



# The Neglected College Race Gap: Racial Disparities Among College Completers

By CJ Libassi     May 23, 2018

For many years, the conversation about equity in higher education has focused on the serious gaps in access for black and Hispanic people.<sup>1</sup> Awareness has also been growing that getting into college is not enough; black and Hispanic students are also much less likely to graduate.<sup>2</sup>

There are serious inequities even among students who do graduate from college. Using federal data on the type of credentials students earn and the majors they study, this analysis finds that, compared with white students, black and Hispanic graduates are far more likely to have attended for-profit colleges and less likely to have attended four-year public or nonprofit institutions. Black and Hispanic graduates also generally have attended institutions that have less money to spend on offering a quality education. And they are significantly underrepresented in important fields such as engineering and education, mathematics and statistics, and the physical sciences.

If U.S. colleges and universities eliminated these gaps among their graduates alone—not considering disparities among those who don't make it to graduation—a large number of students would have a different credential. This issue brief's analysis of federal data on the number of degrees and certificates earned by black, Hispanic, and white students from 2013 through 2015 shows that if black and Hispanic graduates earned each degree type at the same rate as their white peers, more than 1 million more would have earned a bachelor's degree in just those three years.

These gaps also show up in the fields in which students receive their bachelor's degree. For instance, if black and Hispanic bachelor's degree recipients were as likely to major in engineering as white students, this country would have produced 20,000 more engineers from 2013 through 2015. What's more, the United States would have 30,000 more teachers of color if students of color were represented equally among education graduates.

When gender disparities are taken into consideration, inequalities are even starker. For example, white men earn bachelor's degrees in engineering at roughly six times the rate of Hispanic women and more than 11 times the rate of black women.

## Methodology

To understand the breakdown among white, black, and Hispanic college completers in the United States, this brief uses the college completions data from the Integrated Postsecondary Education Data System (IPEDS) for all programs at all types of colleges in the United States from 2013 through 2015.<sup>3</sup> These three years were chosen because they were the three most recent years for which all the necessary data are available to carry out the analysis. The analysis is limited to black, Hispanic, and white degree recipients because of the long history of exclusion and gaps across these groups and because they are the three largest demographic groups represented in the data.

To calculate the fraction of each racial group's credentials that occur in each sector, level, and major analyzed, the author divided the total number of each group's completions in that category by the total number of degrees awarded to students of that race. It should be noted that these are counts of credentials, not students. This means that if a student graduates with multiple majors or pursues a bachelor's degree after finishing their associate degree, they will be counted more than once in the data. For ease of phrasing, the brief sometimes refers to the fraction of graduates in a field of study or type of school, but this should not be taken as indicating that the counts being examined necessarily count distinct students in every instance.

For each of the comparisons in the brief, the baseline assumption is that in a postsecondary system where race did not have an impact on society and was not a factor in what type of credential a student receives, the fraction of students completing in each category would be the same across all racial groups—they would be statistically independent. In other words, knowing a graduate's race would give you no new information about their likelihood of having graduated from a certain type of school or with a particular credential. This is distinct from comparing the racial breakdown by credential with the fraction of the college-going population each racial group represents. The latter comparison would demonstrate how well-represented each racial group is relative to the whole population. Instead, the measure in this brief examines how well-represented each type of credential is among students of a given race.

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## Addressing entrenched gaps

These startling gaps show that true racial equity in higher education means more than getting students to and through college; it also means providing equality in the programs of study that are accessible and welcoming to them. Yet as dramatic and entrenched as the gaps are, there are concrete steps that policymakers and researchers can take to offer more students the opportunities they deserve.

First, researchers and institutions need to study more carefully the nature of the problem: Are students of color pursuing certain majors initially, only to switch later? Or are they steering clear of those fields entirely? Existing state data systems that are able to track college outcomes by race will be crucial to this research.

Second, institutions need to examine whether their pricing and advising practices are disproportionately pushing students of certain races into particular majors. Increasingly, colleges are charging different prices depending on the department in which students take classes. There is already evidence that these price differentials are disproportionately dissuading students of color from high cost fields such as engineering.<sup>4</sup> Additionally, implicit bias in the on-campus advising process could mean that black and Hispanic students are being dissuaded from studying in certain fields, while being encouraged to study in others.

Third, schools must consider how introductory courses affect student persistence in each major. Are these courses designed to “weed out” students that departments do not see as a good fit for the major? And if so, does this have a disparate impact on underrepresented students of color? One survey of 400 department chairs from top research universities revealed that respondents thought such a practice could be harmful to diversity. Given this and the results shown in this brief, this theory deserves further scrutiny.<sup>5</sup>

This issue brief shows that the equity conversation cannot stop at the college door and pick back up upon graduation. Differences in the types of credentials students receive and where they earn them have important implications for students’ long-term earnings potential and career satisfaction, as well as the diversity of the U.S. workforce.

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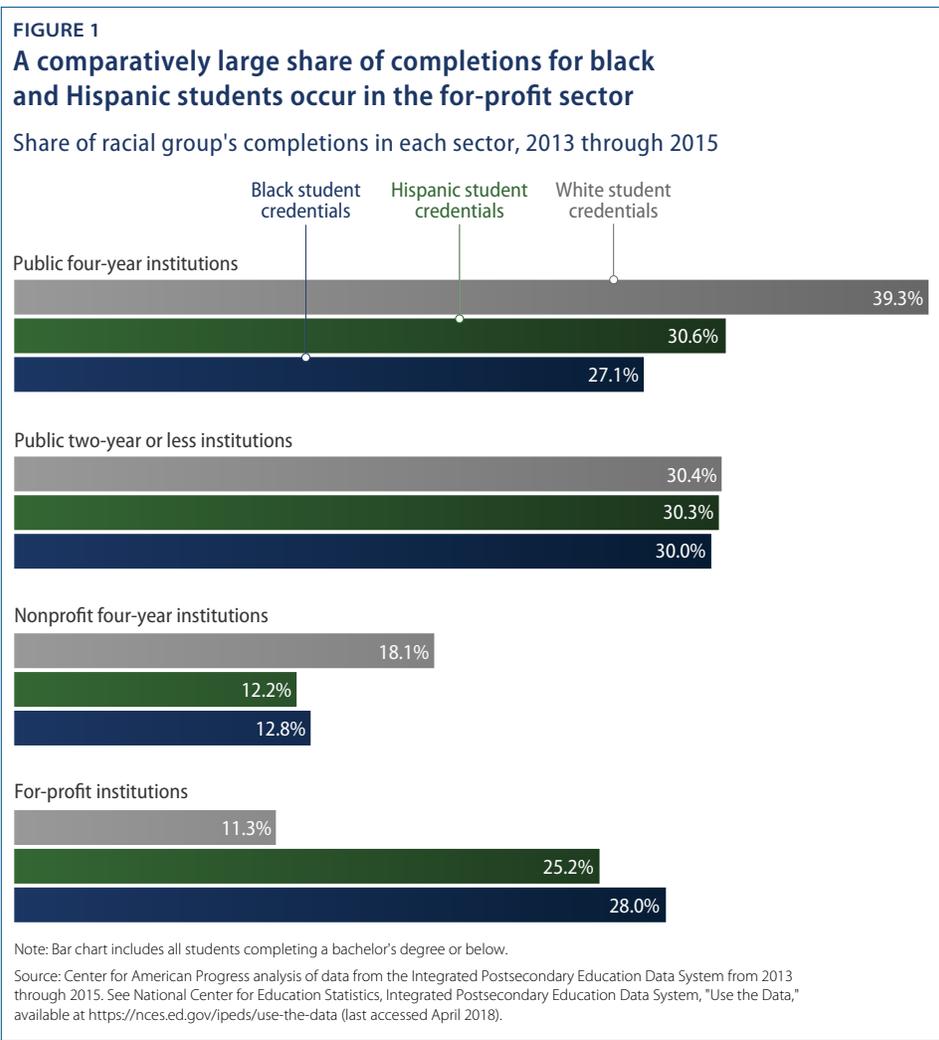
## Where students complete

There is stark inequality in where black and Hispanic students get their degrees and certificates. Given the racial differences in where students enroll, this is perhaps not surprising. Nevertheless, this gap is often overlooked. Black and Hispanic students are much more likely to receive their credential from for-profit schools and much less likely to receive their credential from a public four-year institution. Their credentials are also more likely to come from schools that spend less money on their students, as well as schools with lower average SAT scores, lower faculty salaries, lower retention rates for first-year students, and higher student-faculty ratios.

### Institution type

This study finds dramatic differences in the type of institution at which graduates of different races complete their programs. As Figure 1 shows, between 2013 and 2015, white students disproportionately earned their degrees or certificates at public and

non-profit four-year universities, while black and Hispanic completers were much more likely to have graduated from for-profit schools. Given the mounting evidence that going to a for-profit college can be worse than not attending college at all, the comparative risk that black and Hispanic students receive their credential from a for-profit college is perhaps the most concerning inequality uncovered in this analysis.<sup>6</sup>



While 39 percent of the degrees and certificates white students receive come from public four-year schools, only around 30 percent of credentials awarded to black and Hispanic students are from public four-year colleges. A larger fraction of white students' credentials also come from private, non-profit four-year institutions.

Meanwhile, the for-profit space accounts for about 30 percent of black and a quarter of Hispanic credentials, respectively, while making up just 11 percent of white credentials. To emphasize how extreme this difference is, consider that a larger share of credentials for black graduates comes from for-profit institutions than from public four-year schools. This, despite the fact that public four-year schools award twice as many credentials overall as for-profit schools.

Figure 1 also shows that the one slice of the higher education sector in which white students and black and Hispanic students are equally represented is community colleges. Roughly 30 percent of each group graduates from public two-year schools.

All told, if black and Hispanic graduates' credentials occurred in the sectors detailed above at the rate of white students, there would have been roughly 1 million fewer credentials earned at for-profit institutions and over 600,000 more earned at public four-year schools.

### Student spending

Yet even if students of color earn credentials from institutions similar to those their white peers attend, there can be inequities in how much an institution spends to educate their students. While higher spending levels do not necessarily guarantee quality, recent research has established that increased spending has positive effects on both enrollment and completion for the affected students, with a 10 percent increase in spending raising the number of degrees awarded by 2 percent to 9 percent.<sup>7</sup>

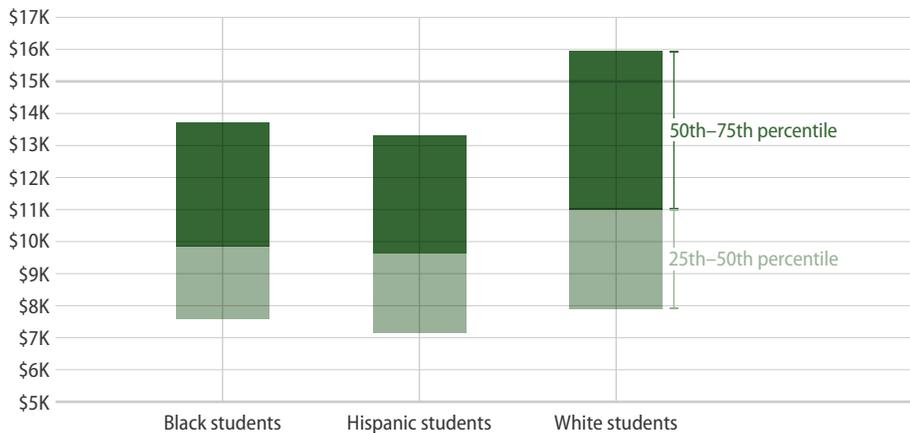
Figure 2 compares spending per full-time equivalent (FTE) student across the institutions where students of different races complete their credentials.<sup>8</sup> It is clear that white graduates receive their credential from institutions that spend much more per student than do their black and Hispanic peers. A quarter of white credential holders leaving school in 2015 attended an institution that spent at least \$16,000 per student, whereas the top quarter of black and Hispanic graduates finished at institutions spending at least \$13,000-\$14,000 per student, a difference in spending of 16 percent to 20 percent.

The median white graduate also has an advantage over their black and Hispanic peers from a spending perspective. While the median black and Hispanic students get their credentials from a school that spends a little less than \$10,000 per student, the median white student finishes their studies at a school spending a little more than \$11,000 per student. Across 2,000 undergraduates—roughly the number at a bachelor's degree granting institution that spends the median amount—this difference translates into a total spending gap of about \$2 million each year at a typical school.

FIGURE 2

### Institutions where black and Hispanic students disproportionately get their credentials spend less per student

Interquartile range of spending per full-time equivalent (FTE) for institutions where students complete their degrees, by race, 2015



Note: Plots are weighted by the number of completions at each school. Figure shows data for all students completing a bachelor's degree or below in 2015.

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018). Spending data from Sara Garcia, "Gaps in College Spending Shortchange Students of Color" (Washington: Center for American Progress, 2018), available at [www.americanprogress.org/issues/education-postsecondary/reports/2018/04/05/448761/gaps-college-spending-shortchange-students-color/](http://www.americanprogress.org/issues/education-postsecondary/reports/2018/04/05/448761/gaps-college-spending-shortchange-students-color/).

## Selectivity and resources

Although spending is very important for learning at the postsecondary level, there are a variety of other significant ways in which the institutions that students of color disproportionately attend put them at a disadvantage. It is helpful to collapse a range of factors into a single index that measures how selective and how well-resourced an institution is, what this analysis refers to as the selectivity and resources index (SRI).

For this analysis, the SRI combines how schools compare on the average SAT score of their entering students (a measure of peer academic performance), the average faculty salary (a measure of the demand for those faculty), the student-faculty ratio (a measure of the amount of access students have to their professors), and the first-year retention rate (a measure of the chance a student will drop out of that school).<sup>9</sup> Each of these measures show ways in which students at certain institutions can be more privileged than their peers at other schools. Because admissions standards are more common among bachelor's degree students, this analysis focuses exclusively on those degrees.

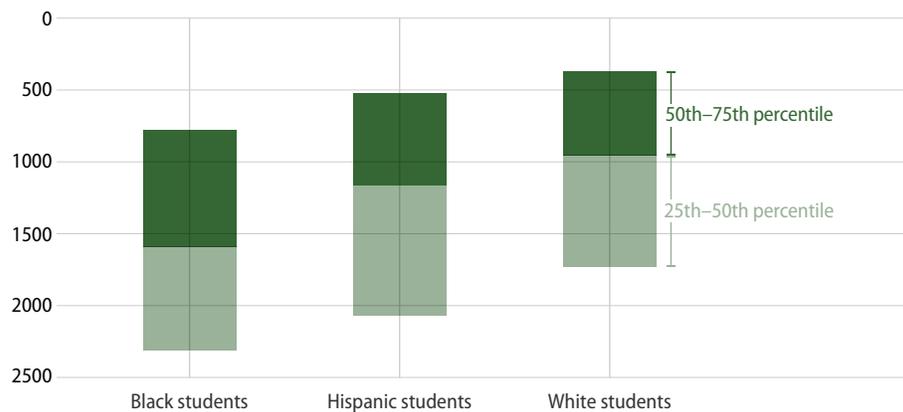
Here again, white students are advantaged relative to their black and Hispanic peers. Figure 3 shows the distribution of the SRI ranks of the schools between the 25th percentile and 75th percentile from which students of each race receive their degrees. Schools that rank higher on the composite SRI measure are closer to the most selective and resource-rich institution.<sup>10</sup>

Figure 3 demonstrates that white students are more likely to receive their degrees from institutions that outrank the institutions of their underrepresented peers of color on the SRI. For example, the median institution for white students ranks about 600 places higher than the median institution for black students. The median institution attended by white students outranks that of Hispanic students by around 200 places.

**FIGURE 3**

**Institutions where black and Hispanic students disproportionately get their credentials are less selective and less well-resourced**

Interquartile range of the selectivity and resources index (SRI) rank of institutions where students completed their degrees, by race, 2013 through 2015



Note: Plots are weighted by the number of completions at each school. Figure shows data for all students completing a bachelor's degree or below, from 2013 through 2015, where there are data available for at least three of the four measures of eliteness and resources used. Following Dillon and Smith's 2017 study, the SRI rank determines a school's position by taking the weighted average of the normalized value of four measures: the average SAT score of their students, the first-year retention rate, the average faculty salary at the school, and the student-faculty ratio. The weights for this average are determined by the factor loadings for the first principal component of the four measures.

Source: Center for American Progress analysis of data from the College Scorecard and Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018). U.S. Department of Education, "College Scorecard Data," <https://collegescorecard.ed.gov/data/> (last accessed April 2018). Ranking methodology from Eleanor Wiske Dillon and Jeffrey Andrew Smith, "Determinants of the Match Between Student Ability and College Quality," *Journal of Labor Economics* 35 (1) (2017): 45–66.

## What degrees students earn

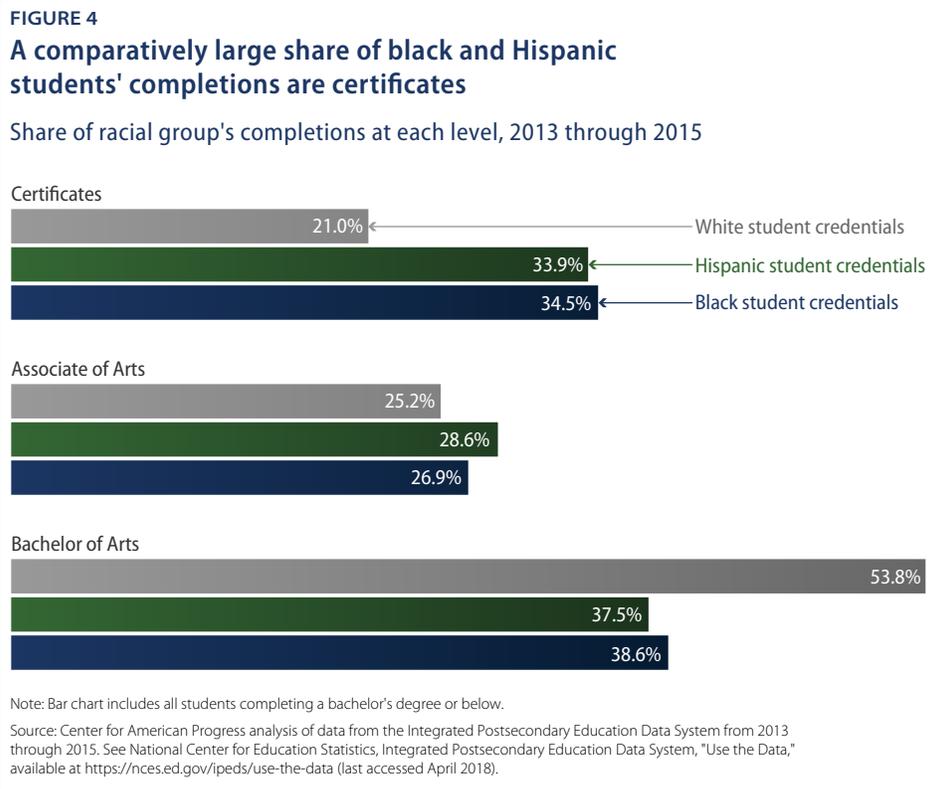
In addition to understanding where students are earning their credentials, it is important to look at what they leave school prepared to do. What students major in is an important determinant of their future earnings and the diversity of the U.S. workforce across fields.

### Credential type

There are clear differences in the net returns of different types of credentials. While all types of postsecondary credentials can provide value, one recent review of the most rigorous evidence on the financial return of degrees and certificates shows a clear hierarchy. Bachelor's degrees are the best investment, easily outearning their cost over a person's lifetime. Associate degrees also provide a substantial return on the money

a student invests, though, on average, that return is lower than for bachelor's degrees. Finally, there is some evidence of an immediate earnings boost from short-term credentials—what this brief calls certificates—but the value of this credential does not seem to persist over time.<sup>11</sup>

In light of this research, this brief's findings are troubling. Figure 4 reveals big differences across races in the rate at which students get bachelor's degrees versus less-than-two-year certificates. While more than half of all degrees that white students earn are bachelor's degrees, just under 40 percent of the degrees that black and Hispanic students earn are bachelor's degrees. By contrast, underrepresented students of color see a much larger fraction of their completions come at the lowest credential level. While around 1 in 5 white completions are certificates, roughly 1 in 3 black and Hispanic completers earn this type of credential.



All told, these disparities mean that hundreds of thousands of black and Hispanic students are earning credentials that are likely to offer less labor market value than the bachelor's degrees received by their white peers. Between 2013 and 2015, if the same percentage of black and Hispanic graduates were earning bachelor's degrees as white students, the United States would have produced another 1 million bachelor's degrees, with 435,000 awarded to black students and 575,000 awarded to Hispanic students. That would be a roughly 40 percent increase over the actual number of bachelor's degrees awarded to these individuals over the same time period.

## Field of degree

Even when students earn bachelor's degrees, what they study does not always offer the same life opportunities. There is wide variation in the job prospects and earning potential of graduates depending on their major.<sup>12</sup> And beyond the labor market consequences for students, society has a strong interest in equitable representation of racial groups across occupations.

First, there is strong evidence that diversity improves the performance of work teams and firms.<sup>13</sup> Also, because the postsecondary system produces too few black and Hispanic education majors, as this analysis shows, the U.S. teaching force doesn't resemble K-12 student communities. This matters because there is increasing evidence that having a teacher of the same race helps students of color succeed in school, as measured by test scores and suspension and dropout rates. Given this, policymakers should be particularly concerned about the racial gap in education majors.<sup>14</sup>

The gaps by major also have serious implications for students' earnings and indebtedness, particularly for engineering majors. Research shows that students of color are more likely to avoid majors such as engineering when colleges charge higher tuition fees for those programs. As that type of differential pricing becomes more common, it's quite possible that these gaps will grow.<sup>15</sup>

Furthermore, engineering is routinely listed among the highest paid majors,<sup>16</sup> and there is evidence that the returns can be attributed to the degree itself, rather than to characteristics of the students who seek it.<sup>17</sup> Given the wide income and wealth gaps across racial groups, and that students of color are more likely to borrow substantially for college, closing off one of the most remunerative careers to students of color has serious implications for American society.<sup>18</sup>

To show the extent of the problem, Tables 1 and 2 take a comprehensive look at representation of white, black, and Hispanic graduates among bachelor's degree completers in 2013 through 2015 across fields of study, with the exception of the area and ethnic studies field. The analysis excludes this area because one would expect a disproportionate number of students of color to earn a degree in this field.<sup>19</sup> This approach borrows from recent research on the inequitable racial and gender representation in the field of economics to measure how close or far an academic field is from having an equal share of students from these different racial groups.<sup>20</sup>

TABLE 1

**Representation for Hispanic graduates varies greatly across fields**

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, 2013 through 2015

Field of degree	Degrees earned by Hispanic students	Degrees earned by white students	Ratio of Hispanic student to white student degrees
Theology and religious vocations	2.6	6.9	37.8%
Agriculture, agriculture operations, and related sciences	5.4	12.3	43.5%
Natural resources and conservation	5.8	11.2	51.2%
Education	39.4	65.4	60.2%
Transportation and materials moving	1.6	2.6	62.9%
Physical sciences	11.2	16.7	66.9%
History	14.7	21.2	69.5%
Mathematics and statistics	8.4	12.0	70.3%
Parks, recreation, leisure, and fitness studies	19.9	26.6	75.1%
Philosophy and religious studies	6.3	8.3	75.5%
Engineering technologies and engineering-related fields	7.2	9.2	78.4%
English language and literature/letters	24.8	30.4	81.7%
Engineering	40.9	47.5	86.2%
Communication, journalism, and related programs	44.5	49.2	90.6%
Health professions and related programs	95.2	105.0	90.7%
Visual and performing arts	48.5	53.1	91.4%
Family and consumer sciences/human sciences	12.2	13.1	92.9%
Computer and information sciences	24.9	26.4	94.3%
Biological and biomedical sciences	52.8	52.2	101.2%
Liberal arts and sciences, general studies, and humanities	23.8	23.3	101.8%
Business, management, and marketing	189.8	182.7	103.9%
Multi/interdisciplinary studies	30.9	24.5	126.3%
Social sciences	93.8	73.8	127.0%
Legal professions and studies	2.9	2.2	133.4%
Architecture and related services	6.1	4.6	133.8%
Psychology	82.2	59.6	137.9%
Communications technologies/technicians and support services	3.1	2.3	138.1%
Public administration and social service professions	23.7	14.7	161.1%
Foreign languages, literatures, and linguistics	24.7	14.8	167.5%
Homeland security, law enforcement, firefighting, and related protective services	51.3	27.4	187.3%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

Given the many other inequalities that students encounter throughout childhood in their K-12 education—and earlier in their college careers—the disparities found below understate the true level of inequality across white, black, and Hispanic students. Put another way, the race-based gaps shown in Tables 1 and 2 occur even among the already relatively high-achieving subset of students who receive a bachelor’s degree.

TABLE 2

**Representation for black students varies greatly across fields**

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, 2013 through 2015

Field of degree	Degrees earned by black students	Degrees earned by white students	Ratio of black student to white student degrees
Natural resources and conservation	2.1	11.2	18.6%
Agriculture, agriculture operations, and related sciences	3.4	12.3	27.7%
History	8.7	21.2	41.3%
Foreign languages, literatures, and linguistics	6.1	14.8	41.5%
Engineering	19.7	47.5	41.6%
Mathematics and statistics	5.6	12.0	46.7%
Physical sciences	8.0	16.7	47.7%
Architecture and related services	2.5	4.6	55.2%
Theology and religious vocations	4.1	6.9	59.7%
Education	41.5	65.4	63.4%
Visual and performing arts	33.8	53.1	63.7%
Transportation and materials moving	1.7	2.6	63.7%
Philosophy and religious studies	5.3	8.3	63.9%
English language and literature/letters	21.2	30.4	69.9%
Biological and biomedical sciences	41.7	52.2	79.8%
Parks, recreation, leisure, and fitness studies	24.3	26.6	91.5%
Engineering technologies and engineering-related fields	8.7	9.1	95.6%
Communication, journalism, and related programs	51.3	49.2	104.3%
Social sciences	82.4	73.8	111.6%
Health professions and related programs	120.7	105.0	115.0%
Business, management, and marketing	210.4	182.7	115.2%
Computer and information sciences	30.5	26.4	115.4%
Multi/interdisciplinary studies	29.5	24.5	120.4%
Family and consumer sciences/human sciences	16.3	13.1	124.9%
Psychology	76.5	59.6	128.3%
Communications technologies/technicians and support services	2.9	2.3	130.5%
Liberal arts and sciences, general studies, and humanities	33.9	23.3	145.3%
Legal professions and studies	3.9	2.2	179.7%
Homeland security, law enforcement, firefighting, and related protective services	63.5	27.4	231.8%
Public administration and social service professions	38.5	14.7	262.4%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

Tables 1 and 2 compare the fractions of Hispanic and black graduates, respectively, who receive their degree in each major with the proportion of white graduates whose degrees come from that major. These tables show that racial representation in degree attainment is far from equitable across fields, with Hispanic and black graduates being quite underrepresented in some fields and greatly overrepresented in others.

The final column of each table shows the ratio of Hispanic or black representation in the major to white representation in that field. A percentage under 100 percent means that Hispanic or black students are underrepresented in the field because they have fewer graduates per 1,000 completers than do their white counterparts. By contrast, a value above 100 percent means that Hispanic or black graduates were more likely to have received their degree in that field than their white peers.

### Representation for black students

Black bachelor's degree recipients face large disparities relative to white students in many important majors. For example, black students are underrepresented in education and engineering. White students are well over twice as likely as black students to have gotten their bachelor's degree in engineering, with about 20 engineers per 1,000 black bachelor's degree recipients and about 47 per 1,000 white bachelor's degrees.<sup>21</sup>

If they were equally represented in the field, that would translate into 15,000 more black engineering graduates in the United States between 2013 and 2015.

Among education majors, white bachelor's degree holders are about 1.7 times as likely to get their degree in the field compared with their black counterparts—41 out of every 1,000 black students' bachelor's degrees were earned in education, compared with 65 out of every 1,000 white students' bachelor's credentials.

White students also lead their black counterparts in a few other important subjects, many of which are in science, technology, engineering, and math fields (STEM). White students are more than twice as likely to graduate with degrees in physical sciences, mathematics, and statistics. Black students also face large gaps in the visual and performing arts and the biological and biomedical sciences, earning the former at about 64 percent of the rate of their white peers and the latter about 80 percent as frequently.

### Representation for Hispanic students

Representation is also a problem for Hispanic students in many of these fields. First, as with their black peers, Hispanic students are much less likely than their white peers to get an education degree. There are just 40 Hispanic bachelor's degree recipients in education for every 1,000 Hispanic bachelor's degree recipients, compared with 65 white graduates with an education bachelor's degree per 1,000 white bachelor's degree recipients.

Similarly, while engineering is a popular bachelor's degree for both Hispanic and white students, Hispanic students are underrepresented among engineering degree recipients relative to their white peers. While about 41 of every 1,000 Hispanic bachelor's degree holders have an engineering credential, that figure for white students is about 47 per 1,000. While it may not seem like a large gap when presented per 1,000 students, an equal representation would translate into 4,300 more Hispanic engineers from 2013 through 2015.

Hispanic students are also underrepresented in the physical sciences, history, and mathematics and statistics.

### Disparities by gender and race

In many fields, significant gender imbalances coexist with racial gaps. Tables 3 through 6 show noteworthy cases of under- and overrepresentation by field of bachelor's degree for Hispanic and black men and women relative to their white counterparts. This approach shows several important gaps in bachelor's degree attainment.

TABLE 3

## Representation for both black and Hispanic women is quite variable

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, 2013 through 2015

Hispanic women relative to white men			
Field of degree	Degrees earned by Hispanic female students	Degrees earned by white male students	Ratio of Hispanic female student to white male student degrees
<b>Underrepresentation</b>			
Computer and information sciences	7.6	51.2	14.9%
Engineering	14.8	88.6	16.7%
History	10.5	29.2	36.1%
Business, management, and marketing	165.1	232.5	71.0%
<b>Overrepresentation</b>			
Education	52.7	30.5	172.7%
Psychology	105.4	31.8	331.6%
Health professions and related programs	128.1	35.1	364.8%
Black women relative to white men			
Field of degree	Degrees earned by black female students	Degrees earned by white male students	Ratio of black female student to white male student degrees
<b>Underrepresentation</b>			
Engineering	7.7	88.6	8.7%
Computer and information sciences	12.6	51.2	24.6%
Visual and performing arts	28.4	46.1	61.7%
Business, management, and marketing	189.5	232.5	81.5%
Biological and biomedical sciences	44.6	50.4	88.4%
Social sciences	78.6	87.7	89.6%
<b>Overrepresentation</b>			
Communication, journalism, and related programs	50.7	40.0	126.7%
Homeland security, law enforcement, firefighting, and related protective services	59.5	37.1	160.5%
Education	49.6	30.5	162.7%
Psychology	94.4	31.8	296.9%
Health professions and related programs	160.6	35.1	457.4%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

Perhaps the most startling finding is the dramatic underrepresentation of black and Hispanic women in engineering relative to white men. For black women, only 8 of every 1,000 bachelor's degrees are in engineering, compared with 89 of every 1,000 white male bachelor's degrees. This means that over this period, white men received engineering degrees at more than 11 times the rate that black women did. For Hispanic women, the number is similarly dismaying, with only 14 of every 1,000 Hispanic female bachelor's degrees in engineering.

TABLE 4

## Representation for black and Hispanic men varies a great deal by field relative to their white male peers

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, by race and gender, 2013 through 2015

Hispanic men relative to white men			
Field of degree	Degrees earned by Hispanic male students	Degrees earned by white male students	Ratio of Hispanic male student to white male student degrees
<b>Underrepresentation</b>			
Education	18.9	30.5	61.9%
Physical sciences	16.4	24.3	67.4%
Engineering	81.0	88.6	91.5%
<b>Overrepresentation</b>			
Social sciences	97.6	87.7	111.3%
Visual and performing arts	51.6	46.1	111.9%
Homeland security, law enforcement, firefighting, and related protective services	60.0	37.1	161.8%
Black men relative to white men			
Field of degree	Degrees earned by black male students	Degrees earned by white male students	Ratio of black male student to white male student degrees
<b>Underrepresentation</b>			
Engineering	41.5	88.6	46.8%
Biological and biomedical sciences	36.4	50.4	72.1%
Education	26.7	30.5	87.6%
<b>Overrepresentation</b>			
Computer and information sciences	63.0	51.2	123.1%
Parks, recreation, leisure, and fitness studies	39.7	32.0	124.2%
Communication, journalism, and related programs	52.3	40.0	130.6%
Multi/interdisciplinary studies	25.7	19.0	134.9%
Psychology	44.0	31.8	138.4%
Health professions and related programs	48.7	35.1	138.7%
Homeland security, law enforcement, firefighting, and related protective services	70.8	37.1	190.9%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

Another STEM field that garners attention for its high earning potential is computer and information sciences, and women of color are dramatically underrepresented among bachelor's degree recipients in this major. White men get bachelor's degrees in computer and information sciences at more than four times the rate of their black female peers and nearly seven times the rate of their Hispanic female peers.

All told, if black and Hispanic women received engineering degrees at the rate of their white male counterparts, about 30,000 more women of each race would have earned engineering degrees from 2013 through 2015. That would be a tenfold increase for black women and a fivefold increase for Hispanic women, given that only about 3,000 black women and 6,000 Hispanic women graduated with engineering degrees over this period.

The country would also have produced more than 13,000 more black female computer science bachelor's degree holders and 17,000 Hispanic women with credentials in the field. This would also be many times more than the existing number of black and Hispanic computer science bachelor's degree recipients from 2013 through 2015, which were about 4,000 and 3,000, respectively.

In engineering, comparing black and Hispanic men and women to their white male counterparts makes sense because white men are by far the dominant demographic group in that field. But in some fields, white women are the overrepresented group. Therefore, Tables 5 and 6 also provide comparisons of black and Hispanic men and women to their white female peers.

TABLE 5

## Representation for black and hispanic women is a concern in female-dominated fields

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, by race and gender, 2013 through 2015

Hispanic women relative to white women			
Field of degree	Degrees earned by Hispanic female students	Degrees earned by white female students	Ratio of Hispanic female student to white female student degrees
<b>Underrepresentation</b>			
Education	52.7	92.6	56.9%
Visual and performing arts	46.4	58.5	79.2%
Health professions and related programs	128.1	159.7	80.2%
Communication, journalism, and related programs	49.5	56.3	88.0%
<b>Overrepresentation</b>			
Business, management, and marketing	165.1	143.8	114.9%
Psychology	105.4	81.3	129.7%
Social sciences	91.3	63.0	145.0%
Black women relative to white women			
Field of degree	Degrees earned by black female students	Degrees earned by white female students	Ratio of black female student to white female student degrees
<b>Underrepresentation</b>			
Visual and performing arts	28.4	58.5	48.6%
Education	49.6	92.6	53.6%
English Language and Literature	24.1	37.2	64.8%
Parks, Recreation, Leisure, and Fitness studies	15.8	22.4	70.8%
Biological and biomedical sciences	44.6	53.5	83.2%
Communication, Journalism, and Related Programs	50.7	56.3	90.1%
<b>Overrepresentation</b>			
Psychology	94.4	81.3	116.1%
Social sciences	78.6	63.0	124.9%
Liberal arts and sciences, general studies, and humanities	33.1	25.9	127.6%
Business, management, and marketing	189.5	143.8	131.8%
Public administration and social services	50.1	21.4	234.3%
Homeland security, law enforcement, firefighting, and related protective services	59.5	19.8	300.1%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

For example, white women are far more likely to get education degrees than any other group. If black and Hispanic women got degrees in education at the rate of white women from 2013 through 2015, there would have been 15,000 more trained female educators of those races graduating over that period. If black and Hispanic men received education degrees at the rate of their white female peers, there would be nearly 13,000 more black men and 19,000 Hispanic men with teaching degrees.

TABLE 6

**Representation gaps are a concern for black and Hispanic men in white female-dominated fields**

Bachelor's degrees earned in a given field per 1,000 bachelor's degrees awarded, by race and gender, 2013 through 2015

Hispanic men relative to white women			
Field of degree	Degrees earned by Hispanic male students	Degrees earned by white female students	Ratio of Hispanic male student to white female student degrees
<b>Underrepresentation</b>			
Education	18.9	92.6	20.4%
Health professions and related programs	44.8	159.7	28.1%
Psychology	46.2	81.3	56.8%
Communication, journalism, and related programs	37.0	56.3	65.7%
Visual and performing arts	51.6	58.5	88.2%
<b>Overrepresentation</b>			
Social sciences	97.6	63.0	155.0%
Business, management, and marketing	227.7	143.8	158.4%
Homeland security, law enforcement, firefighting, and related protective services	60.0	19.8	302.6%
Engineering	81.0	15.4	527.9%
Computer and information sciences	51.6	7.1	724.7%
Black men relative to white women			
Field of degree	Degrees earned by black male students	Degrees earned by white female students	Ratio of black male student to white female student degrees
<b>Underrepresentation</b>			
Education	26.7	92.6	28.9%
Health professions and related programs	48.7	159.7	30.5%
Psychology	44.0	81.3	54.1%
Biological and biomedical sciences	36.4	53.5	67.9%
Visual and performing arts	43.5	58.5	74.3%
<b>Overrepresentation</b>			
Liberal arts and sciences, general studies, and humanities	35.4	25.9	136.3%
Social sciences	89.2	63.0	141.6%
Business, management, and marketing	248.4	143.8	172.8%
Parks, recreation, leisure, and fitness studies	39.7	22.4	177.5%
Engineering	41.5	15.4	270.3%
Homeland security, law enforcement, firefighting, and related protective services	70.8	19.8	357.0%
Computer and information sciences	63.0	7.1	884.2%

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

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## Recommendations

This analysis' findings show that considerations of equity in higher education must go beyond where students enroll and whether they finish to examine what they study and what credential they earn. Each year, the United States fails to educate thousands of black engineers, who could be among the nation's highest earners, and thousands of Hispanic educators, who could be helping young black and Hispanic students feel more confident and do better in school. In addition to the lost potential to improve economic prospects for thousands of black and Hispanic families, this creates a competitive disadvantage for the United States and risks leaving scientific breakthroughs undiscovered. Even more importantly, an equitable society would allow students of every racial, ethnic, and socio-economic background to flourish in the field they find most rewarding.

Below are concrete steps that could move the higher education system in the right direction.

### Include racial equity measures in federal accountability structures

At the federal level, existing systems for holding colleges accountable do nothing to address how institutions serve black and Hispanic students. In some areas, such as student loan default rates, the federal government does not even collect data on outcomes by race. Breaking down outcomes data by demographic group is a necessary step to ensure that colleges strive to provide an equitable path to graduation for all students—and that they are held accountable when they fall short.

Understanding and highlighting these gaps is especially important for the conversation about accountability at for-profit and certificate-granting institutions. Given that black and Hispanic students are so disproportionately represented in the programs these institutions offer, the educational outcomes of a large percentage of black and Hispanic students depend on robust scrutiny of these sectors.

### Create a federal student-level data system to track outcomes by race

Expanding the equity conversation to include gaps by race in institution type and field of degree is an important first step. But regularly measuring and reporting on such gaps would allow a greater focus on ensuring that students of every race and gender have access to all fields of study.

Because Congress has banned the federal government from collecting student-level data on all students in the United States under intense lobbying from colleges,<sup>22</sup> policymakers' ability to precisely track racial and other disparities in student outcomes is severely limited.<sup>23</sup> Establishing such a system will be key for further exploring the mechanisms behind the observed trends and tracking progress on these issues.

## Use state-level data to tackle the problem

Regardless of what Congress does on the above issue, states are well-positioned to monitor the issue of equity gaps in college completion. Many states already have extensive longitudinal data systems that track students throughout their time in the state's education system, including higher education. Therefore, states with such data systems can start right away in tracking racial disparities in the credential types their students are receiving. These systems may even be able to dig into issues—such as whether gaps are a result of students changing majors or never finishing gateway courses—that even a better federal system may not be able to assess.

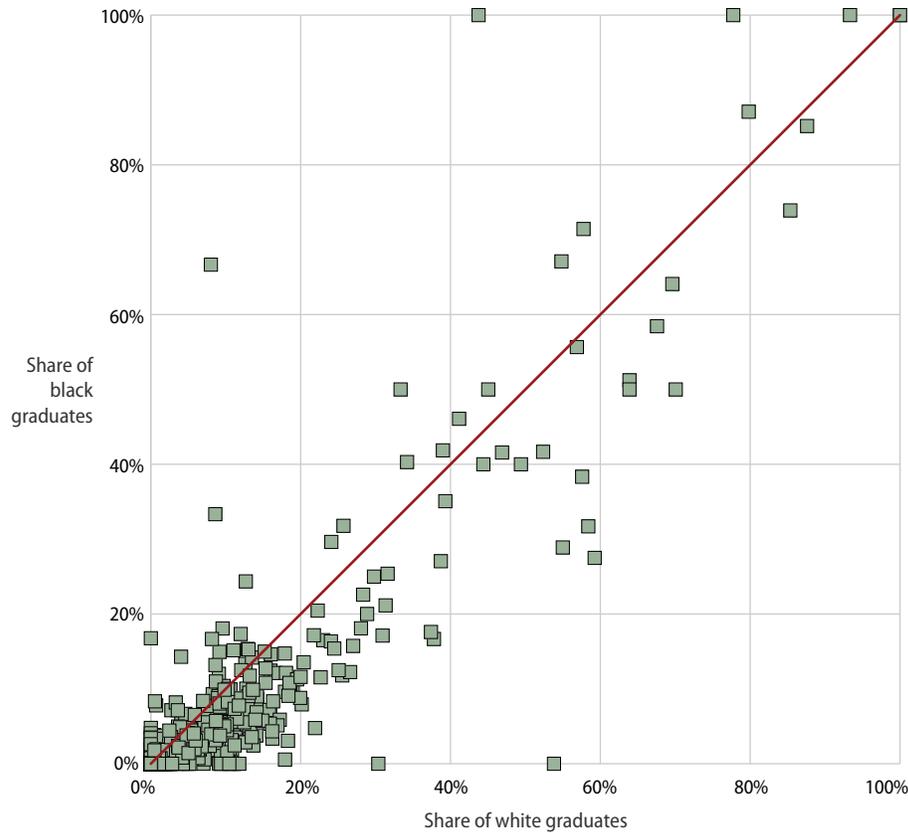
State leaders and higher education governing bodies are also well-positioned to demand change, especially from public institutions. For example, they could set targets for improvement, with financial or governance consequences attached and create scholarships or other supports for black and Hispanic students to study in fields where they have been underrepresented.

## Learn from schools that are already succeeding

Institutions can also do a great deal to improve how they serve their students. In fact, Figure 5 shows that even in engineering, where the gaps are quite large, there are dozens of institutions where a larger share of black students graduate with engineering bachelor's degrees than white students and many other schools where the two groups are roughly equal. Each dot above and to the left of the 45 degree line represents an institution that has a larger share of its black students than white students completing in engineering; each dot on or near the line has roughly the same share of students of both races earning an engineering bachelor's degree.

**FIGURE 5**  
**While black graduates are underrepresented in engineering overall, they are well-represented at many individual institutions**

Share of black and white graduates at each institution majoring in engineering, 2013 through 2015



Note: Figure includes all bachelor's degree students at institutions offering engineering degrees.

Source: Center for American Progress analysis of data from the Integrated Postsecondary Education Data System from 2013 through 2015. See National Center for Education Statistics, Integrated Postsecondary Education Data System, "Use the Data," available at <https://nces.ed.gov/ipeds/use-the-data> (last accessed April 2018).

Fifteen out of these 138 number colleges are historically black colleges or universities (HBCUs). These institutions account for just 15 percent of African American graduates, but they produce 20 percent of all engineering bachelor's degrees awarded to African American students. It is not clear from this data whether these institutions are more successful at recruiting black students who want to study engineering; or if they are better at encouraging students to choose the field; or better at supporting them once they express an interest. Getting a better handle on the factors that have made many HBCUs more successful in this realm would be very useful for all types of institutions.

But beyond HBCUs, 123 institutions with parity in engineering are not HBCUs. They are somewhat more likely to be nonprofits than public institutions. But most importantly, while HBCUs do outsized work in helping to ameliorate these disparities, there is a variety of institution types achieving parity in engineering, suggesting there are examples worth studying for any institution looking to move toward more equitable degree production.

These colleges suggest that equity in degree types may be possible in the face of pervasive racism and structural inequalities that students encounter both before they get to college and while in school. Researchers and policymakers should study these institutions to highlight effective strategies for achieving equity that could be adopted elsewhere.

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## Conclusion

Plenty more investigation is necessary. Institutions should also work to understand the different ways students of color might be discouraged from pursuing certain degrees. Varying tuition by major is one practice that has been shown to dissuade black and Hispanic students from pursuing certain courses of study. Also, advisers may be explicitly or implicitly discouraging black and Hispanic students from pursuing degree types that cost more to produce or are perceived to be more rigorous. This latter problem could be especially prevalent in majors, such as engineering, where many programs use their introductory classes to weed out weaker students and may be doing so in a way that is ineffective or discriminatory.

If schools are to take academic equity seriously, they need to recognize first that judgments about who is likely to succeed in a given field are inevitably affected by implicit bias and structural racism and may be wrong about many students of color. Second, to the extent that students of color disproportionately receive lower K-12 academic preparation, institutions should reorient their practices to recognize that education is about more than cream skimming; to truly be an excellent academic institution, a college needs to be able effectively serve any student who meets its admission criteria. Many institutions have been leaders in providing resources to at-risk students through programs like summer bridge, which allow students to adjust to college life before school begins, and through extensive tutoring and academic support programs.

Finding a path to equity in the types of credentials students get is not only a moral imperative for this country but is also crucial to its future success.

*To learn more about or replicate the author's findings, you can find the detailed Stata code [here](#).*

*CJ Libassi is a former policy analyst for Postsecondary Education at the Center for American Progress.*

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## Endnotes

- 1 See, for example, Rachel Baker, Daniel Klasik, and Sean F. Reardon, "Race and stratification in college enrollment over time," *AERA Open* 4.1 (2018): 1–28, available at <http://journals.sagepub.com/doi/pdf/10.1177/2332858417751896>; Peter Hinrichs, "An empirical analysis of racial segregation in higher education." Working Paper 21831 (National Bureau of Economic Research, 2015); Julie Renee Posselt and others, "Access without equity: Longitudinal analyses of institutional stratification by race and ethnicity, 1972–2004," *American Educational Research Journal* 49.6 (2012): 1074–1111.
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- 4 Kevin Stange, "Differential pricing in undergraduate education: Effects on degree production by field," *Journal of Policy Analysis and Management* 34.1 (2015): 107–135.
- 5 Jeffrey Mervis, "Weed-out courses hamper diversity," *Science* 334 (2011): 1333, available at <http://science.sciencemag.org/content/334/6061/1333>.
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- 9 It is worth noting these measures are all themselves a result of any numbers of inequities in the development of higher education in the United States. The fact that some institutions have more resources than others is no accident. Nevertheless, even if discrimination and unfairness created such current inequalities, it remains worth asking how much access traditionally marginalized students have to the most elite institutions. The approach for determining this borrows from Eleanor Wiske Dillon and Jeffrey Andrew Smith, "Determinants of the match between student ability and college quality," *Journal of Labor Economics* 35.1 (2017): 45–66," which builds on Dan A. Black, and Jeffrey A. Smith, "Estimating the returns to college quality with multiple proxies for quality," *Journal of Labor Economics* 24.3 (2006): 701–728. The index is a weighted average of the normalized value (with mean zero and standard deviation of one) of each measure. The weights for the average are determined by the factor loadings on the first principal component that comes from a principal components analysis of the four variables of interest.
- 10 For reference, the top 10 ranked institutions as measured by this index are (in order): Stanford University, California Institute of Technology, Harvard University, University of Chicago, Massachusetts Institute of Technology, Yale University, Princeton University, Columbia University of New York, University of Pennsylvania, and Northwestern University.
- 11 Clive Belfield and Thomas Bailey, "The labor market returns to sub-baccalaureate college: A review," (New York: Center for Analysis of Postsecondary Education and Employment, 2017), available at <https://ccrc.tc.columbia.edu/publications/labor-market-returns-sub-baccalaureate-college-review.html>.
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- 16 See, for example, Anthony P. Carnevale, Ban Cheah, and Andrew R. Hanson, "The Economic Value of College Majors" (Washington: Georgetown University Center on Education and the Workforce, 2015), available at <https://cew.georgetown.edu/cew-reports/valueofcollegemajors/>; Payscale, "2017-18 College Salary Report: Highest Paying Bachelor Degrees by Salary Potential," available at [www.payscale.com/college-salary-report/majors-that-pay-you-back/bachelors](http://www.payscale.com/college-salary-report/majors-that-pay-you-back/bachelors) (last accessed April 2018).
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- 19 That is, the author examined field of study at the 2-digit classification of instructional program (CIP) level.
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