrepresented minority students compared to white students from 2010 - 2019 (which overlapped with our departmental data) (Fig. 7). The proportion of BS geoscience degrees awarded to BIPOC students nationally is higher than within our department, as are the number of graduate degrees to BIPOC graduate students compared to what is awarded in our department (Fig. 7). Employment in the geosciences lags behind other occupations, but there have been gains recently (2019, Fig. 8), which is hopeful and may stimulate recruitment of students from underrepresented minority groups into the discipline.

Public (i.e, easily found online) Goals on Demographics & Increasing Representation

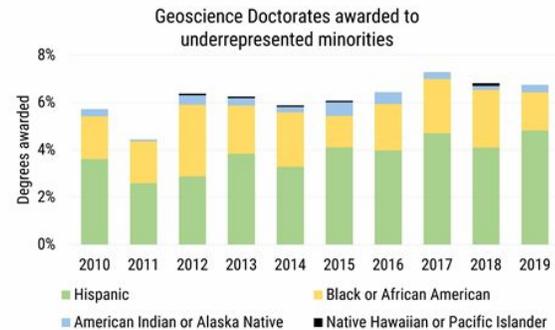
General Goals in *EPS Strategic Plan*

As commitment to diversity is listed in the EPS strategic plan (adopted 11/2019) as a Value of the Department (page 2). Although diversity or representation was not mentioned in the general goals of the Undergraduate or Graduate programs, a separate section on Diversity and Inclusion exists (page 22). However, general (i.e., not directly measurable) goals in the plan included:

- Continue efforts to eradicate concerns regarding gender-based bias



Credit: AGI, data derived from IPEDS



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Fig. 7 Data for all geoscience degrees awarded to underrepresented minorities (top, Bachelor; bottom, PhD). Source: <https://www.americangeosciences.org/geoscience-currents/diversity-geosciences>

General Goals in EPS Diversity Action Plan

In September 2020, EPS developed a **Diversity Action Plan** as part of the overall College of Arts and Sciences (CAS) effort to focus on increasing representation within departments of the College. The plans needed to include measurable goals and specific strategies for achieving those goals. The EPS general commitment to diversity and inclusion was stated as follows:

“The Department of Earth and Planetary Sciences (EPS) affirms its belief in and commitment to diversity and will continue to develop and promote a diverse community. EPS is dedicated to maintaining an inclusive working environment where differing ideas, abilities, backgrounds, and needs are fostered with opportunities for students, faculty, staff, and visitors from divergent experiences to participate in and contribute to the Department. EPS recognizes that diverse perspectives are important and necessary in teaching, research, and service. Therefore, EPS will strive to ensure that every departmental activity is open to all students, faculty, staff, and visitors regardless of race, sex, creed, age, sexual orientation, national origin, religion, or disability.”

The proposed actions in the Diversity Action Plan proposed data collection strategies as they are implemented. These data will be collected from the beginning of implementation (i.e., fall 2020). Parties responsible for collecting said data are also indicated for each statistic to be tracked.

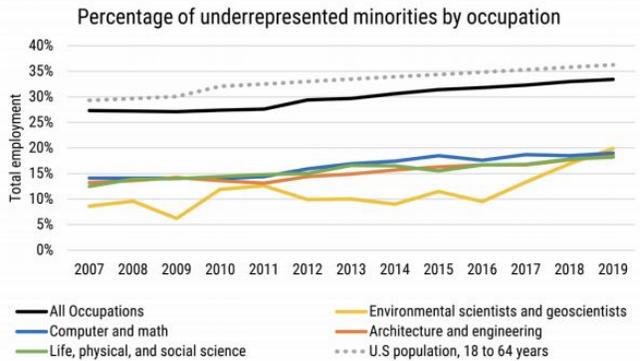


Fig. 8 Percent of underrepresented minorities in science & engineering, including Environmental & Geosciences occupations, 2007-2019. Source: https://www.americangeosciences.org/sites/default/files/DB_2020-023-DiversityInTheGeosciences.pdf

Measurable Goals for Achieving Representation

EPS Strategic Plan

- Recruit and retain at least 5% of graduate students with African American, Hispanic, and/or Asian backgrounds, and at least 10% international students.
- Offer annual implicit bias training to all members of the Department.
- Increase representation of speakers in the Klepser Seminar series.
- Recruit a faculty member from a minority racial group and/or LGBTQ+ orientation.

EPS Diversity Action Plan

- This document, [which can be viewed here](#), has a number of stated goals, with attending objectives, actions, and metrics for each.

Suggested Goals for Improvement

1. Update our policies to make transfer pipelines from community colleges to EPS possible and sustain that connection (not funding-dependent).
2. Connect the Diversity Council to seminar speaker selection in some way (i.e., reserve space).
3. Work within University guidelines to assemble diverse pools of applicants for admissions and hiring opportunities; advertise through society and general scientific publications, but also listservs and social media to broaden the outreach effort.
4. Increase the undergraduate major demographics in EPS to reflect the broader population at UT at least, but ideally Tennessee as a whole.
5. Highlight the profiles of members of the EPS alumni Advisory Board, particularly those from diverse backgrounds and unique career paths; these can also be highlighted on social media and in rotating features on the department's recognition and screen displays.
6. Recommend and commit to rotating departmental art/display content and add to the walls (especially related to diverse representation). One mechanism would be to take advantage and/or use free-standing exhibits (banners) and glass display cabinets to diversify the department's image.
7. Take efforts to expand existing undergraduate research opportunities, for example by increasing advertising through campus and online outlets, including to non-majors, to provide interested students with one-on-one mentoring opportunities.
8. Outreach to develop or promote curricula and materials to biology, chemistry, physics, and environmental science teachers that integrate geosciences into the core TN State science requirements they already teach. This could include possibly teaming with Biology-In-A-Box in UTK Ecology and Evolutionary Biology (i.e., a self-sustaining program) to expand outreach efforts. An existing NSF GEOPATHS grant to members of EPS will provide funding for this effort for the next ~3 years, but efforts beyond that period will require departmental buy-in on the program.
9. Encourage more frequent and aggressive faculty/graduate student interactions at the undergraduate first-year course rotation, as well as Honors & Scholars program, which can introduce earth science/geoscience to groups of incoming students.

POD EXPLORATION REGARDING WHY “THE NUMBERS” ARE NOT IMPROVING

Spurred on by the readings and interviews, the Pod discussed reasons why we think the numbers of underrepresented minorities in the geosciences are not improving, not simply within our department, but within the whole of geoscience broadly. Below are our ideas and action item suggestions where attention could be directed.

Recruitment in Geosciences, Broadly

- NOAA and NSF initiatives to increase geoscience programs at historically Black colleges and universities (HBCUs) and minority-serving institutions (MSIs) were one time grants with no sustained action after the program. This resulted in failure to develop programs that were viable over the long-term, which led to no change in the pipeline to graduate school recruitment (<https://doi.org/10.1080/10899995.2019.1636337>)
- The three main factors in attracting students to the geosciences are: “(1) positive undergraduate experiences, (2) love of the outdoors, and (3) family influences” (<https://www.geosociety.org/gsatoday/archive/21/6/pdf/i1052-5173-21-6-52.pdf>). Although the second point cannot really be altered, we can work to create positive undergraduate experiences through faculty interactions. We can also encourage positive family influence by showcasing successful alumni on our websites, especially BIPOC alumni in industry, and representing a diverse view of the field (especially those who do not do field work).

Department-level

- Efforts to increase BIPOC student membership within the Department appear to be unsustainable at the Department level. Previous grants for recruitment and collaboration with neighboring two-year colleges have ended and the project website appears outdated and buried within the department’s website. Informal connections still exist between major feeder schools (especially Pellissippi State, Roane State, Volunteer State, and Walters State), with instructors there referring individual students to contacts within EPS during the transfer process. Heightened participation during community college recruitment events and guest speaking opportunities would increase visibility of UT EPS as an attractive option for transfer students, who have constituted as much as 50% of our undergraduate majors enrollment in recent years. Moreover, the Department seminars are not broadly advertised to the community colleges, but they could easily be promoted to them each week <https://www.aaiscloud.com/UTNKnoxville/Default.aspx>.
- EPS’s prior NSF GEOPATHS project found that undergraduate research and other examples of experiential learning were successful recruitment tools for underrepresented student communities. EPS lacks opportunities in these areas.
- As to the points listed above for attractants, our current 100-level spread does not provide for much interaction with faculty and is more so focused on lab time and face-to-face interactions with graduate students. This has strong potential for recruitment, but some training might be good on unconscious bias and best practices in teaching and pedagogy for students. Reflecting on what is currently preventing a “positive undergraduate experience” in the non-geoscience members of our 100-level classes would provide us with a jumping off point for improvement and learning.
- Our departmental club, Earth and Planetary Sciences Student Association(GeoClub), has the potential to attract students and showcase many aspects of geoscience while fostering a sense of community. However, combined existence as an undergraduate and graduate club has limited sense of belonging and made leadership positions difficult to fill and consistency between years difficult to foster. Improvements need to be made in undergraduate inclusion and inclusion of the club in university-wide events. New pathways for funding the programming will need to be enacted soon, as none is provided by the

university and past funding channels have disappeared with recent changes in the department. Budget limitations make event planning outside of the existing department increasingly difficult and this limits our recruitment of outside members and therefore diminishes the reach to diverse and underserved populations on campus.

- Community focused engagement for primary and secondary students through informal education is currently scattered among multiple individuals and it is not rare for organizational relationships to be lost with graduate student matriculation. In the past there have been partnerships with diverse and/or underserved populations through organizations such as Girls Inc. (<https://www.girlsinctnv.org/knox-county/>), Kid's Place Sequoyah (kpsequoyah.com), tnAchieves mentor program (<https://tnachieves.org/mentors/apply>), and other local non-profits. Maintaining a list of contacts within the department might aid in sustaining relationships within the community for long term recruitment goals.

State-level

- Tennessee Transfer Pathway for Geoscience (<https://www.tntransferpathway.org/majors/geosciences>) is a program to provide access to higher education across the state through 2 year colleges. Alarming, UT-Knoxville is missing from the TN-Transfer portal as a Geosciences institution for transferring from 2 year institutions. We need to determine if this is an oversight, or if we were removed due to not being in compliance with the transfer pathway requirements. Update requirements to ease the transfer pathway, as required to come into compliance.
- Expansion of the state's Tennessee Promise program (providing two years of tuition for all qualified applicants who are willing to participate in mentoring and volunteer programs) suggests that transfer students will continue to be an important demographic for recruiting efforts, especially among lower income and first generation college students. In fact, many state four year colleges saw major drops in enrollment when this program was first launched, and it is not clear if their enrollment rates have improved in the interim.
- It remains to be seen whether UT Promise (an in-system campaign meant to mimic the funding provided by Tennessee Promise to lower income students entering the University System as true freshmen) will shift a significant portion of the students who would otherwise use the Tennessee Promise pathway to a four year degree back into the UT system.
- Geosciences is not a required part of the curriculum above middle school in the State of Tennessee, so exposure is limited for high school to undergraduate level. State education standards do not include Earth Science. This is especially important in public schools in underserved areas because earth and environmental sciences is available at larger, better funded public and private high schools.
- Historically, the culture of the State has been tightly linked with religious traditions and practices that reject evolution, deep time, and other geologically important concepts. It can be easy for geoscientists to fall into a combative relationship with religious students and organizations, which risks alienation of a large proportion of Tennessee students, especially among underrepresented and underserved communities who might otherwise be interested in the subject or open to expanding their worldview if the material was presented in a more sensitive, less confrontational way.