



**Vela Institute**  
Illuminating Education



**NATIONAL  
COLLEGE  
ATTAINMENT  
NETWORK**

DATE 05/17/22

**USING DATA IN  
POSTSECONDARY ADVISING  
TO “LIFT” COMPLETION  
LIKELIHOOD**

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## INTRODUCTION

For students pursuing a postsecondary education, *where* they go is as important as *whether* they go. National College Attainment Network (“NCAN”) member programs and college access programs more broadly often inform students about their likelihood of completing a degree at their prospective postsecondary destinations as part of the advising process. Even holding constant institutional sector and selectivity, postsecondary completion rates vary widely. This rate variability is also true across different racial and ethnic groups of students, even at the same institution. High schools can (and should) incorporate this knowledge and more prominently advise students that where they matriculate can have a substantial impact on their likelihood of attaining a postsecondary degree.

Much of the above is conventional wisdom in the college access field, but quantifying that wisdom is less common. The Vela Institute (“Vela”) and NCAN examined the matriculation patterns of students from the To & Through Advising Challenge, a recently concluded project that NCAN led from 2018 to 2022. Using matriculation data from the National Student Clearinghouse (“NSC”) and institutional graduation rate data from the Integrated Postsecondary Education Data Survey (“IPEDS”) allowed Vela and NCAN to explore if students plausibly had alternative pathways that might have represented a higher likelihood of degree attainment.

This project has its roots in a simple assertion with profound implications for practice: The advising high schools provide can change students’ postsecondary pathways and increase their likelihood of postsecondary completion. Students have options, and it is within the power of schools and districts to connect students to their best option following high school graduation. The data in this analysis support this idea.

Among our findings are:

- Across all students in the analyzed sample, the average 150% of time graduation rate<sup>1</sup> for institutions at which students first enrolled following high school graduation was 37.1%, but these rates varied considerably by high school characteristics and institutional sector.
- White and Asian students are the only groups in the analyzed sample whose projected graduation rates exceed the overall institution rates where they matriculate. Black students, in particular, face the largest gaps between their institutions’ graduation rates for students like them and graduation rates for all students at their institution of first enrollment.
- 81.3% of students in the sample had another postsecondary institution within 50 miles of their high school that both had a higher projected postsecondary completion rate and that they could have plausibly attended based on academics. This percentage varied considerably by high school income level.
- The average “lift difference” in completion rates for students from the lowest-income high schools was 36.8 percentage points. In other words, the average student from a lowest-income

high school had a nearby postsecondary alternative whose projected completion rate was nearly 37 percentage points higher than where the student actually first attended

## BACKGROUND

Recent projects and analyses demonstrate and explore the disparate outcomes students experience depending on the colleges and universities they attend. For example:

- [The nonprofit Education Trust's College Results Online](#) platform provides “policymakers, counselors, parents, students, and others with information about college graduation rates for nearly any four-year college or university in the country” and focuses primarily on graduation rate comparisons for students from minoritized ethnic groups.
- The [Postsecondary Value Commission](#), convened in 2019 by the Bill & Melinda Gates Foundation, released its [first set of reports](#) in May 2021. These reports are full of interesting ideas and analyses for those of us working in postsecondary access and success. For example, they suggest measurement thresholds like minimum economic return, earnings premium, earnings parity, economic mobility, economic security, and wealth parity.
- Two analyses from the think tank [Third Way](#) consider variation in outcomes across postsecondary institutions. The first examines [students' return on investment](#) by college programs. The second creates an [“Economic Mobility Index”](#) and then rates institutions themselves by “which schools enroll the highest proportion of students from low- and moderate-income backgrounds AND provide them with a strong return on their educational investment.”

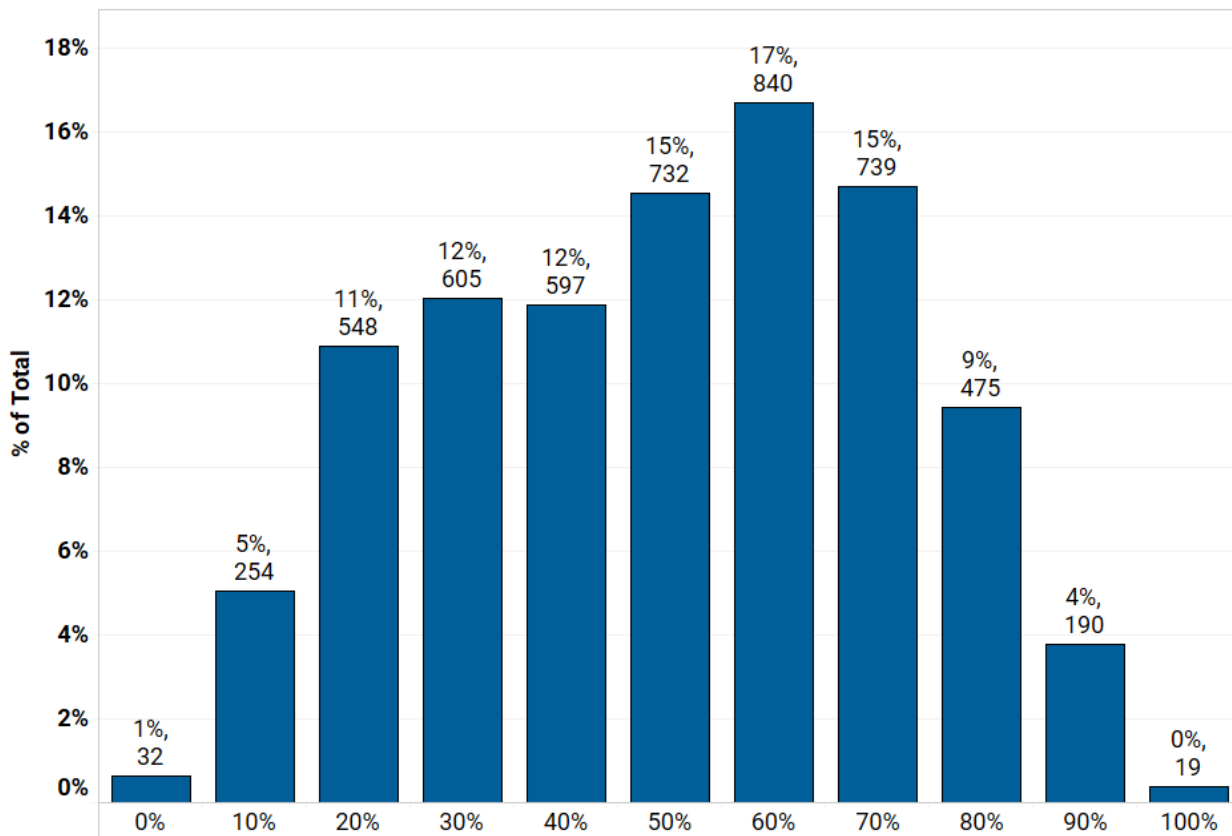
What the current analysis considers that those above do not are students' higher education pathways following high school graduation and whether they had plausible alternatives that would have given them a higher likelihood of graduating. All of these analyses pull in the same direction and reach the same conclusion: Where students matriculate matters.

### Postsecondary Completion Rates Vary a Lot

Graduation rates vary widely across postsecondary institutions, even within the same sector. Beyond that, postsecondary completion rates by race and ethnicity also vary widely even *within* the same institution. Some institutions offer certain groups of students a higher likelihood of completing than others, so where students matriculate potentially matters a lot for their future.

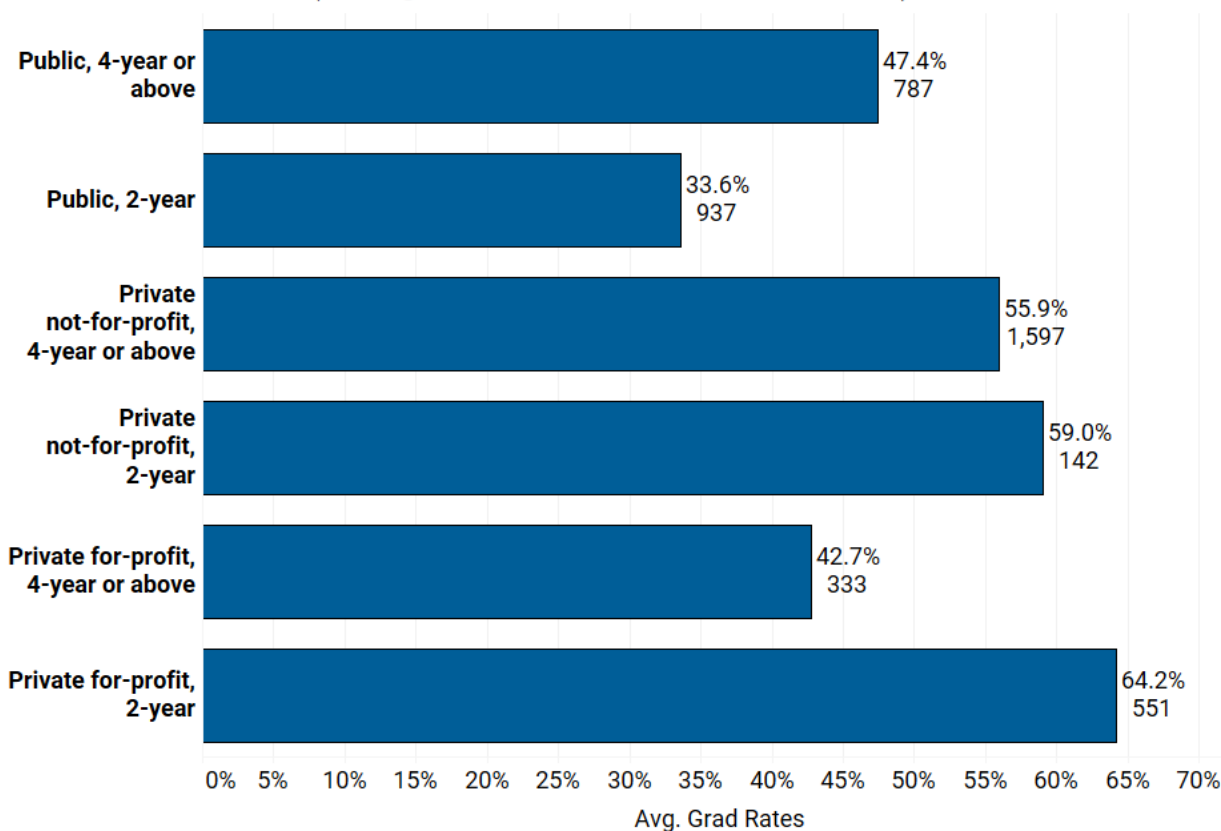
Figure 1 below groups institutions' average graduation rates across the three most recent releases of the IPEDS Graduation Rates survey.<sup>2</sup> The average 150% of time graduation rate across all institutions is 54.2%, but it is clear there is considerable variation on either side of that figure.

**Figure 1. 150% of Time Postsecondary Completion Rates,  
IPEDS Graduation Rate Survey, 2018-20 Collections**  
*(% of Institutions, Number of Institutions)*



The finding that graduation rates vary so dramatically is hardly a shocking revelation for most, but the variation in graduation rates across institutional types and sectors may be surprising. Four-year institutions offer a higher likelihood of graduation on average, and that trend is well-documented. Figure 2 below shows the average 150% of time graduation rates by institutional type and sector.

**Figure 2. 150% of Time Completion Rates, by Type and Sector**  
**IPEDS Graduation Rate Survey, 2018-20 Collections**  
*(Average Graduation Rate, # of Institutions)*

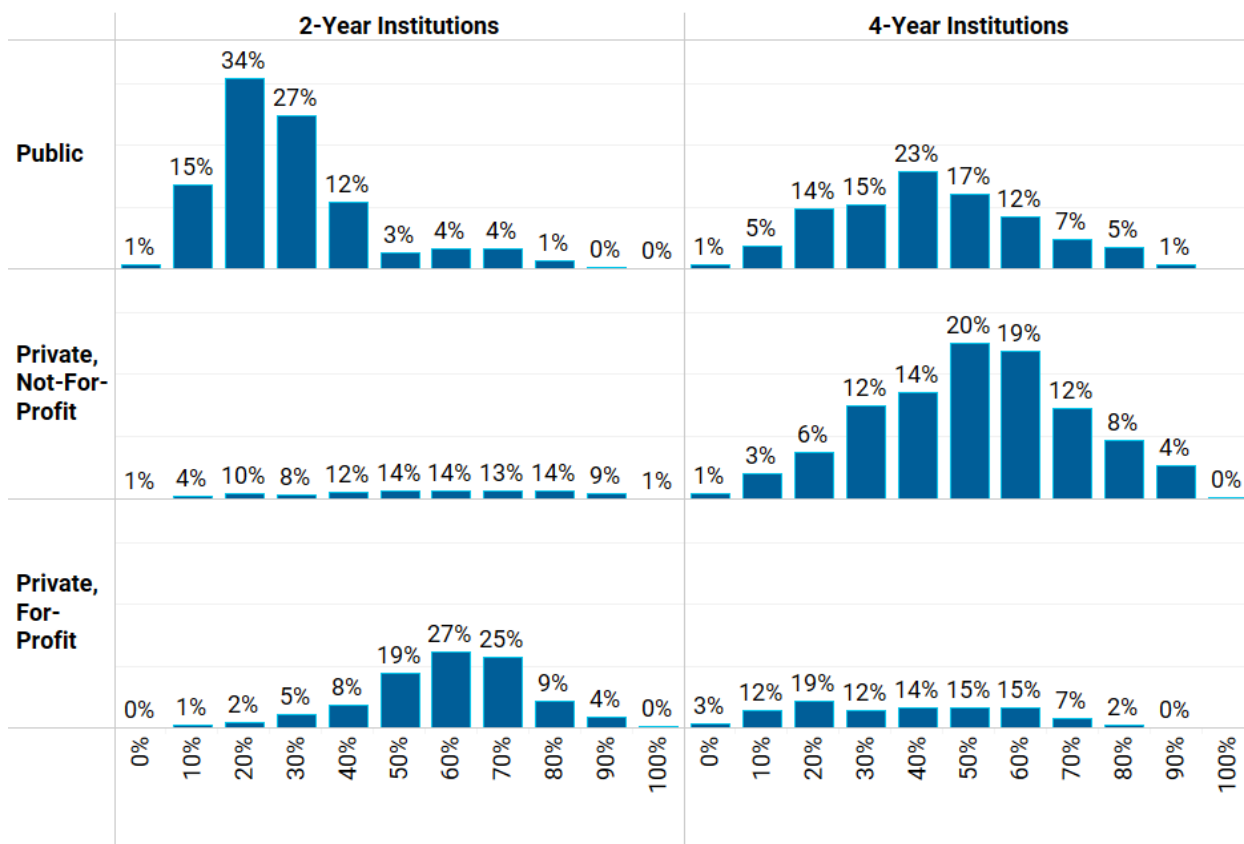


Graduation rates also vary between institutions of the *same* type and sector. Figure 3 below shows the average graduation rates from two- and four-year institutions in the public, private not-for-profit, and private for-profit sectors. The percentage of institutions in each column is less important than the shape of the graduation rates’ distribution. Some institution types and sectors have higher average graduation rates than others (i.e., taller bars further to the right), but even *within* the same type and sector, there are considerable differences across institutions. Tying this observation back to postsecondary advising for students: Graduation rates matter, and students’ pathways by institution type and sector do not offer a homogeneous likelihood of success.

Figures 2 and 3 notably demonstrate strong completion rates on average at two-year, private for-profit institutions. IPEDS institutional sector variable categorizes institutions according to their highest degree awarded, not necessarily their predominant degree awarded.<sup>3</sup> These two-year, private for-profit institutions’ may benefit from the inclusion of shorter-term certificate programs with elevated completion rates. Furthermore, despite the high postsecondary completion rates observed in Figures 2

and 3, students' return on investment, in terms of recouping costs, wages, and employment outcomes, has been repeatedly demonstrated to be lower at for-profit institutions than at public and private not-for-profit institutions.<sup>4</sup> These considerations are also important to incorporate into advising for students.

**Figure 3. 150% of Time Postsecondary Completion Rates, by Type and Sector**  
**IPEDS Graduation Rate Survey, 2018-20 Collections**  
 (% of Institutions Falling in Range)

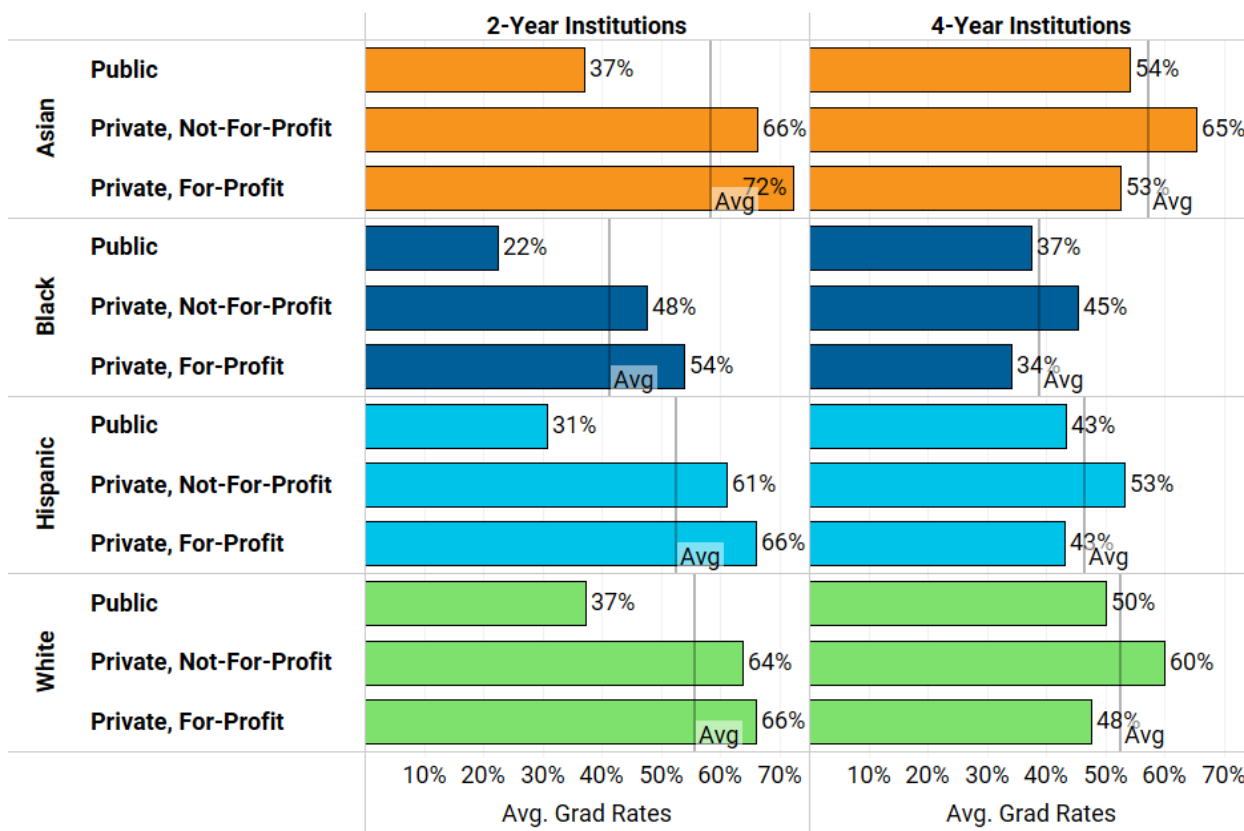


The final piece of the puzzle in this exploration of graduation rates is how students from different racial and ethnic groups fare. There are historical inequities, many of which are driven by systemic racism, that have long created gaps in the postsecondary outcomes between students of color and students from low-income backgrounds and their peers. Black and Hispanic students continue to be overrepresented at less-resourced, less-selective postsecondary institutions that may not be able to provide them with adequate services and supports, including sufficient financial aid.<sup>5</sup>

Even within a single postsecondary institution, graduation rates can (and often do) vary widely for different racial and ethnic groups. This is a critical reason to incorporate the graduation rates by race and ethnicity of students' prospective institutions into the postsecondary advising conversation.

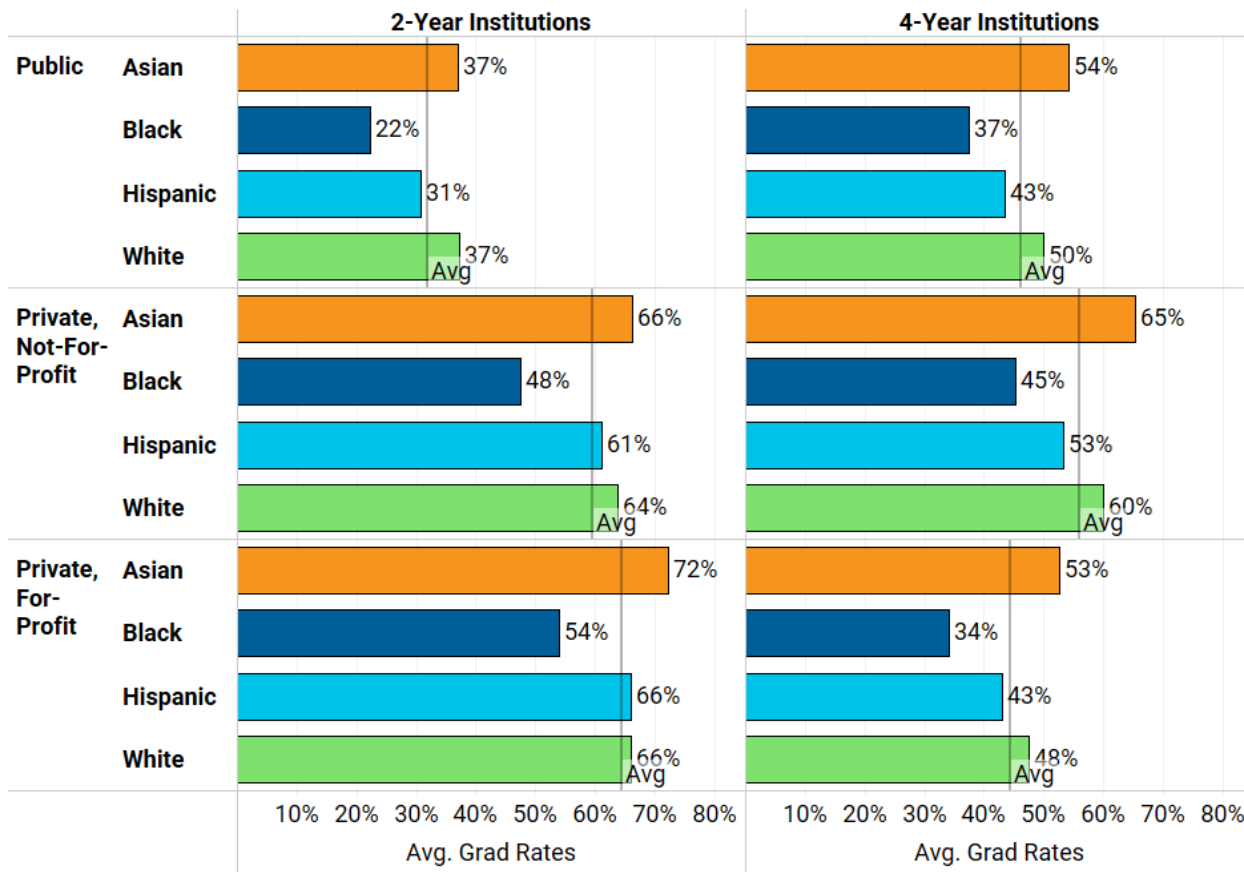
The two charts below, Figures 4 and 5, display the same data in two different ways. Figure 4 first groups racial and ethnic groups together and examines the graduation rates of institutions of different types and sectors. Figure 5 instead first groups institutions together by type and sector and then examines the racial and ethnic groups within them. These outcomes vary widely, but graduation rates for Black and Hispanic students are generally lower than those of their White and Asian peers.

**Figure 4. 150% of Time Postsecondary Completion Rates, by Institution Category and Race/Ethnicity, IPEDS Graduation Rate Survey 2018-20 Collections**





**Figure 5. 150% of Time Postsecondary Completion Rates, by Race/Ethnicity and Institution Category, IPEDS Graduation Rate Survey 2018-20 Collections**



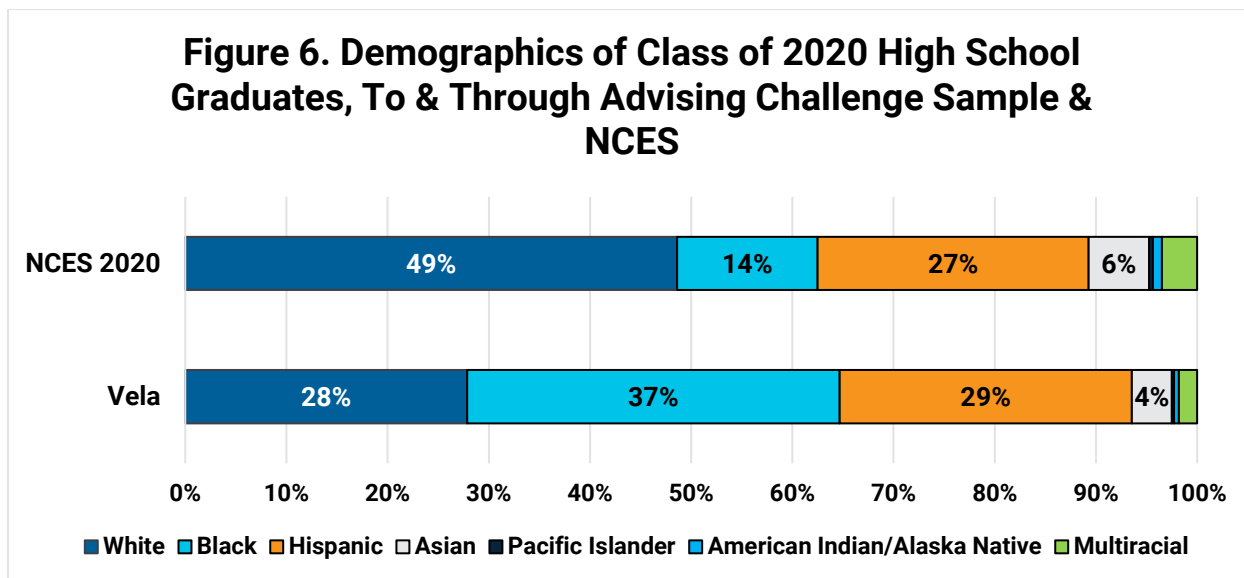
## SAMPLE AND APPROACH

The [To & Through Advising Challenge](#) was an NCAN-led project from 2018 to 2022. The project, supported by the Bill & Melinda Gates Foundation, aimed to improve the postsecondary outcomes of students by revamping postsecondary advising, increasing access to financial aid, reducing summer melt, and using data more effectively. NCAN provided technical assistance to a cohort of 20 school districts and partner organizations during the 2018-19 and 2019-20 academic years. As part of their project reporting, these entities submitted data to the NSC through its StudentTracker service.

The Vela Institute is a nonprofit organization dedicated to increasing access to evaluation, analytics, and data tracking to education partners to improve student and community outcomes. Vela provided technical assistance to the To & Through grantees around cleaning, analyzing, and reporting their NSC

data. This brief’s data come from these grantees’ reporting. The data are de-identified at the student level but retain data on students’ demographics and postsecondary enrollments. To understand the completion rates of the institutions to which students matriculated, Vela aggregated numerous NSC detail reports into one data file for this analysis. The final data set includes 71,771 student records from 116 high schools across 10 states.

We include data from the National Center for Education Statistics (“NCES”) to examine the sample by student race and ethnicity. The sample was 37% Black, 29% Hispanic, 28% White, and 4% Asian. American Indian (0.5% for Vela, 0.9% for NCES), Pacific Islander (0.2%, 0.4%), and multiracial (1.8%, 3.5%) students comprised the remaining proportion. Figure 6 below shows the sample in comparison to NCES data. Overall, the sample Vela analyzed is different from the national population in that it has fewer White students and more Black students. Representation from Hispanic, Asian, Native American, and multiracial groups is comparable between the current sample and the population.



Beyond student-level racial and ethnic demographics, Vela also considered high school characteristics like income, percentage of students of color (specifically Black and Hispanic students), and locale (urban, suburban, or rural). These characteristics are those employed by the National Student Clearinghouse Research Center (NSCRC) in its High School Benchmarks report series.

NSCRC’s [High School Benchmarks series](#) describes high schools’ income levels according to the percentage of students eligible for free- or reduced-price lunch benefits. For this analysis’ sample, 40% of high schools were lowest-income (75-100% eligible for free- or reduced-price lunch benefits), 33% lower-income (50-75%), 13% higher-income (25-50%), and 16% highest-income (0-25%).

To describe high school demographics for locale and concentration of students of color, Vela and NCAN adopted the NSCRC’s classifications from its High School Benchmarks series:

- High-minority schools are defined as those schools where at least 40% of the students are Black or Hispanic. In this sample, 87% of high schools were “high-minority.”
- Locale is defined by the NCES urban-centric locale code. Schools with a code from 11 to 13 are defined as urban. Schools with a code from 21 to 23 are defined as suburban. And those with a code 31 to 43, covering both town and rural areas, are defined as rural. In this sample, 55% of high schools were urban, 29% suburban, and 16% rural.

Figure 7 below compares the To & Through sample to the sample of high schools considered by the NSCRC in its most recent report.

<b>Figure 7. Comparison of High School Demographics Between NSCRC and To &amp; Through Advising Challenge Samples</b>			
	NSCRC High School Benchmarks 2020 Sample	To & Through Advising Challenge Sample	Difference
<b>High-Minority High Schools</b>	44%	87%	-43%
<b>Low-Minority High Schools</b>	56%	13%	+43%
<b>Higher-Income High Schools</b>	61%	27%	+34%
<b>Low-Income High Schools</b>	39%	73%	-34%
<b>Rural High Schools</b>	21%	16%	+5%
<b>Suburban High Schools</b>	46%	29%	+17%
<b>Urban High Schools</b>	33%	55%	-22%

The To & Through Advising Challenge high schools analyzed by the Vela Institute were much more likely to be low-income, have high proportions of Black and Hispanic students, and be urban than those in the NSCRC’s High School Benchmarks report. The differences between these samples reflect the aims of the To & Through Advising Challenge project and NCAN’s mission more generally: to serve and concentrate on students of color and students from low-income backgrounds.

Having examined the sample and noted its differences from national comparisons, Vela then considered the postsecondary completion rates of the institutions to which these students matriculated.

### Exploring Postsecondary Completion Rates

Through an interactive dashboard, Vela examined the graduation rates of the institutions in which students in the sample first enrolled. Across all students in the sample, the average 150% graduation rate for students' first institutions was 37.1%. The 25<sup>th</sup> percentile graduation rate was 19.1%, and the 75<sup>th</sup> percentile rate was 52%. Moving well beyond that one figure, the dashboard below allows users to examine postsecondary completion rates based on student and school characteristics. As with the graduation rate analyses above, the dashboard shows considerable variation based on student, high school, and postsecondary institutional characteristics.

## Exploring Variation in Postsecondary Completion Rates

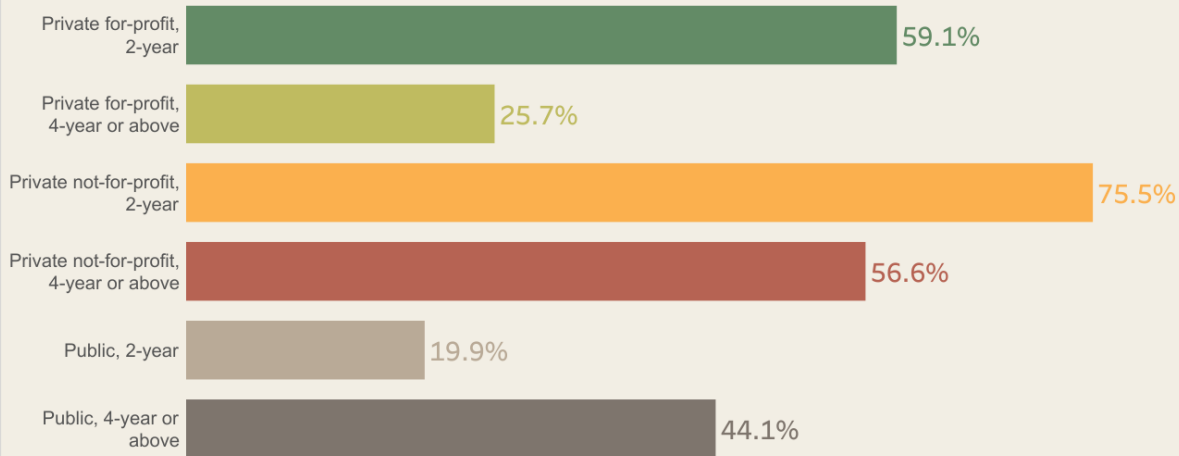
Postsecondary institutions do not offer equal likelihoods of success. Students often have options that can increase their likelihood of attainment. Assistance from school counselors and other advisors can shift students' trajectories. By focusing on institutions' postsecondary completion rates, K-12 stakeholders can better understand how the advising they deliver to students helps to improve those students' postsecondary outcomes.

The visualization below represents 71,771 student enrollment records from 116 high schools in 18 local education agencies across 10 states. Postsecondary completion rates were determined by matching the institution where a student first enrolled with that institution's 150% of time (3 years for 2-year colleges; 6 years for 4-year colleges) completion rate. The figures below represent the average values for all students in the sample. **The average postsecondary completion rate of all institutions where students first attended was 36.1%.**

**Poverty level:** Percent of students eligible for free and reduced lunch at the high schools where students graduated. Source: NCES  
**Locale:** High School code matched with NCES locale designations. Source: NCES  
**Institution Type:** Reported institution type where students first enrolled. Source: NSC

- Select Characteristic
- Overall Completion Rate
  - HS Income Level
  - Institution Type
  - Locale

Completion rate broken down by: **Institution Type**



Considering the postsecondary completion rates where students matriculated broken out by students' high school income levels, the lowest-income high schools also had the lowest projected graduation rates. Projected graduation rates increased as high school income levels increased. This indicates yet again the differential kinds of opportunities that additional income affords to students. In short: Better-resourced students attend institutions offering a better likelihood of completing.

By high school locale, the projected completion rates of students from urban (38.8%), suburban (34.5%), and rural (36.1%) high schools were similar. Given suburban students' [generally higher completion rates](#), this trend in the sample is counterintuitive. But given the sample's high school demographics described above, which were generally lower-income and higher-minority, it may be that

students in the sample's suburban high schools did not have the same benefits and privileges as their suburban peers more broadly.

Finally, by postsecondary institution type, we observe graduation rate patterns similar to those from IPEDS above. That two- and four-year private, for-profit institutions have high graduation rates in this chart will be surprising to some readers. Keep in mind that by volume, this is a small portion of the sample's postsecondary pipeline, comprising just 1.3% of all first-year enrollments. Figure 8 below shows the percentage of students in the sample matriculating to each type and sector of postsecondary institution.

<b>Figure 8. First Semester Enrollment Pattern of Class of 2020 To &amp; Through Advising Challenge Participants</b>		
<b>Type</b>	<b>Student N</b>	<b>% Enrolling</b>
Public, 4-year or above	35,926	50.18%
Public, 2-year	25,433	35.53%
Private not-for-profit, 4-year or above	8,713	12.17%
Private for-profit, 4-year or above	814	1.14%
Private not-for-profit, 2-year	592	0.83%
Private for-profit, 2-year	111	0.16%

IPEDS also provides institutions' postsecondary completion rates disaggregated by race and ethnicity. The sample for this analysis contained 42,967 students who both had an identified race and who attended a postsecondary institution that reported projected completion rates by race/ethnicity. Using student demographic data and these by-race/ethnicity completion rates from IPEDS, Vela also produced the data visualization below to examine differences in projected completion rates across racial and ethnic groups. Users can filter the visualization by institution type.

## Comparing Postsecondary Completion Rates by Race and Ethnicity

Postsecondary completion rates by race and ethnicity vary across and within colleges and universities. A single institution can have completion rate gaps between different student groups. Postsecondary advising should keep students aware of prospective institutions' completion rates by racial and ethnic groups. This can help students arrive at a destination that increases their likelihood of earning a degree.

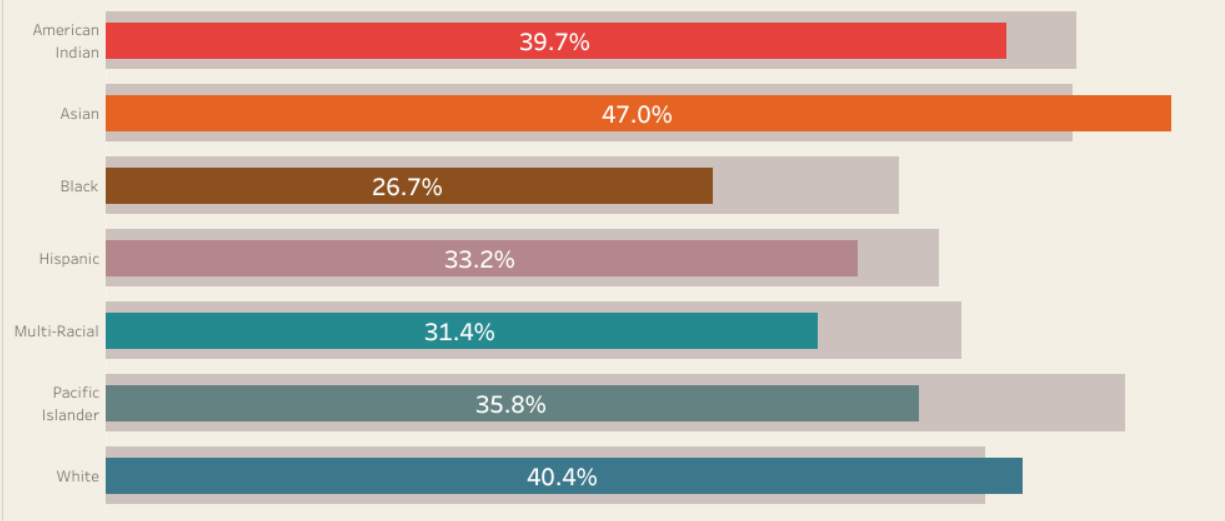
This visualization highlights postsecondary completion rate differences by race for 42,967 students. The addition of race and ethnicity data allowed for further exploration of how completion rates varied by race/ethnicity and institution type. **The grey bar represents the overall 150% of time (3 years for 2-year colleges; 6 years for 4-year colleges) completion rate by first institution enrolled.** The color bar is the completion rate by race/ethnicity at the same institution. Postsecondary completion rates by race were determined by matching (1) the institutions where a student first enrolled, (2) that student's race /ethnicity, and (3) the institution's 150% of time completion rate for students of that race/ethnicity.

**Race:** Race categories represent IPEDS race categories for institutional data

Select an Institution Type to Filter

All

Overall and by Race/Ethnicity Postsecondary Completion Rate Comparison



The visualization shows a clear disparity in projected postsecondary completion rates by race/ethnicity (the bars in various colors) compared to overall completion rates (the overlapping gray bars). White and Asian students are the only groups whose projected graduation rates exceed the overall institution rates where they matriculate. Black students, in particular, face the largest gaps between their institutions' graduation rates for students like them and graduation rates for all students at their institution of first enrollment. Pacific Islander, multiracial, and Hispanic students also see similar gaps.

These gaps matter because they represent a decreased likelihood of eventual postsecondary attainment. But students' postsecondary pathways are not set in stone. Recalling that the data above show variation in completion rates for students of the same race and ethnicity even within the same

institutional sector, it is possible, perhaps even likely, that students have options that would offer them a better chance of attainment. The next section explores these possibilities.

### Students Often Have Alternatives That Can Improve Their Chances of Attainment

Identifying inequities in overall and disaggregated completion rates is not groundbreaking, but it is still discouraging. Some institutions do better than others at graduating students, but are they within reach for students, geographically and/or academically speaking? Research shows that students' tend to enroll in higher education institutions that are relatively close to home.<sup>6</sup> Students may have better matriculation options, but if those options are not nearby, they may be functionally out of reach.

To understand students' proximities to alternative institutions, Vela geocoded each student's high school and the institution to which they first matriculated.<sup>7</sup> This data set determined if there were similar postsecondary institutions within a 50-mile distance from a student's high school that had a higher postsecondary completion rate. Because selectivity is also a factor in whether an institution is viable for a student's enrollment, Vela also included a selectivity metric to compare similar institutions. Using IPEDS data, postsecondary institutions' 75th percentile ACT scores were also added to the data set.

To determine whether a student had a viable alternative that would have afforded them a greater likelihood of completing, Vela used an algorithm with the following logic:

- For each student who enrolled at a two-year institution, was there another two-year institution within 50 miles of their high school that had a higher postsecondary completion rate?
- For each student who enrolled in a four-year institution, was there another two- or four-year institution within 50 miles of their high school with a higher postsecondary completion rate and a 75<sup>th</sup> percentile ACT score equal to or less than or equal to the student's ACT score?

Applying the algorithm shows that 81.3% of students matched with another postsecondary institution within 50 miles of their high school that had a higher postsecondary completion rate according to IPEDS data. That percentage varied across high schools of different income levels. For example, 74% of students from the lowest-income (bottom quartile) high schools had a higher completion rate alternative compared to 84% of students from the highest-income (top quartile) high schools. Lower-income (second quartile) high schools had a higher-EPSC alternative 81% of the time, and higher-income (third quartile) high schools had one 85% of the time.

Regardless of high school income, students tended to have alternative postsecondary institutions that might have increased their likelihood of completion. But how *much* of a difference would that alternative have made? To understand this, Vela calculated the "lift difference," or the difference between the projected postsecondary completion rates of a) the institution a student actually attended and b) an institution where the student could have enrolled that had equal or lower selectivity and a higher projected postsecondary completion rate.



The average lift difference for students from the lowest-income high schools was 36.8 percentage points. In other words, the average student from a lowest-income high school had a nearby postsecondary alternative with a projected completion rate nearly 37 percentage points higher than where the student actually first attended. For lower-income high schools, the average lift difference was 34.1 percentage points; for higher-income high schools, it was 35.5 percentage points. For students in the highest-income high schools, the lift difference was 21.5 percentage points. Given the association between student and high school income levels and institutional selectivity and completion rates, this trend makes sense. Students in the highest-income schools, on average, will both attend college more often and attend schools with higher selectivity and completion.

Communities and broad locales (i.e., urban, suburban, and rural) have dissimilar access and proximity to postsecondary institutions. Generally, urban locales tend to have more institutional options than rural locales owing to disparities in population density. Suburban locales are more varied in terms of population density, and so their access to postsecondary institutions will also vary. Where a student lives, then, will affect their local postsecondary options. Vela also calculated the lift difference above for different high school locales. Urban high schools had an average lift difference of 40 percentage points, and suburban high schools' lift difference averaged 32.9 percentage points. These values reflect the likelihood of more postsecondary options from which to choose. Students in rural high schools still had an average lift difference of 18.1 percentage points. Even in areas where we would expect fewer postsecondary options, the average rural high school student still had an accessible alternative with a higher projected postsecondary completion rate.

All of these results boil down to a few assertions: Postsecondary institutions do not offer equal likelihoods of success. Students often have options that can increase their likelihood of attainment. Assistance from school counselors and other advisers can shift students' trajectories. We explore this last piece in the next section.

## IMPLICATIONS FOR PRACTICE

This brief's central idea – that graduation rates vary and, consequently, that students' matriculation decisions also matter – should be clear by now. If readers take away nothing else, it should be the idea that postsecondary advising decisions can and should steer students toward the paths that will lend them the greatest likelihood of success. That said, there are some specific related practices that deserve calling out.

1. **Get Your Data; Know Your Data:** The National Student Clearinghouse Research Center's StudentTracker service is both widely available and relatively affordable (\$595 per high school per year at the time of this writing). Despite this, too few districts and schools are subscribing to the service and accessing the postsecondary outcomes data of up to eight graduating classes of high school students. Districts and schools should be accessing this data to understand what happens to their students after high school graduation. Those postsecondary outcomes

are important for understanding how well students are being prepared to make their next steps following high school graduation. Data from the NSC can make those efforts much easier. Even if districts and schools only make use of the preconstructed charts and never dive into the granular-detail data, they will still be getting access to valuable insights that are not easily accessible through other means.

- 2. Map the Postsecondary Pipeline:** As described above, students' matriculation patterns tend to be place-based and proximate to their high school. That pattern emphasizes the importance of districts and schools knowing how students fare when they matriculate. Using data to understand the percentages of students heading to a given set of institutions and then understanding how the students do when they get there is critical. It also starts new conversations. For example, a district sending 40% of its students to an institution delivering a 30% second-year persistence rate should be asking why students are stumbling and what can be done to connect them with supports, better prepare them before arriving on campus, or both. Districts with better alternative destinations for their students can be changing the postsecondary advising conversation with students and parents. If meaningful progress cannot be made with an institution regarding students' outcomes, districts and schools should consider advising toward alternative pathways that would offer a higher likelihood of completion.
- 3. Put Completion on the Forefront for Students:** Students make college-going decisions on the basis of all kinds of factors: cost and affordability, location, academic programs, family advice, institutional reputation, where their friends are going, campus atmosphere and amenities, and even the institutions' sports teams. These factors and more combine to comprise the concept of "fit" in fit and match. But our experience is that too few students are putting the likelihood of completion toward or at the top of their list of deciding factors. Tools like the [College Scorecard](#) allow students to look up completion rates for institutions, and this brief's analysis emphasizes the importance of considering completion in this critical decision.

## CONCLUSION

Data from the National Student Clearinghouse Research Center show that 29% of students in the class of 2014 who graduated from low-income high schools completed college within six years. For higher-income high schools, that figure was 51%, and for low-poverty high schools 60%. Even under circumstances where students and communities are well-resourced, just 3 of 5 high school graduates will have a degree, and in many cases, this figure will be a lot lower. College completion matters tremendously for students, their families and communities, states, and our nation overall. College completion matters because it leads to increased wages and tax revenues, and improved health, public safety, and civic outcomes. The path to postsecondary attainment is altered by a critical step students take along the way: deciding where first to enroll. This brief offers support for the idea that graduation

rates vary tremendously and, because of that, where students go matters. Postsecondary advising practice must shift to focus on these matriculation decisions and help put students on a path that is likely to see them complete a degree.

## Endnotes

<sup>1</sup> 150% of time considers a six-year graduation window for four-year institutions and a three-year graduation window for two-year institutions.

<sup>2</sup> Institutional graduation rates by race and ethnicity in each year calculated by dividing 150% of time completers by each race/ethnicity's adjusted cohort. Three-year averages computed across the 2018, 2019, and 2020 graduation rate survey data collection. For more information, visit <https://nces.ed.gov/ipeds/>.

<sup>3</sup> Kelchen, R. (2022). How colleges' Carnegie Classifications have changed over time. Retrieved from: <https://robertkelchen.com/2021/12/16/how-colleges-carnegie-classifications-have-changed-over-time-2/>

<sup>4</sup> Miller, K. & Akabas, S. (2022). Which colleges are worth the cost? Institution-level return on investment for students and taxpayers. Washington, DC: Bipartisan Policy Center. Retrieved from:

[https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/02/EP\\_-\\_](https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/02/EP_-_What_Colleges_Are_Worth_Report_RV4.pdf)

[What\\_Colleges\\_Are\\_Worth\\_Report\\_RV4.pdf](https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/02/EP_-_What_Colleges_Are_Worth_Report_RV4.pdf): "Public institutions are the most likely to provide a positive estimated median ROI, followed by private nonprofit institutions and then private for-profit institutions, many of which are estimated to provide little value to their students."; Itzkowitz, M. (2020). [Price-to-earnings premium: A new way of measuring return on investment in higher ed](https://www.thirdway.org/report/price-to-earnings-premium-a-new-way-of-measuring-return-on-investment-in-higher-ed). Washington, DC: Third Way. Retrieved from:

<https://www.thirdway.org/report/price-to-earnings-premium-a-new-way-of-measuring-return-on-investment-in-higher-ed>: "...schools with no ROI are overwhelmingly concentrated within the for-profit sector. For example, 51% of for-profit institutions leave the majority of their students earning less than a high school graduate, even 10

years after they enrolled in the institution."; Itzkowitz, M. (2021). Which college programs give students the best bang for their buck? Washington, DC: Third Way. Retrieved from: <https://www.thirdway.org/report/which-college-programs-give-students-the-best-bang-for-their-buck>: "...two-fifths of those who complete for-profit programs

likely end up economically worse off by attending, even though they have done everything right to earn their credential."; Ortagus, J. & Hughes, R. (2021). Paying more for less? A new classification system to prioritize outcomes in higher education. <https://www.thirdway.org/report/paying-more-for-less-a-new-classification-system-to-prioritize-outcomes-in-higher-education>: "...roughly four out of five for-profit four-year colleges (79.8%)

are high-price, low-quality institutions... that not only charged higher-than-average net prices but also left a larger share of their students unable to repay their student loans."; Armona, L., Chakrabarti, R., & Lovenheim, M.F. (2018). How does for-profit college attendance affect student loans, defaults, and labor market outcomes? Cambridge, MA: National Bureau for Economic Research. Retrieved from: <https://www.nber.org/papers/w25042>: "Among

four-year students, for-profit enrollment leads to more loans, higher loan amounts, an increased likelihood of borrowing, an increased risk of default and worse labor market outcomes. Two-year for-profit students also take out more loans, have higher default rates and lower earnings. But, they are more likely to graduate and to earn over \$25,000 per year (the median earnings of high school graduates)."

<sup>5</sup> Nichols, A.H. (2020). Segregation Forever?: The continued underrepresentation of Black and Latino undergraduates at the nation's 101 most selective public colleges and universities. Washington, DC: The Education Trust. Retrieved from: <https://edtrust.org/wp-content/uploads/2014/09/Segregation-Forever-The-Continued-Underrepresentation-of-Black-and-Latino-Undergraduates-at-the-Nations-101-Most-Selective-Public-Colleges-and-Universities-July-21-2020.pdf>; Baylor, E. (2016). Closed doors: Black and Latino students are excluded from top public universities. Washington, DC: Center for American Progress. Retrieved from:

<https://www.americanprogress.org/article/closed-doors-black-and-latino-students-are-excluded-from-top-public-universities/>

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<sup>6</sup> See, e.g., Cabrera, A. & La Nasa, S. (2000). Understanding the college-choice process. *New Directions for Institutional Research*, 2000(107), 5–5.; Dache-Gerbino, A. et al. (2018). The dangling carrot: Proprietary institutions and the mirage of college choice for Latina students. *Review of Higher Education*, 42(1), 29–60.; Hillman, N. W. (2016). Geography of college opportunity: the case of education deserts. *American Educational Research Journal*, 53(4), 987–1021.; Mattern, K. & Wyatt, J.N. (2009). Student choice of college: How far do students go for an education? *Journal of College Admission*, (203), 18-29.; Tevebaugh, E. (2019). Analyzing the impact of home locales on access to tertiary education; Trends in students’ access to Bucknell University.” *Honors Theses*. 479.; Turley, R. & López, N. (2009). College proximity: Mapping access to opportunity. *Sociology of Education*, 82(2), 126–146.; Hillman, N. & Weichman, T. (2016). Education deserts: The continued significance of “place” in the twenty-first century. *Viewpoints: Voices from the Field*. Washington, DC: American Council on Education. proves particularly incisive: “Not all students have the luxury of shopping around, and in many cases (as this issue brief highlights) there are no alternatives from which to choose. From this vantage point, college choice may be less a function of students’ ‘college knowledge’ and more a function of proximity and place. For place-bound students, many of whom are ‘post-traditional’ students, postsecondary choices are made according to proximity to home and work, making it all the more important to know how geographic opportunity structures vary across the nation.”

<sup>7</sup> To facilitate further insights, the student data set was also enhanced by utilizing OpenRouteService API service to query colleges and universities in the vicinity of each of the students’ high schools – specifically within a 100-mile by 100-mile bounding square where the high school is at the geographic center of this bounding square. This new data set contained one or more colleges or universities per unique high school in the data set.