DataBrief

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AASCU
American Association
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Universities
Delivering America's Promise

Opening Our Doors Wider: Using Data to Promote Equitable Access and Social Mobility

Equitable access focuses on creating opportunities for all prospective students to acquire information, apply, and enroll in a college or university. Access is especially critical for regional public four-year institutions because location matters: nearly 60% of students enrolled in public four-year institutions travel less than 50 miles from their homes, and the rate is even higher for Black, Hispanic, and Native American students.[1] Academic major also matters: 60% to 70% of the growth in earnings gaps by race/ethnicity over the last 30 to 40 years is attributed to differences in access to college programs with labor market value.[2] Institutions taking action to ensure access to "good jobs"—those in high-demand fields with good wages—can help reduce this earnings gap.

The American Association of State Colleges and Universities (AASCU) analyzed data from five higher education institutions to examine accessibility for all students. This brief describes a sample data inquiry that can help institutions identify inequities. The brief also provides guiding questions to assist campuses in facilitating discussions about policies and programs to improve equity and promote social mobility.

The findings reveal patterns that can be examined alongside institutional policies and practices to help institutions understand where to focus future efforts to improve equitable access to education and to promote social mobility.

AASCU's members are access-oriented regional public four-year institutions meeting the educational needs and advancing the economy of their local communities. AASCU has been working closely with a group of five institutions—Austin Peay State University (Tenn.), Bowie State University (Md.), California State University-San Bernardino, Lehman College of The City University of New York, and Northwest Missouri State University—to refine the institutional transformation process at the heart of its student success strategy. This effort is supported by the Bill & Melinda Gates Foundation[3] and aligns with AASCU's strategic goals to assist its members in achieving equitable student outcomes across race/ethnicity, income, and first-generation status.[4]

Two questions are the focus of this analysis of more than 70,000 students enrolled at the five partner institutions between 2014–15 and 2018–19:

❶ Are enrollments representative of the service area population?

❷ What are the enrollment patterns by major field?

The findings reveal patterns that can be examined alongside institutional policies and practices to help institutions understand where to focus future efforts to improve equitable access to education and to promote social mobility.

❶ Are Enrollments Representative of the Institution's Service Area Population?

The five partner institutions educate students from a relatively local area[5]—53% to 94% of students enroll from their surrounding counties. Figure 1 displays the racial/ethnic distribution and share of college-educated residents in the service

area compared to the national average. Although there are composition differences across the five institutions, each serves an area with large Black or Hispanic populations and large shares of families with no college credentials. The median family income for the five service areas differs, largely due to geography, and the distribution of population by gender is typically 50% male/50% female; thus, national comparison on these measures does not add to this analysis.[6]
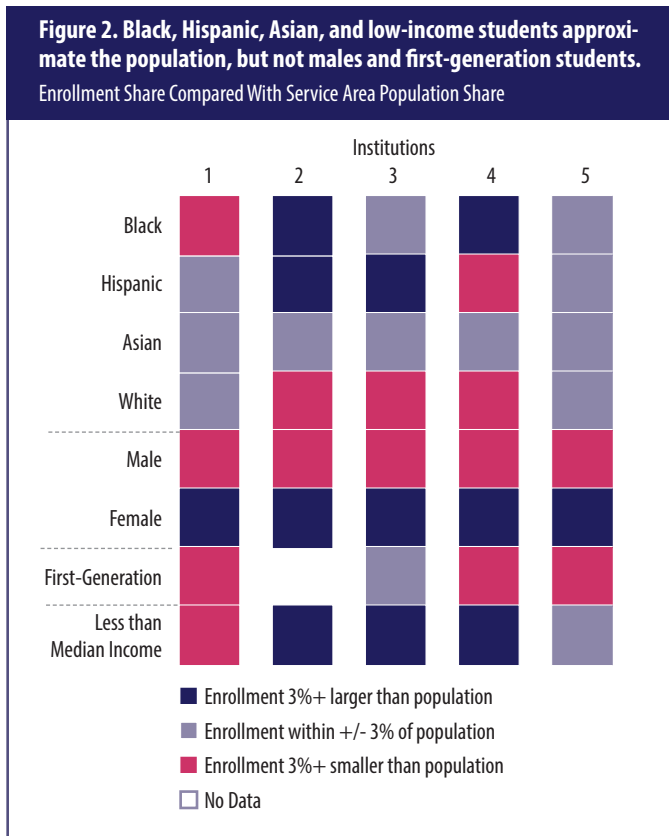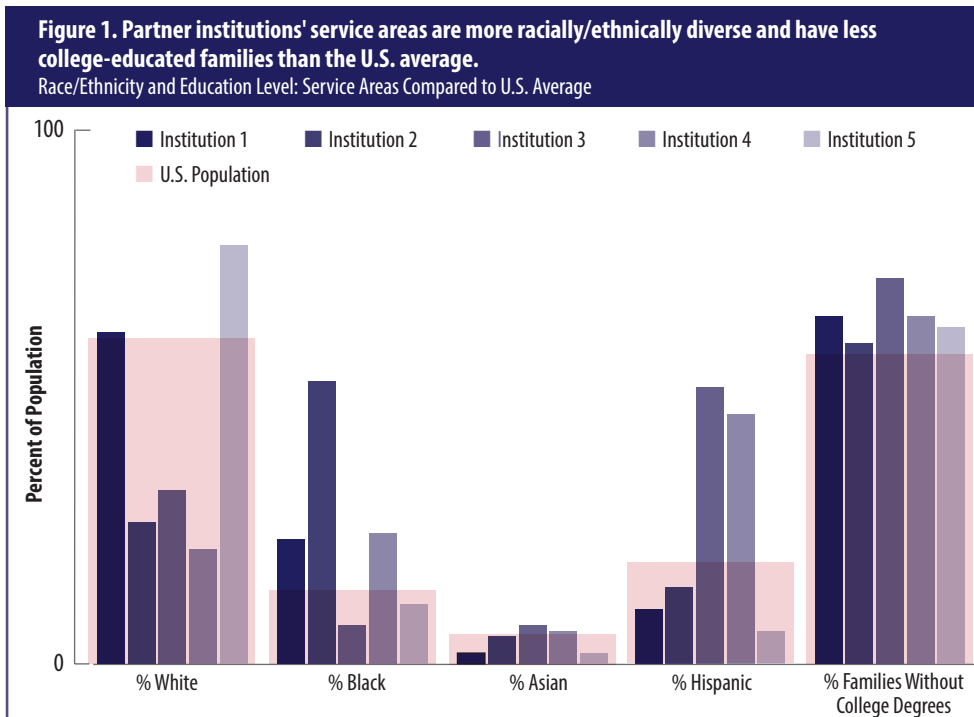
The five institutions' enrollments reflect the race/ethnicity and income diversity of their local areas. However, male enrollments and the share of students from families with no college credentials are smaller than their service areas (Figure 2).[7]

Race/Ethnicity. Four of the institutions enroll similar or larger shares of Black and Hispanic students compared with their service area populations and all five do so for Asian students. In fact, three of the five institutions enroll similar or larger shares of Black, Hispanic, *and* Asian students when compared to their service area population.

Gender.[8] None of the five studied institutions reflect their service areas' gender makeup. Although the population in all five service areas is about 50% male/50% female, 4-in-10 students are male, on average. At one institution, only 3-in-10 students are male.

First-Generation Status. The share of the service area population that does not have a college credential was compared to the share of first-generation students, those who are first in their families to attend college. Across the five service areas, 64% of the population aged 25 or older do not have a college credential at the associate degree level or higher. Among the five institutions, just one enrolls first-generation students at a rate similar to the service area's population without a degree; notably, this institution's service area has the highest density of people without a college degree, about 70%. One institution does not provide first-generation status data, but across the remaining three, the share of students that are first-generation is about 20 to 30 percentage points smaller than that of the service area.[9]

Income.[10] At four of the five institutions, more than half of dependent students are from families with incomes less than the service area median. At one institution, 78% of

Figure 1. Partner institutions' service areas are more racially/ethnically diverse and have less college-educated families than the U.S. average.
Race/Ethnicity and Education Level: Service Areas Compared to U.S. Average

Legend: Institution 1, Institution 2, Institution 3, Institution 4, Institution 5, U.S. Population

Y-axis: Percent of Population (0 to 100)
X-axis categories: % White, % Black, % Asian, % Hispanic, % Families Without College Degrees

Figure 2. Black, Hispanic, Asian, and low-income students approximate the population, but not males and first-generation students.
Enrollment Share Compared With Service Area Population Share

Institutions: 1, 2, 3, 4, 5
Rows: Black, Hispanic, Asian, White, Male, Female, First-Generation, Less than Median Income

Legend:
- Enrollment 3%+ larger than population
- Enrollment within +/- 3% of population
- Enrollment 3%+ smaller than population
- No Data

students are from families with incomes less than the $53,000 service area median, and the family income for dependent students averages $23,400. Only one institution enrolls a smaller share, 36%, of students with family incomes below the service area median of $58,000. The average family income for dependent students is $91,000 at this institution.

Questions to Consider

Examining the distribution of students alongside the service area population allows institutions to assess how closely their enrollment patterns reflect the localities they serve. The access patterns identified lead to deeper questions—see examples below—about related policies and programs and can help institutions understand practices that may perpetuate inequities.

None of the five studied institutions reflect their service areas' gender distribution.

This finding reflects national enrollment patterns. Over the past 50 years, increasing numbers of women entered the workforce and enrolled in higher education. Across the U.S., the share of male enrollments dropped from 60% in 1970 to 40% in 2020.[11] How can institutions work with communities in their service areas to improve the college-going rates for men? Does the application and enrollment process (e.g., financial aid application, attending orientation, registering for class) and experience differ for men and women? How can the learning environment be transformed to attract male students (e.g., experiential learning)?
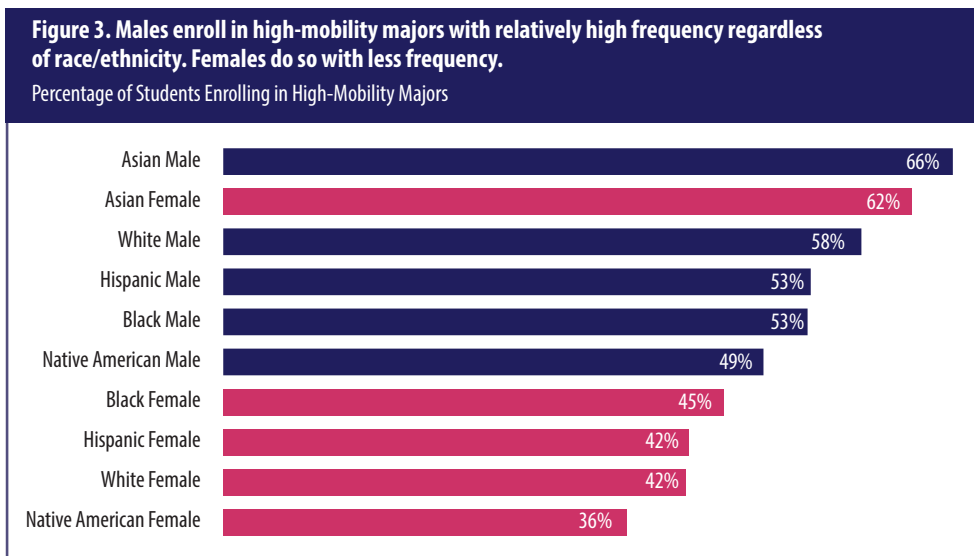
The share of enrolled first-generation students is 20 to 30 percent lower than the share of the service areas' populations without a college credential.

Does the institution collect data to understand the experiences of first-generation students and identify potential barriers to access, including financial barriers? Is the institution holding conversations with first-generation students to understand the effects of processes and systems—such as the financial aid application process—on the decision to attend? What barriers to access exist for first-generation students to attend college? Are programs and events for students and families held in the community in their first language, or while students are in middle or high school, to convey the opportunities that a postsecondary education can provide? Is the institution partnering with trusted community-based organizations to assist in recruiting students?

❷ What Are the Enrollment Patterns by Major Field?

Major selection supersedes student demographics, family income, incoming test scores, and institutional prestige in determining graduates' earnings.[12] Science, technology, engineering, and math (STEM); health; and business are major field areas that lead to high-mobility jobs and are referred to as "high-mobility majors" within this brief.[13] At both entry level and mid-career, wages for workers with degrees in high-mobility majors outpace those in arts, humanities, teaching, and service.[14] Examining enrollment patterns by declared major[15] can help to identify institutional policies and practices that may adversely affect access equity.

Figure 3. Males enroll in high-mobility majors with relatively high frequency regardless of race/ethnicity. Females do so with less frequency.

Percentage of Students Enrolling in High-Mobility Majors

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Asian Male	66%
Asian Female	62%
White Male	58%
Hispanic Male	53%
Black Male	53%
Native American Male	49%
Black Female	45%
Hispanic Female	42%
White Female	42%
Native American Female	36%

Race/Ethnicity and Gender. The trend depicted in Figure 3 is consistent across the five institutions: regardless of race/ethnicity, males enroll in high-mobility majors with relatively high frequency and, excepting Asians, females do so less frequently.

Asian males enroll in high-mobility majors with the highest rate, while Native American females enroll with the lowest rate. Among male students, Hispanic, Black, and Native American males enroll in high-mobility majors less frequently than white and Asian males. At 42%, white and Hispanic females enroll in high-mobility majors with slightly less frequency than Black females, at 46%.

Figure 4 displays enrollment rates within the major field areas. Among high-mobility majors, males enroll in STEM and business majors with greater frequency than health majors, while females enroll more frequently in health majors, regardless of race/ethnicity. Females, except Asians, enroll in STEM majors at only about half the rate of males. Regardless of race/ethnicity, males enroll in business majors at similar rates. Females, except Native Americans, also enroll in business majors at similar rates, but with less frequency than males. Females are more likely than males to enroll in health fields, and Asian females do so with the most frequency.

Figure 4. Historically underserved males enroll in STEM at lower rates than white and Asian males, but at similar rates in business. Historically underserved females enroll in STEM, business, and health at rates similar to white females, but at higher rates in arts/humanities.

Percentage Distribution of Students by Major, Race/Ethnicity, and Gender

		STEM	Business	Health	Arts/Humanities	Education/Service
Male	Asian	31%	23%	12%	20%	3%
	Black	22%	23%	7%	32%	8%
	Hispanic	21%	24%	8%	26%	11%
	Native American	24%	21%	3%	29%	6%
	White	27%	24%	7%	25%	10%
Female	Asian	20%	15%	28%	20%	9%
	Black	12%	15%	19%	36%	12%
	Hispanic	12%	13%	17%	29%	20%
	Native American	11%	7%	18%	39%	16%
	White	13%	12%	17%	32%	19%
	Average	19%	17%	13%	31%	13%

Note: Detail does not sum to 100% because students with missing or undeclared majors are not reported.

Figure 5. Enrollment patterns by major are similar for first-generation and non-first-generation students.

Percentage Distribution of Students by Major and First-Generation Status

	STEM	Business	Health	Arts/Humanities	Education/Service
First-Generation	20%	18%	13%	33%	16%
Non-First-Generation	22%	18%	12%	34%	14%
Average	21%	18%	12%	34%	15%

Note: Detail does not sum to 100% because students with missing or undeclared majors are not reported.

Overall, females and Black and Native American males enroll with higher frequency than others in majors that do not always lead to high-demand/high-paying jobs.

First-Generation Status. Although first-generation students may struggle with navigating systems such as college admissions and the enrollment process, these students' major field enrollment patterns are nearly identical to that of non-first-generation students (Figure 5).[16] This pattern holds within each of the five colleges.
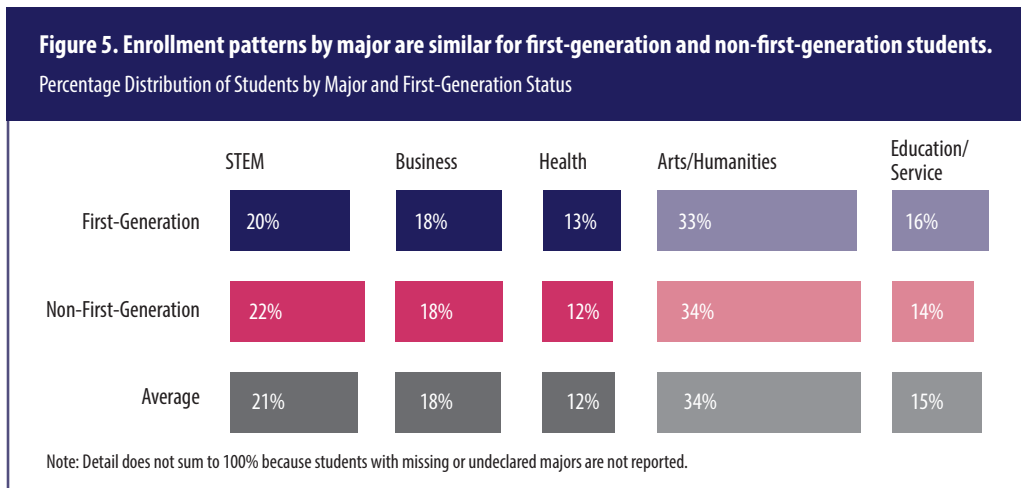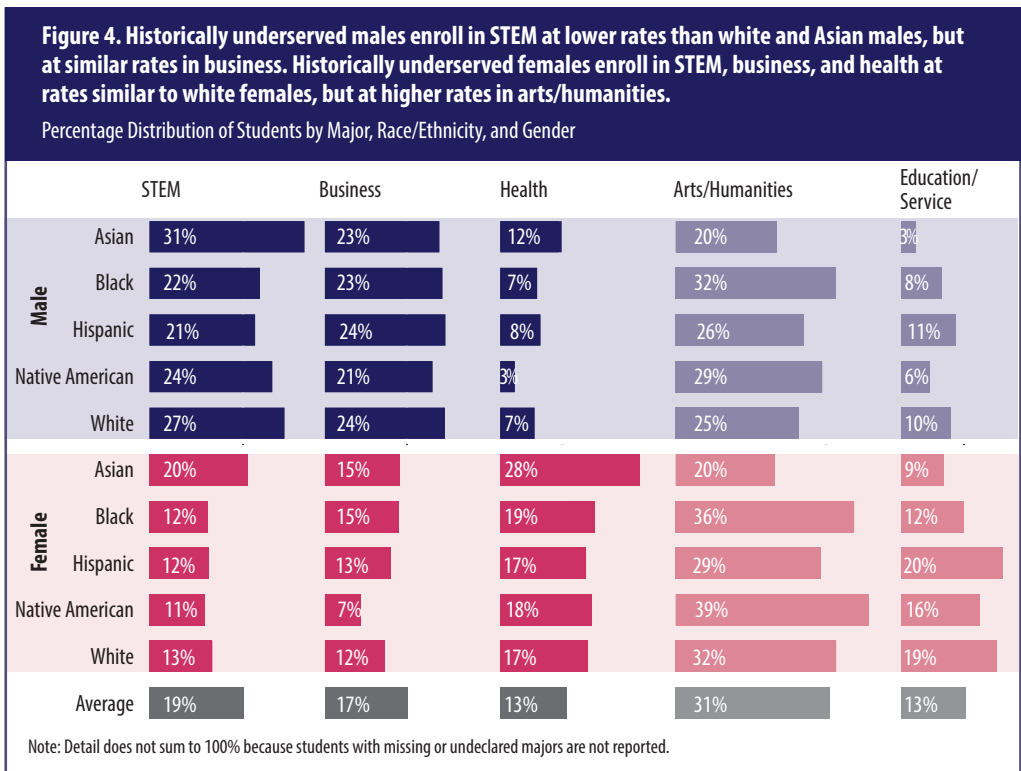
Income. On average, family income does not affect students' major selection (Figure 6). The same is true within each of the institutions, except one where higher-income students enroll in business and STEM majors at slightly higher rates than lower-income students.

Questions to Consider

The evidenced patterns in major selection may be a consequence of social or cultural influences. However, the findings also raise the question as to whether students receive implicitly or explicitly biased information about careers and majors. Here are some questions to consider about whether policies and programs align with or reinforce historical influences:

Figure 6. Enrollment patterns by major are similar regardless of income.*
Percentage Distribution of Students by Major and Family Income

	STEM	Business	Health	Arts/Humanities	Education/Service
<=Median	18%	19%	11%	29%	12%
>Median	19%	19%	10%	28%	12%
All	19%	19%	11%	28%	13%

Family Income

*Based on dependent students only.

Note: Detail does not sum to 100% because students with missing or undeclared majors are not reported.

Black, Hispanic, and Native American males are less likely to enroll in STEM majors than white and Asian males.

Research shows that Black, Hispanic, and Native American students sometimes have larger funding gaps than white and Asian students and tend to take on larger loans.[17] What are the financial and mobility implications if these students enroll in majors that lead to lower-demand and lower-paying jobs? Do institutional practices such as career and academic advising influence student major selection inequitably? Consider student focus groups or surveys to understand the student experience, major selection, and first career upon postsecondary completion.

Females, except Asians, enroll in high-mobility majors with less frequency than males.

Is information presented about career options early on when students are selecting a major (e.g., during career exploration in K-12)? Is the information presented in an unbiased manner? For example, on your institution's website and marketing materials, are women more often depicted alongside information for humanities and service majors and less often with STEM or business majors? Are female faculty seen teaching STEM and business courses?

About one-third of Native American females and one-half of Native American males enroll in high-mobility majors—the lowest rates by race/ethnicity and gender.

In what specific majors do Native American students enroll? What are the reasons for major selection? Do students have accurate and accessible information about job fields and the labor market? How is information about majors and careers provided? How can the institution include Indigenous voices in systems, processes, and communications? What social or cultural barriers exist for Native American students transitioning to college from tribal communities and high schools?

Conclusion

This analysis provides an example of an access equity inquiry to assess how accessible institutions are to the communities they serve. Examining whether institutional enrollment is representative of the service area can lead to exploration of policies, practices, or supports to better meet the needs of local students. Examining enrollment patterns across majors can lead to inquiry of policies and programs that may create barriers to access to high-mobility majors and, thus, well-paying jobs for historically underserved students.

Among these five institutions, for example, enrollments appear to be relatively equitable across race/ethnicity and income, but males and first-generation enrollments are underrepresented. Once males enroll, they do so in high-mobility majors with relatively high frequency, while females, except Asians, often enroll in majors that lead to lower-mobility jobs. First-generation status or family income does not make a difference in major selection.
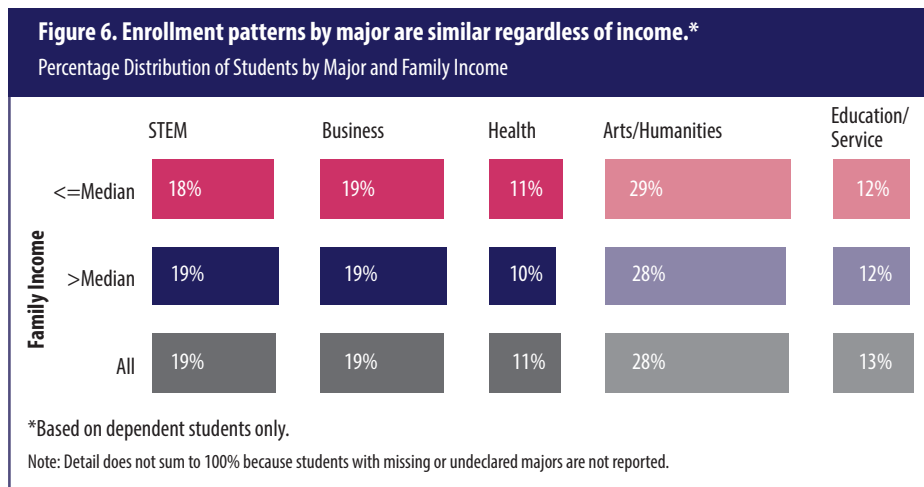
When conducting an equity inquiry, it is crucial for institutions to understand all of the systems and the related obstacles that act on students. Below are questions institutions can consider regarding processes, policies, and programs that may introduce inequities, both explicitly and implicitly.

- Which student populations should be included in equity conversations? What types of data can be collected to better understand their experiences and outcomes?

- Who most likely benefits from the policy or program? Is the program meant to serve all students equally?

- How might a practice disadvantage some students, particularly Black, Latinx, Indigenous, and low-income students?

- What is prioritized, rewarded, and normalized to consistently privilege those in certain groups?

- How did those who designed the policy take equity into account? Was it considered?

- Who might not meet eligibility requirements? Does this have uneven effects?

- How is the selection of majors introduced to incoming students? How does an institution choose to address major and career aspirations?

COVID-Era Access Equity Considerations

The coronavirus pandemic has had strong adverse effects on Black, Latinx, Indigenous, and low-income students. Education access includes ensuring supports for both academic and non-academic concerns.

During the pandemic, historically underserved students have experienced increased challenges related to employment and finances, affecting their ability to pay for and attend college. Students of color, low-income, and first-generation students, in particular, may lack access to technology or the internet to view information about prospective colleges and navigate the application processes. Be sure to consider:

- How is access to financial aid information, particularly emergency funds or basic needs assistance, affected?

- Do students have access to federally distributed assistance (e.g., Coronavirus Aid, Relief, and Economic Security Act and Coronavirus Response and Relief Supplemental Appropriations Act, 2021) in a timely fashion to meet their needs?

- How is information conveyed regarding admissions to mitigate summer melt issues?

- Are all students able to communicate with advisors and counselors?

- What information can ensure students' needs are understood across the spectrum of supports and policies?

Methodology and Terms

Analytical note. The major field patterns by race/ethnicity and gender, first-generation status, and income analyses were conducted for students with reported data. Race/ethnicity and gender is missing for 4% of students. First-generation status is missing for 28% of students. Analysis by income is reported for dependent students only, about 70% of students reported. Due to differences in the analyzed groups, there is slight variability in the average distribution of students by major field across the student characteristics reported.

Computation of averages. The five institutions vary in size; as such, simple averages were computed across the institutions so that one institution does not weigh more or less than the others.

Income. Total adjusted gross income in tax year prior to academic year enrollment. Only dependent students were included in this analysis to be as comparable as possible to the Census estimate definition for the service area comparison.

Major field declaration and groups. Student's major field at first enrollment. Majors are coded using the U.S. Department of Education's Classification of Instructional Programs (CIP) codes.[18] Major fields were grouped into five areas to ensure large enough group size for analytical purposes and to examine specific major fields of interest. The major field groups follow.

	Major Field Groups and Majors	Percentage of Students (Total number of students = 78,197)
STEM	Agriculture, Agriculture Operations, and Related Sciences	1.4%
	Natural Resources and Conservation	0.4%
	Biological and Biomedical Sciences	6.5%
	Physical Sciences	1.5%
	Engineering	0.7%
	Engineering Technologies/Technicians	1.1%
	Computer and Information Sciences and Support Services	5.4%
	Mathematics and Statistics	1.2%
Business	Business, Management, Marketing, and Related Support Services	13.1%
	Communication, Journalism, and Related Programs	2.2%
	Communications Technologies/Technicians and Support Services	0.6%
Health	Health Professions and Related Clinical Sciences	12.6%
Arts, Humanities	Social Sciences	4.2%
	Psychology	7.4%
	Area, Ethnic, Cultural, and Gender Studies	0.1%
	Foreign Languages, Literatures, and Linguistics	0.6%
	English Language and Literature/Letters	1.5%
	Liberal Arts and Sciences, General Studies and Humanities	10.1%
	Multi/Interdisciplinary Studies	0.7%
	Philosophy and Religious Studies	0.1%
	History	1.2%
	Visual and Performing Arts	3.2%
Education, Services	Education	4.5%
	Personal and Culinary Services	0.0%
	Family and Consumer Sciences/Human Sciences	0.7%
	Parks, Recreation, Leisure, and Fitness Studies	3.3%
	Transportation and Materials Moving	0.0%
	Legal Professions and Studies	0.1%
	Public Administration and Social Service Professions	2.9%
	Security and Protective Services	3.7%
Missing, Undeclared	Missing	8.4%
	Undeclared	0.4%

Native American. Native American includes students identifying as American Indian and Alaska Native.

Service area and demographics. The five institutions' service areas were defined by the in-state counties represented by 5% or more of the institution's enrollment. Typically, one county comprises 50% or more of each institution's enrollment. The demographic distributions of each service area were weighted by the share of enrollment from each county. For example, if 75% of enrollments come from County A, County A's income was weighted by 75% to compute the average income for the service area. The counties included for each institution and their respective share of enrollment follow.

- Austin Peay State University: Montgomery, 52%; Davidson, 6%; Shelby, 5%

- Bowie State University: Prince George's, 58%; Baltimore City, 8%; Anne Arundel, 7%; Baltimore County, 7%; Montgomery, 7%; Charles, 6%

- California State University, San Bernardino: San Bernardino, 59%; Riverside, 36%

- Lehman College in The City University of New York: Bronx, 62%; New York, 13%; Westchester, 12%; Queens, 6%

- Northwest Missouri State University: Jackson, 17%; Clay, 15%; Nodaway, 9%; Platte, 7%; Buchanan, 5%

Service area demographics were derived from U.S. Census Bureau, American Community Survey, demographic, and housing five-year estimates for educational attainment for the population 25 years and over, median household income, race/ethnicity and gender. For further information visit
https://data.census.gov/cedsci/table?d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2017.DP05.

Endnotes

1   Nicholas Hillman and Taylor Weichman, "Education Deserts: The Continued Significance of 'Place' in the Twenty-First Century," American Council on Education, 2016, https://www.acenet.edu/Documents/Education-Deserts-The-Continued-Significance-of-Place-in-the-Twenty-First-Century.pdf.

2   Carnevale, Anthony P., et al. The Merit Myth: How Our Colleges Favor the Rich and Divide America. The New Press, 2020.

3   The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the foundation.

4   "Strategic Directions and Goals: FY 2020–2025," American Association of State Colleges and Universities, July 9, 2020, https://www.aascu.org/strategic-plan/StrategicDirections/.

5   Robert Maxim and Mark Muro, "Restoring Regional Public Universities for Recovery in the Great Lakes," Metropolitan Policy Program at Brookings, June 2020, https://www.brookings.edu/wp-content/uploads/2020/06/20200617_Brookings-Metro_Great-Lakes-RPUs_FULL-final.pdf.

6   Native Americans account for a small share of the population in each of the five institution service areas, rounding to 0%, and, as such, are not displayed here.

7   Counties that account for 5% or more of an institution's enrollment comprise an institution's service area for purposes of this analysis. Of the five institutions included in this analysis, two to six counties create the service area; more than 50% of students hail from one county in four of the five institutions.

8   The partner institutions report gender values of male and female only.

9   Three of the four institutions providing first-generation status do not carry first-generation status data for some students, ranging from 5% to 25%. A large number of unknowns can affect the reported results, depending on how they vary.

10   Only dependent students were included in the income analysis. Independent students' family composition and income situations vary widely. As such, they are not easily comparable to the Census median family income data for the service area. Students are considered to be dependent unless they meet one of the following criteria for independence: age 24 or older by Dec. 31 of the academic year; a veteran of the U.S. Armed Forces; enrolled in a graduate or professional program beyond a bachelor's degree; married, orphaned, or ward of the court; or have legal dependents other than a spouse.

11   U.S. Department of Education, National Center for Education Statistics, "Table 303.70. Total undergraduate fall enroll-ment in degree-granting postsecondary institutions, by attendance status, sex of student, and control and level of institu-tion: Selected years, 1970 through 2026," Digest of Education Statistics, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asp.

12   Anthony P. Carnevale, Megan L. Fasules, Stephanie A. Bond Huie, and David R. Troutman, "Major Matters Most: The Economic Value of Bachelor's Degrees," Center on Education and the Workforce, Georgetown University, 2017, https://cew.georgetown.edu/wp-content/uploads/UT-System.pdf.

13   Anthony P. Carnevale, Ban Cheah, and Andrew R. Hanson, "The Economic Value of Majors: Executive Summary," Center on Education and the Workforce, Georgetown University, 2015, https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/The-Economic-Value-of-College-Majors-Exec-Summ-Web.pdf.

14   Ibid.

15   This analysis examined students' declared major at the time of first enrollment.

16   Student records containing missing data on the key disaggregate(s) are not included in the analysis, causing slightly different averages by major field across this analysis.

17   Sue Clery, "Data Brief: Do Financial Aid Policies Promote Equality or Close Equity Gaps?", American Association of State Colleges and Universities, October 2020, https://aascu.org/uploadedFiles/AASCU/Content/Root/AcademicAffairsPrograms/Oct2020.pdf.

18   For further information, see U.S. Department of Education, National Center for Education Statistics, Classification of Instructional Programs, https://nces.ed.gov/ipeds/cipcode/Default.aspx?y=56.

About the American Association of State Colleges and Universities

The American Association of State Colleges and Universities (AASCU) is a Washington, D.C.-based higher education association of nearly 400 public colleges, universities, and systems whose members share a learning- and teaching-centered culture, a historic commitment to underserved student populations, and a dedication to research and creativity that advances their regions' economic progress and cultural development. These are institutions Delivering America's Promise.

Prepared in Partnership With ASA Research

This AASCU Data Brief was prepared by Sue Clery, founding partner of ASA Research, in collaboration with AASCU. ASA is driven by the belief that research—particularly in the fields of higher education and workforce—is essential for expanding opportunity, improving economic mobility, and contributing to personal and social well-being. ASA is pleased to partner with AASCU in support of student success and to provide strategic data consulting and assistance to AASCU.

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