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Opportunity Engines: Middle-Class Mobility in Higher Education

Sarah Reber
Rubenstein Fellow, Brookings Institution

Chenoah Sinclair
Research Assistant, Brookings Institution

Introduction

Inequality in the United States has been rising in recent decades, while [intergenerational mobility remains low](#). This means that [absolute mobility](#)—the extent to which children are economically better off than their parents—is declining, and intergenerational inequality is increasingly entrenched. A long literature suggests large returns to attending college and points to the [importance of higher education for intergenerational mobility](#). [Recent work by Opportunity Insights](#) explores in more detail the role that different colleges play in promoting upward mobility, pointing to significant differences across colleges in the extent to which they enroll students from low-income families who have high earnings as adults. Here, we use the data produced by Opportunity Insights to focus specifically on students from middle-class families to understand patterns of attendance and upward mobility for the middle class.

Building on the [College Scorecard Data](#) compiled by the U.S. Department of Education, the Opportunity Insights [Mobility Report Cards](#) use de-identified data from tax returns, linked to information about colleges, to construct a publicly available database for colleges in the United States. Although they provide many measures in the Mobility Report Cards, the Opportunity Insights team focuses primarily on upward mobility for the lowest-income students—those whose parents’ income falls in the bottom quintile—and on the likelihood that those students make it all the way to the top earnings quintile as adults. This “Bottom-to-Top” measure of mobility is important, but it is not the whole story. It is important to also consider the prospects for students from a broader range of the income distribution, and in particular from middle-class families.

The Bottom-to-Top Mobility (BTM) measure depends on both how many bottom-quintile students a college enrolls (bottom-quintile “access”) *and* what proportion of those enrolled bottom-quintile students reach the top earnings quintile in adulthood (“success”). Colleges with low access for bottom-quintile students have relatively low BTM even if those who do enroll have high upward mobility; conversely, colleges where low-income students are not upwardly mobile have low BTM even if they enroll many low-income students.

We develop an analogous measure of Middle-Class Mobility (MCM), focusing on upward mobility for students from middle-income families. Our measure is the share of students at a college who come from the middle quintile of the parental income distribution—*and* move up at least one quintile in adulthood. (Note that throughout this paper, we use the term “middle class” to refer to the middle quintile.) We also adjust this measure to account for downward mobility and for typical mobility among students who do not attend college at all, discussed further below.

Key Findings

- Middle-Class Mobility varies substantially across colleges.

- Colleges with high Bottom-to-Top Mobility do not necessarily have high Middle-Class Mobility, and vice-versa; the correlation between the two measures is just 0.26.
- Selective four-year colleges have the highest rates of Middle-Class Mobility on average, followed by nonselective and highly selective four-year colleges, then two-year and for-profit colleges.
- Public and private four-year colleges have similar average Middle-Class Mobility rates, but public four-years contribute substantially more to upward mobility overall because they enroll many more students.
- Two-year colleges account for a smaller share of total Middle-Class Mobility (31 percent) than their share of middle-class enrollment (43 percent). But per-student instructional spending is lower and students in these colleges spend fewer years in college, on average, so the sector nonetheless accounts for a large share of net upward mobility compared to its share of total spending, just 11 percent.
- Conversely, highly selective colleges account for a disproportionate share of net upward mobility compared to enrollment. But they have high per-student instructional expenditure, so they account for a larger share of spending than Middle-Class Mobility.
- Selective four-year colleges are the workhorses of upward mobility for the middle class, accounting for 34 percent of middle-class enrollment, 50 percent of spending on middle-class students, and 43 percent of Middle-Class Mobility.

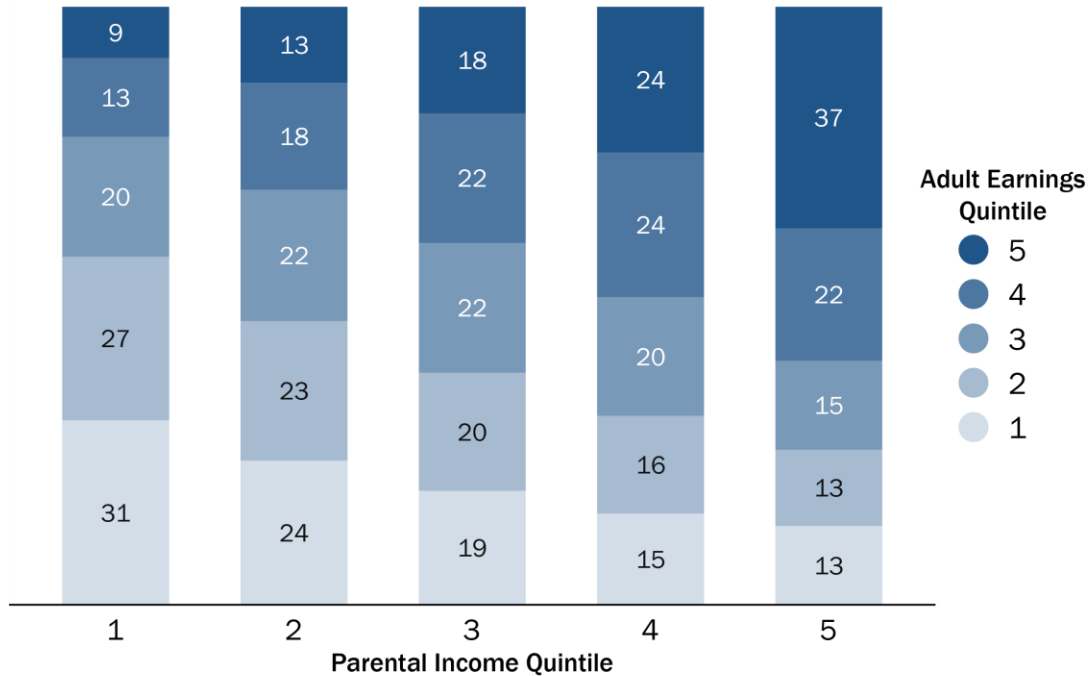
Background

Intergenerational mobility is low in the United States

The fact that children from poor families are likely to be poor adults, while children lucky enough to be born to well-off parents tend to grow up to be well-off adults is well-established. Figure 1 shows this pattern using the Opportunity Insights data for the cohorts analyzed in this report. The figure shows the adult earnings quintile for children who start in each quintile of parental income. If adult earnings did not depend on parental income—that is, if intergenerational mobility were high—each bar would look the same, showing 20 percent in each adult earnings quintile regardless of parental income quintile. In fact, the bars look quite different, suggesting significant persistence in economic outcomes across generations. For example, the first bar shows that among those growing up with parents who had the lowest income (the bottom 20 percent of the distribution), only 9 percent reached the top 20 percent of the earnings distribution as adults, and 31 percent did not experience any upward mobility, earning in the bottom 20 percent as adults. By contrast, the rightmost bar shows that for children growing up with parents in the top 20 percent of the parental income distribution, 37 percent were in the top 20 percent of the earnings distribution as adults. And only 13 percent of children growing up with the most-affluent parents ended up in the bottom earnings quintile as adults. Americans’ chances to make it

to the top of the economic heap, or even the middle, depend significantly on the income of their parents.

Figure 1. Adult Earnings Quintile, by Parental Income Quintile



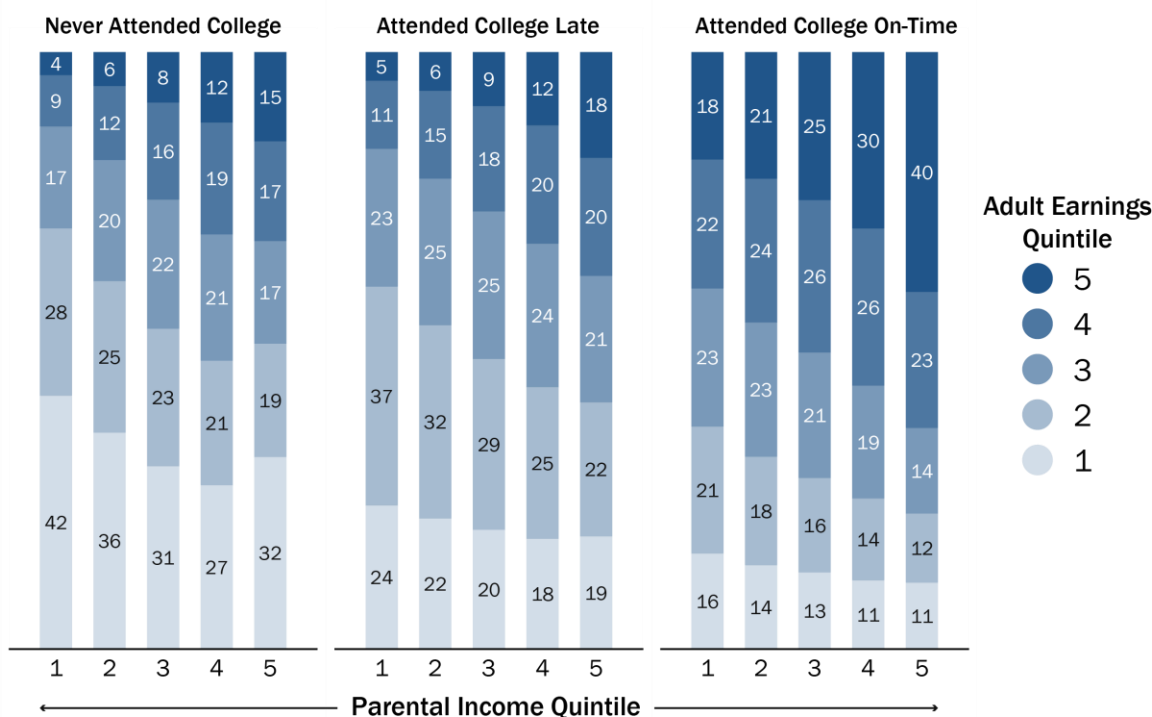
Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows the distribution of children across adult earnings quintiles by parental income quintile; observations with incomplete data are excluded.

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Figure 2 shows the intergenerational transition matrices for those who never attended college, attended college later in life, and attended college “on-time” (between ages 19 and 22). It shows significantly more upward mobility for children from low-income households who attended college. For example, 42 percent of people whose parents were in the bottom quintile and who did not go to college had adult earnings in the bottom quintile, compared to just 24 percent who attended college later in life and 16 percent for those who attended college on-time. For those starting in the middle of the parental income distribution, college attendance is associated with a higher likelihood of staying in the middle of the earnings distribution or moving up. This is consistent with a long line of [research](#) showing that obtaining a college education boosts earnings.

Figure 2. Quintile Transitions, by Attendance Status



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows the distribution of children across adult earnings quintiles by parental income quintile for each college attendance status. Students who attended college at some point between ages 19 and 22 were classified as 'on-time' attenders; those who first attended college between ages 23 and 28 were classified as 'late' attenders. Observations with incomplete data are excluded.

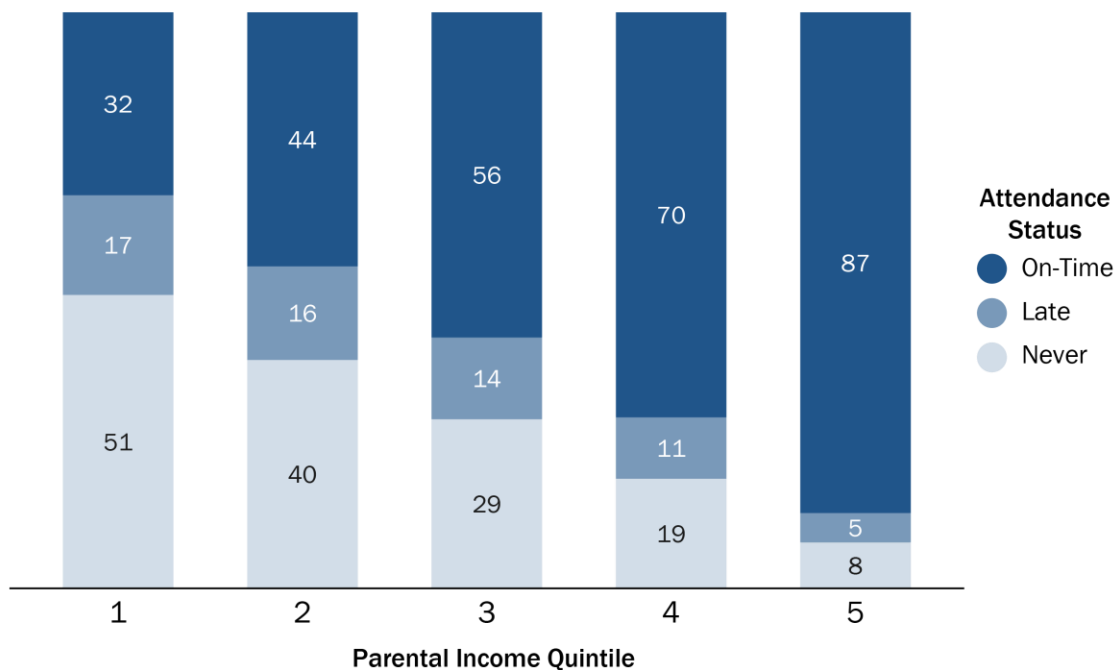
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When it comes to reaching the top 20 percent of the earnings distribution, however, the importance of being an on-time attender becomes clear. Among people whose parents were in the bottom quintile, 18 percent of on-time attenders reached the top quintile in adulthood, compared to 5 percent of late-attenders and 4 percent of non-attenders. A similar pattern can be seen for people from middle-class families: 25 percent of on-time attenders reached the top quintile in adulthood, compared to 9 percent of late-attenders and 8 percent of non-attenders. While those attending college later in life have adult earnings outcomes more similar to never-attenders than on-time attenders, late-attenders are substantially less likely to end up in the lowest adult earnings quintile. These patterns are partially attributable to differences in other characteristics of those who attend college on-time, later in life, or not at all, but attending college later in life may offer some protection against low earnings, even if it is unlikely to launch a student to the top of the earnings distribution.

Unfortunately, young adults who grow up in lower- and middle-class families are much less likely to attend college on-time or at all, compared to their more affluent peers. Figure 3 shows the distribution of young adults across college attendance categories by parental

income. The relationship between parental income and college attendance rates is strong: only one-third of those from the lowest-income families attend college on-time. Attendance rates increase sharply with parental income, with just over half of children of middle-quintile parents heading off to college on-time, compared to 87 percent for those from the top-quintile. Some of this gap is made up slightly later in life, as children of lower-income parents are more likely to attend college later in adulthood. Still, large shares of low- and middle-income children never go on to attend college, and Figure 2 suggests late attenders have better outcomes than never-attenders, but do worse than those who enroll in college shortly after high school graduation. Research suggests that these gaps are not fully explained by differences in academic preparation. In fact, low-scoring students from affluent backgrounds are [about as likely](#) to graduate from college as high-scoring students from low-income families.

Figure 3. College Attendance Status, by Parental Income Quintile



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

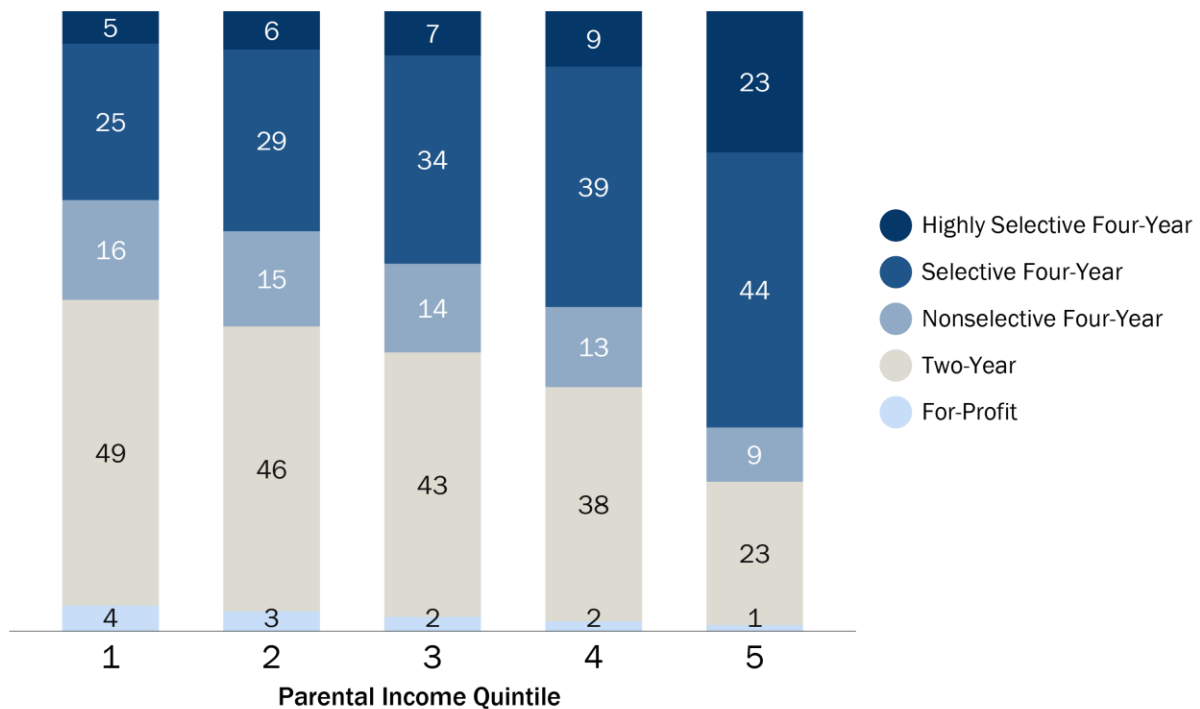
Notes: Figure shows the distribution of children across college attendance categories by parental income quintile; Students who attended college at some point between ages 19 and 22 were classified as 'on-time' attenders; those who first attended college between ages 23 and 28 were classified as 'late' attenders. Observations with incomplete data are excluded.

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Moreover, even among students who do enroll in college soon after high school graduation, the selectivity and type of college attended depends strongly on parental income. Figure 4 shows that low- and middle-income students are predominately served by two-year colleges and nonselective four-year colleges, whereas higher-income students are more likely to attend selective and highly selective four-year colleges. This is consistent with the

research [literature](#) showing that children of higher-income families are more likely to attend college, and to attend more-selective colleges, compared to their middle-class and low-income counterparts.

Figure 4. Where Students Attend College, by Parental Income Quintile



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows the distribution of on-time college attenders across college selectivity tier by parental income. Four-year colleges were grouped according to their Barron's selectivity rating (see text for details); two-year and for-profit colleges were assigned to those categories regardless of selectivity. Observations with incomplete data are excluded.

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A Middle-Class Mobility Measure

We develop a measure of mobility similar in spirit to Chetty et al.'s Bottom-to-Top Mobility (BTM) measure but adapt it to focus on students from the middle of the parental income distribution. We begin by describing the data Chetty et al. use and how they construct BTM before turning to how we modify this approach to construct our own Middle-Class Mobility (MCM) measure.

Data

We do not have access to the individual-level, de-identified tax data used by Chetty et al. in their analysis, so we are limited to the data they make public through Opportunity Insights. Fortunately, [the public-use dataset](#) includes a wide range of information about colleges that we can use in this analysis. This section details how the Opportunity Insights team

constructed the college-level variables used in this analysis; interested readers can consult the [full documentation](#) and [this paper](#) for more information.

Sample

The Opportunity Insights team constructed college-level statistics using de-identified tax filings. The sample included all individuals in the U.S. who have a valid Social Security Number or Individual Taxpayer Identification Number, were born between 1980 and 1982, and could be linked to at least one parent in the tax data. Children were linked to parents based on the most recent tax filers to claim the child as a dependent during the period when the child was 12–17 years old. If the child was claimed by a single filer, the child is defined as having a single parent. About 2 percent of children were never claimed as dependents and were consequently excluded from the analysis.¹

Our analysis necessarily focuses on older cohorts because we need time to see how they fare in the labor market. The cohorts represented in these data largely attended college prior to recent expansions of the for-profit sector,² which was accompanied by increasingly predatory practices. Mobility measures for the for-profit sector should therefore be interpreted with caution.

Identifying where students attend college

Opportunity Insights provides college-level estimates of attendance derived from two sources: federal tax records and Department of Education records from 1999 to 2013. They use data from Form 1098-T—an informational return filed by colleges for each enrolled student for the purposes of reporting tuition payments—and Pell grant records to determine whether and where each person enrolled in college. A student is considered to have attended a college in a school year if she has a 1098-T filed by the college or received a Pell grant that year. Students who attended more than one college are assigned to the college attended most frequently between the ages of 19 and 22; if a student attended two or more colleges for the same number of years, she is assigned to the first college attended.

The 1098-T forms identify each college by its Employer Identification Number (EIN) and ZIP code. Importantly, some colleges file these forms for multiple campuses using a single EIN-ZIP, in which case we cannot distinguish between campuses in the same system. For example, the University of Maryland reports under a single EIN-Zip code, lumping together

¹ The share of children who can be successfully linked to parents drops significantly when looking at birth cohorts before 1980. This is because the federal tax data used by Chetty et al. to measure parents' and children's incomes begins in 1996, and many children leave the household starting at age 17. Consequently, Chetty and colleagues limit their analysis sample to children born in or after 1980. This range is restricted further in the public-access data, where data are only available for children in the 1980-'82 birth cohorts, with supplementary data provided from the 1983 and 1984 cohorts when information for a college for one of these cohorts is incomplete.

² Between 1986 and 2009, enrollment within for-profit higher education institutions (FPHEIs) grew from 2% to more than 10% of all students enrolled in institutions of higher education (Liu, 2011). Furthermore, the percentage of undergraduates attending FPHEIs more than doubled between 1995 and 2012, from 5% to 13% overall and from 1% to 17% in 4-year FPHEIs (National Center for Education Statistics, 2017).

students who attend any of its 15 campuses. Other large systems to which this limitation applies include the University of Tennessee, University of Illinois, and University of Minnesota. We exclude these aggregated campuses from the analysis.

Measuring parental income and adult earnings

Children in the relevant cohorts are linked to parents who claimed them as a dependent, as discussed above. Data on the income of parents and the earnings of children come from federal income tax returns and W-2 forms to capture income for those who do not file tax returns. Parent income is defined as total pre-tax income for the household, which includes both earnings and other forms of income (such as interest payments and government benefits). They average parental income for the five years when the child is aged 15–19 to obtain a measure of resources available when college attendance decisions are typically being made. Children are then assigned to parental income quintiles by ranking them on this measure relative to other children in the same birth cohort.

Earnings in adulthood for these children are defined as total pre-tax individual earnings. Unlike the income measure for parents—which accounts for non-wage forms of income like unemployment benefits and interest payments—this measure is restricted to earnings, defined as the sum of wages and net self-employment earnings. The earnings of children were measured in 2014 when they were between 32 and 34 years old, late enough to finish their schooling and gain some experience in the labor market. They were assigned to earnings quintiles by ranking them relative to others in the same birth cohort, regardless of college attendance status.

The Opportunity Insights team use these data to count the number of students in each college who come from each parental income quintile and reach each adult earnings quintile. We use these college-level counts in our analysis. Following Chetty et al., we restrict the analysis to colleges with an average cohort size of at least 200 for the 1980 to 1982 birth cohorts; this excludes 416 institutions that account for 2.8 percent of all students.

College Characteristics

We use data from the Integrated Postsecondary Education Data System (IPEDS) database³ and the College Scorecard made available through Opportunity Insights.⁴ Using the Barron’s selectivity ranking provided in the College Scorecard data as a guideline, we group colleges into the following 5 selectivity tiers:

³ IPEDS is a system of interrelated surveys conducted annually by the U.S. Department of Education. The surveys contain data on enrollment, program completion, graduation rates, faculty and staff, finances, institutional prices, selectivity, and student financial aid for all institutions that participate in federal student aid programs.

⁴ We use the “selected characteristics” file.

- Highly Selective Four-Year: Four-year colleges belonging to the elite and highly selective Barron's selectivity categories.
- Selective Four-Year: Four-year colleges belonging to the 3rd and 4th Barron's selectivity categories.
- Nonselective Four-Year: Four-year colleges belonging to the 5th and nonselective Barron's selectivity categories, as well as four-year colleges with missing Barron's rankings.
- Two-Year: All two-year colleges and less than two-year colleges that are not for-profit.
- For-Profit: All two-year and four-year for-profit colleges.

We use the IPEDS data to classify colleges into sectors based on highest degree offered and whether they are public, private non-profit, or for-profit:

- Private Four-Year: Private, non-profit colleges that offer a four-year degree.
- Public Four-Year: Public colleges that offer a four-year degree.
- Two-Year: Public and non-profit colleges that do not offer a four-year degree, including those that only offer certificate programs. In practice, the vast majority of these colleges are public community colleges that offer two-year degrees.
- For-Profit: All for-profit colleges, regardless of highest degree offered.

Opportunity Insights' Bottom-to-Top Mobility measure

Our MCM measure builds conceptually on the BTM measure emphasized by Opportunity Insights. BTM is the share of a college's enrollment that is *both* from the bottom quintile of parental income *and* in the top quintile of adult earnings. It has two components:

- **Access** is the share of a college's enrollment that comes from the bottom quintile. It tells us how many low-income students a college serves, compared to total enrollment.
- **Success** is the share of bottom-quintile students at a college who make it to the top quintile of the adult earnings distribution. It tells us how low-income students do, conditional on enrolling in a college.
- **Mobility** is equal to Access multiplied by Success.

Table 1 illustrates this calculation for several colleges. For example, at Harvard, only 3.0 percent of enrollment is from the bottom quintile of the parental income distribution (bottom-quintile access). Among those students, 57.7 percent have adult earnings that put them in the top quintile of the adult earnings distribution for their cohort (bottom-to-top success). This implies that 1.8 percent of Harvard's total enrollment comes from the bottom parental income quintile *and* is in the top earnings quintile in adulthood. SUNY-Stony Brook has a slightly lower success rate of 51.2 percent, but bottom-quintile students comprise a much larger share of enrollment (16.4 percent), yielding a BTM rate of 8.4 percent. Wright Career College primarily serves low-income students, so it has a high bottom-quintile access rate (42.1 percent). However, only 1.1 percent of bottom-quintile

students who attend Wright make it to the top quintile of the adult earnings distribution, so Wright has a mobility rate of just 0.5 percent.

Table 1. Calculating Bottom-to-Top Mobility for select colleges					
	Q1 Access ↓ P(Parent in Q1)	X	Success Rate ↓ P(Child in Q5 Parent in Q1)	=	Unadjusted Mobility Rate ↓ P(Child in Q5 & Parent in Q1)
Harvard University	3.0%	X	57.7%	=	1.8%
SUNY-Stony Brook	16.4%	X	51.2%	=	8.4%
Wright Career College	42.1%	X	1.1%	=	0.5%

A new measure of Middle-Class Mobility

To construct our measure of Middle-Class Mobility, we use the same approach described above, but we define access and success in ways that are more relevant to the middle class. Although the Future of the Middle Class Initiative [defines the middle class](#) as those falling in the middle-three quintiles of the income distribution, we focus exclusively on the third quintile. This simplifies the analysis compared to considering quintiles 2, 3, and 4, and produces a similar picture.⁵ We begin by defining access and success for the middle class:

- **Access** is the share of a college’s enrollment coming from the third quintile of the parental income distribution.
- **Success** is the share of third-quintile students attending a college who move up at least one quintile *net* the share of students who fall at least one earnings quintile. By this measure, a college has a positive “success” measure if more of its third-quintile students move up than move down.

Some children from low-income families will be upwardly mobile despite not attending college; those whose parents are in the bottom income quintile cannot be downwardly mobile by definition, and some will even make it to the top earnings quintile in adulthood without attending college. Figure 2 shows that 4 percent of non-attenders from the bottom parental income quintile were in the top earnings quintile as adults. As Chetty et al. note, a hypothetical college that enrolled only students from the bottom quintile (bottom-quintile

⁵ Interpreting both access and success measures — and therefore mobility measures — for the middle-three income quintiles proved difficult. For example, a college might have lower middle-three-quintile access because it enrolls many bottom-quintile students or because it enrolls many top-quintile students, and the equity implications of those alternatives are quite different. Mechanically, the possibility of upward or downward economic mobility also vary considerably across the middle-three quintiles (children from the second quintile have more room to move up than children from fourth-quintile families), and it is not obvious how to weight different quintile transitions to make a single “success” measure. Focusing on the third quintile simplifies the interpretation of the MCM measure.

access of 100 percent), 4 percent of whom had adult earnings in the top quintile (bottom-to-top success of 4 percent), would have a BTM rate of 4 percent, well above the average, even though bottom-quintile students were doing no better than students who did not attend college at all. They adjust for this by subtracting the bottom-to-top “success” of non-attenders from each college’s success rate. By this measure, a college only gets “credit” for upward mobility that exceeds the average mobility among non-attenders.

Chetty and colleagues use this adjusted measure in robustness checks but find it makes little difference because colleges with very high access rates for bottom-quintile students are rare. However, this adjustment matters more for measuring Middle-Class Mobility. On average, students from the third quintile of parental income who never attend college fall in the earnings distribution relative to their parents’ position in the income distribution; the average net mobility rate for middle-class non-attenders is about -29 percent. That is, substantially more non-attenders from middle-class families are downwardly mobile than upwardly mobile. Following the logic described above, we “net out” the average mobility of non-attenders in our measure of success for the middle class. For comparability, we use the adjusted measure of BTM, rather than the main measure Chetty and colleagues use in their analysis. The measures with and without this adjustment are highly correlated, but the adjustment affects our comparisons across sectors and selectivity tiers, particularly for the middle class, so we use the adjusted version in our analysis.

Table 2 shows how this adjustment affects the calculations in Table 1. The access measure is the same, but the success measure is reduced by 3.9 percentage points—the average “success” for those who don’t attend college. The mobility rate is also reduced.

Table 2. Calculating adjusted Bottom-to-Top Mobility rate for select colleges					
	Q1 Access	X	Adjusted Bottom-to-Top Success Rate	=	Adjusted Bottom-to-Top Mobility Rate
Harvard University	3.0%	X	53.9%	=	1.6%
SUNY-Stony Brook	16.4%	X	47.4%	=	7.8%
Wright Career College	42.1%	X	-2.7%	=	-1.1%

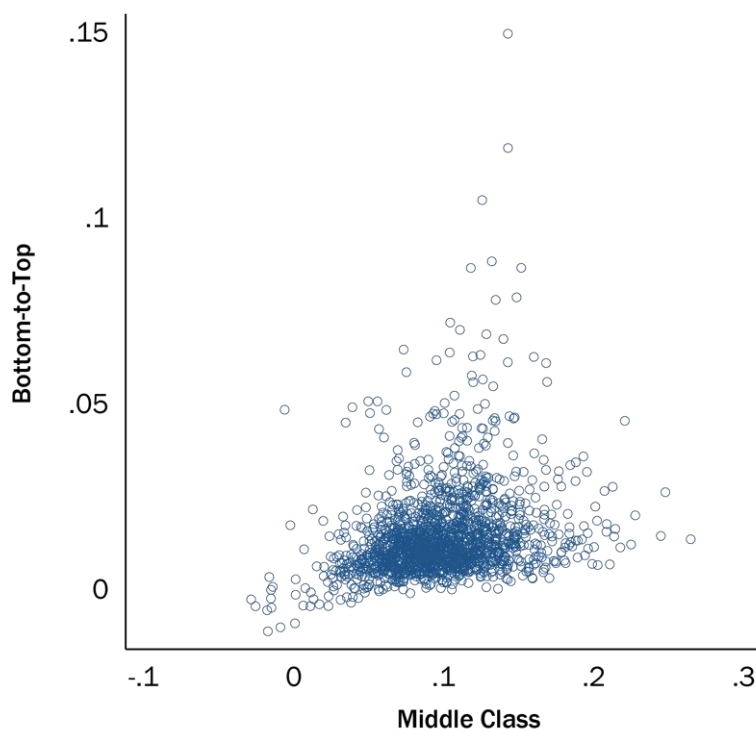
Table 3 illustrates the calculation of our Middle-Class Mobility rate. At Harvard, students from the third quintile of the parental income distribution comprise 8.1 percent of total enrollment (middle-class access). Among those students, 56.6 percent more move up at least one quintile than move down at least one quintile. But among students who don’t attend college at all, success by this measure is *negative* 28.9 percent (more move down than up), so we add 28.9 to 56.6 percent to get the adjusted middle-class success rate for Harvard. This can be interpreted as net upward mobility for third-quintile students who attend Harvard, compared to net upward mobility for third-quintile students who never

attend college. Multiplying access by this measure of success yields the Middle-Class Mobility rate.

Table 3. Calculating Middle-Class Mobility Rate for select colleges					
	Middle-Class Access	X	Middle-Class Success Rate	=	Middle-Class Mobility Rate
Harvard University	8.1%	X	85.5% = (56.6% + 28.9%)	=	6.9%
SUNY-Stony Brook	16.1%	X	83.5% = (54.6% + 28.9%)	=	13.5%
Wright Career College	16.5%	X	-10.4% = (-39.3% + 28.9%)	=	-1.7%

Figure 5 shows how the (adjusted) Bottom-to-Top Mobility measure relates to the new Middle-Class Mobility measure for all colleges. Colleges with higher Middle-Class Mobility also have higher Bottom-to-Top Mobility, on average, but the relationship is not very strong. The correlation is 0.26. Figure 5 also shows substantial variation in MCM across colleges. An [interactive version](#) of this figure allows the user to find a specific college, or filter on categories of colleges, to see how colleges stack up on these measures.

Figure 5. Bottom-to-Top versus Middle Class Mobility



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.
Notes: Colleges with fewer than 200 students per cohort in the IRS data are excluded.

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The “success” measures—and therefore the mobility rates—reflect differences across colleges both in who attends the college and the causal impact of the college itself. Implicitly, the success measures compare outcomes for students who attended a particular college to outcomes for the average student who never attended college. Variation in this measure across colleges could be due to differences in which students colleges accept and enroll or differences in the effect of attendance. The calculations in Table 3 show that middle-class students who go to Harvard have similar upward mobility to those who attend Stony Brook, but those who attend Wright do much worse; in fact, they have worse outcomes than students who never attend college. Part of the difference in outcomes for students attending Harvard and Stony Brook, on the one hand, and Wright on the other, is almost certainly partially due to differences in characteristics of students who attend each college, such as academic preparation or study skills. In their analysis, Chetty and colleagues show that, conditional on attending the same college, outcomes are remarkably similar across the distribution of parental income; they argue the data suggest a substantial share of variation in success across colleges is due to differences in the causal impact of colleges rather than selection. Nevertheless, it is important to keep in mind that differences across colleges in success—and therefore mobility—reflect differences in both selection and impact.

Differences in mobility across different types of colleges

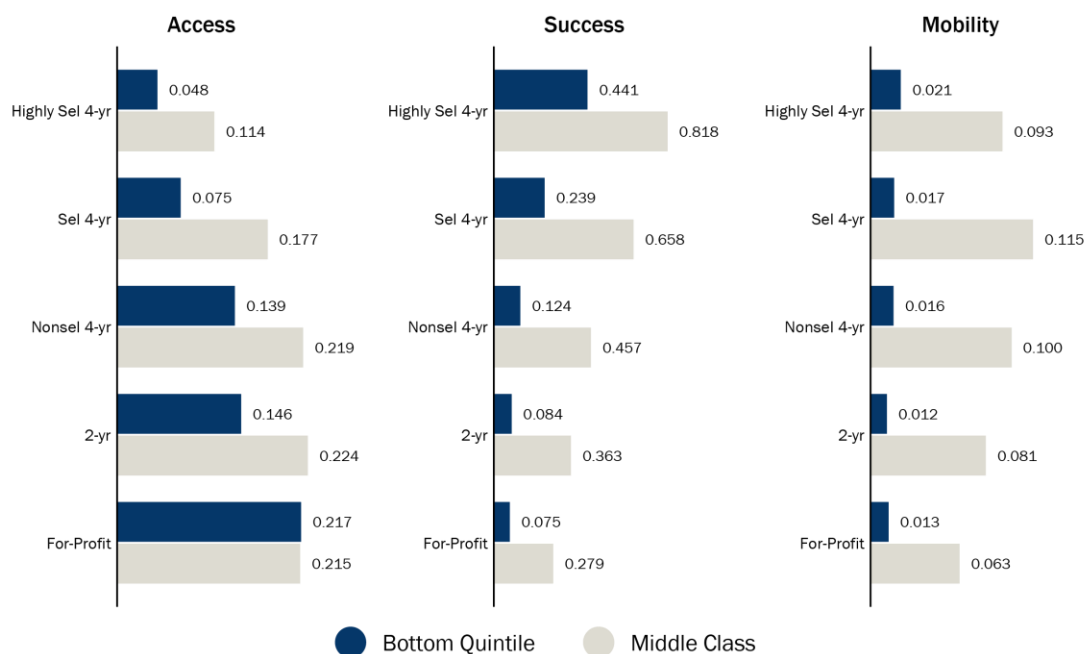
Figure 5 shows that MCM varies considerably across colleges and is only weakly correlated with BTM. In other words, the colleges with the most students moving from the bottom rung of the economic ladder to the top are not necessarily the same as the ones with the most students moving up from the middle quintile.

Do some colleges have systematically higher or lower mobility depending on how selective they are or their sector? We address this question by analyzing average mobility by these characteristics; we also examine the two components of mobility—access and success—to better understand the reasons for differences in mobility rates for different types of colleges.

Middle-Class Mobility by college selectivity tier

Students from low-income families attend colleges that are less selective, on average, compared to middle- and higher-income students (Figure 4). Figure 6 shows how access, success, and mobility for bottom-quintile and middle-class students vary depending on college selectivity. The first panel shows average bottom-quintile and middle-quintile access—the share of total enrollment that comes from those quintiles—for each selectivity tier. The second panel shows average success, and the final panel shows mobility — which incorporates access and success. (Note that Figure 6 shows the proportion of students from each quintile enrolled in institutions in each category, while Figure 4 shows the proportion *from* each quintile enrolled in each type of institution.)

Figure 6. Bottom Quintile and Middle Class Access, Success, and Mobility, by Selectivity Tier



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows average access, success, and mobility rates for bottom-quintile and middle-class students, weighted by average cohort size. Four-year colleges were grouped according to their Barron's selectivity rating (see text for details); two-year and for-profit colleges were assigned to those categories regardless of selectivity. Colleges with fewer than 200 students per cohort in the IRS data are excluded.

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The left panel shows that for students from the bottom quintile, access increases as selectivity declines. On average, less than 5 percent of students in highly selective colleges come from families in the bottom quintile, compared to 22 percent in for-profit colleges. A similar relationship holds for students from the middle class, though it is less pronounced. On average, about 11 percent of students in highly selective institutions come from the middle class, compared to 22 percent in for-profits.

The middle panel shows average “success” by selectivity tier. Recall that for the bottom quintile, success is defined as making it to the top quintile of the adult earnings distribution (as in [Chetty et al.](#)); for the middle class, we define success as net upward mobility; in both cases, we net out the success rate of non-attenders, as described above. For students from the bottom quintile, the more-selective schools have significantly higher success rates. Among low-income students who attend highly selective four-year colleges, 44 percent make it to the top earnings quintile in adulthood. A similar pattern is observed for middle-class students.

The last panel shows the mobility measures. Among four-year colleges, BTM is relatively constant across selectivity tiers. This is because differences in access and success offset

each other. For example, selective and nonselective four-years have similar mobility rates (.017 and .016, respectively), but selective four-year colleges have higher success and lower access, whereas nonselective four-year colleges have higher access and lower success. Among two-year colleges and for-profits, average BTM rates are slightly lower, which is largely attributable to their weak success rates.

In terms of MCM, selective four-year colleges have the highest mobility rates, on average, followed by nonselective and highly selective four-year colleges, then two-year colleges and for-profits. As with BTM, access and success are somewhat offsetting—but not to quite the same degree. Selective four-years, for example, have both high access *and* high success, explaining their high average rate of Middle-Class Mobility.

The first two panels in Figure 6 underscore that the similarity of mobility rates across selectivity tiers obscures the differing contributions of access and success. Unfortunately, the types of institutions where low-income and middle-class students are most likely to be successful—highly selective and selective four-years—are the least accessible, whereas the schools at which these students can easily enroll are associated with the poorest labor-market outcomes.

Middle-Class Mobility by college sector

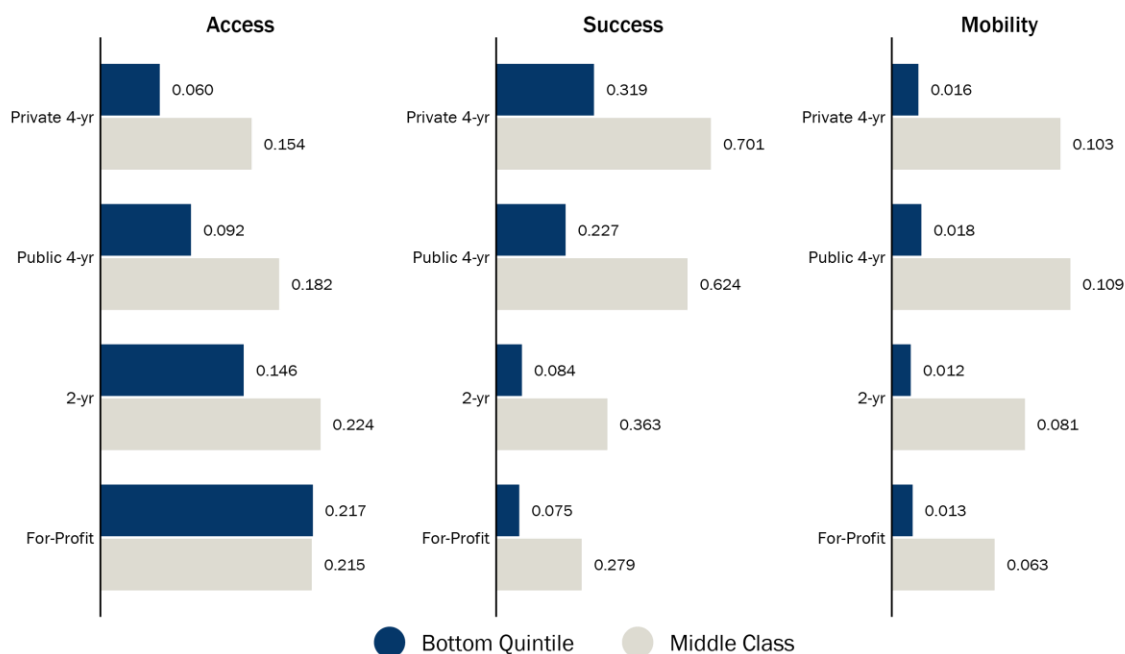
Figure 7 shows how access, success, and mobility vary by sector, defined as:

- Private (non-profit) four-year
- Public four-year
- Two-year⁶
- For-profit (including two-year and four-year)

The first panel of Figure 7 shows that, with the exception of for-profits, students from the bottom quintile make up a smaller share of enrollment across all sectors, compared to middle-class students. Access for bottom-quintile students is significantly lower at four-year colleges, particularly those that are private, compared to two-year or for-profit colleges. As above, differences in access and success for bottom-quintile students are largely offsetting, so BTM rates (third panel) are similar among four-year colleges and two-years and for-profits.

⁶ Private, non-profit two-year colleges are rare (less than 2 percent of two-year colleges), so we combine them with public two-years.

Figure 7. Bottom Quintile and Middle Class Access, Success, and Mobility, by Sector



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows average access, success, and mobility rates for bottom-quintile and middle-class students, weighted by average cohort size. Colleges were assigned to sector based on highest degree offered and whether they are public, non-profit, or for-profit according to IPEDS data (see text for details). Colleges with fewer than 200 students per cohort in the IRS data are excluded.

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For middle-class students, access follows a similar, but less steep pattern, and success for both public and private four-year colleges is substantially higher than for two-year and for-profit colleges, on average. MCM rates (last panel) vary more across sectors than do BTM rates. As with BTM, four-year colleges have higher mobility than two-years or for-profits, but the four-year advantage is larger for the middle class, compared to the bottom quintile.

Accounting for upward mobility

The results presented in Figures 6 and 7 show how access, success, and mobility rates vary depending on college characteristics. The Middle-Class Mobility measure indicates what *share* of a college's enrollment is both from the middle class and upwardly mobile. However, holding constant a college's mobility rate, a college that enrolls more students overall will contribute more to upward mobility than a college that enrolls fewer students.

We account for these differences in college size by calculating the *number* of upwardly mobile students who attend each college and examining how total upward mobility is

distributed across colleges of different types.⁷ The total number of (net) upwardly mobile students from the middle quintile by our definition averaged approximately 160,000 per cohort. We then calculate the contribution of each college to that total, as demonstrated in Table 4: Harvard has 1,609 students per cohort, 8.1 percent of whom come from the third parental income quintile—30 students. Among third-quintile students at Harvard, net upward mobility is 85.5 percentage points higher than net upward mobility for non-attenders. Harvard therefore accounts for 111 of the 160,000 upwardly mobile middle-class students by this measure. Stony Brook has both higher access for the middle quintile and higher enrollment overall, so it contributes more to upward mobility, despite having a slightly lower middle-class success rate. Wright has a negative success rate—meaning students enrolled there do worse than students who don’t attend college at all—but they don’t enroll many students, so their (negative) contribution is small.

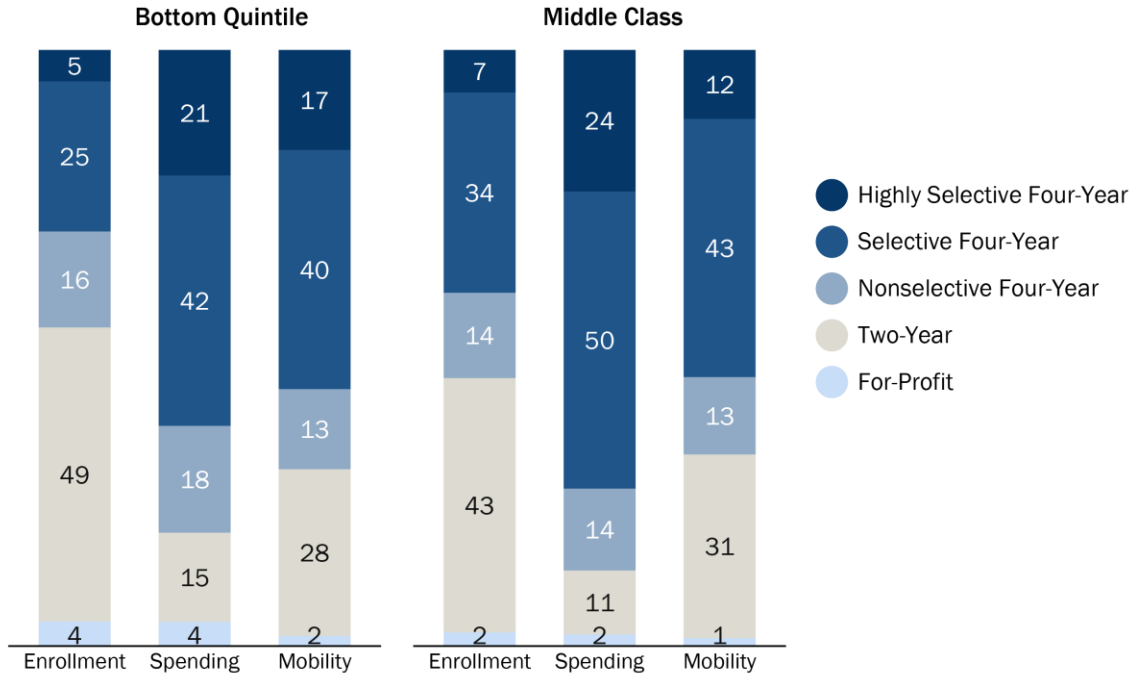
	Q3 Access	X	Cohort size	=	Number of Q3 students	X	Adjusted Middle-Class Success Rate	=	Number of Successes
Harvard University	8.1%	X	1,609	=	130		85.5%	X	111
SUNY-Stony Brook	16.1%	X	2,070	=	333		83.5%	X	278
Wright Career College	16.5%	X	249	=	41		-10.4%	X	-4

The costs associated with different types of colleges also vary substantially, both because per-pupil, per-year instructional spending is significantly higher in more-selective institutions, on average, and because students who enroll in two-year colleges enroll for fewer years, on average, than those enrolled in four-year colleges. We calculate the estimated cost associated with bottom-quintile and middle-class students at each college; this calculation is necessarily approximate but nevertheless allows for a rough comparison of total spending to enrollment and upward mobility by type of college.⁸

⁷ As above, we net out the average upward mobility rate for students who don’t attend college. The number of upwardly mobile middle-class students at a college is the success measure times the number of middle-class students the college enrolls. In other words, it is the number of additional students who moved up at least one quintile compared to what would be expected based on transitions among non-attenders.

⁸ We multiply enrollment in the relevant quintile (bottom or third) by per-pupil instructional spending in 2000 as reported in IPEDS; we scale that by 1.5 for 2-year colleges and 4 for 4-year colleges to account for the different average times students spend in college in each sector. These estimates are necessarily crude, as the

Figure 8. Share of Enrollment, Expenditure, and Mobility, by Tier



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows the distribution of enrollment, estimated per-pupil instructional spending, and mobility for bottom-quintile and middle-class children by college selectivity tier. Four-year colleges were grouped according to their Barron's selectivity rating (see text for details); two-year and for-profit colleges were assigned to those categories regardless of selectivity. Estimated per-pupil expenditure assumes students in four-year colleges attend for 4 years and students in two-year colleges attend for 1.5 years, on average. Colleges with fewer than 200 students per cohort in the IRS data are excluded.

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Figure 8 shows the share of enrollment, spending, and mobility across selectivity tiers for both bottom-quintile and middle-class students. For example, highly selective four-year colleges account for 5 percent of bottom-quintile enrollment, 21 percent of estimated instructional spending, and 17 percent of Bottom-to-Top Mobility. For bottom-quintile students, two-year colleges account for 49 percent of enrollment, 15 percent of estimated spending, and 28 percent of upward mobility.

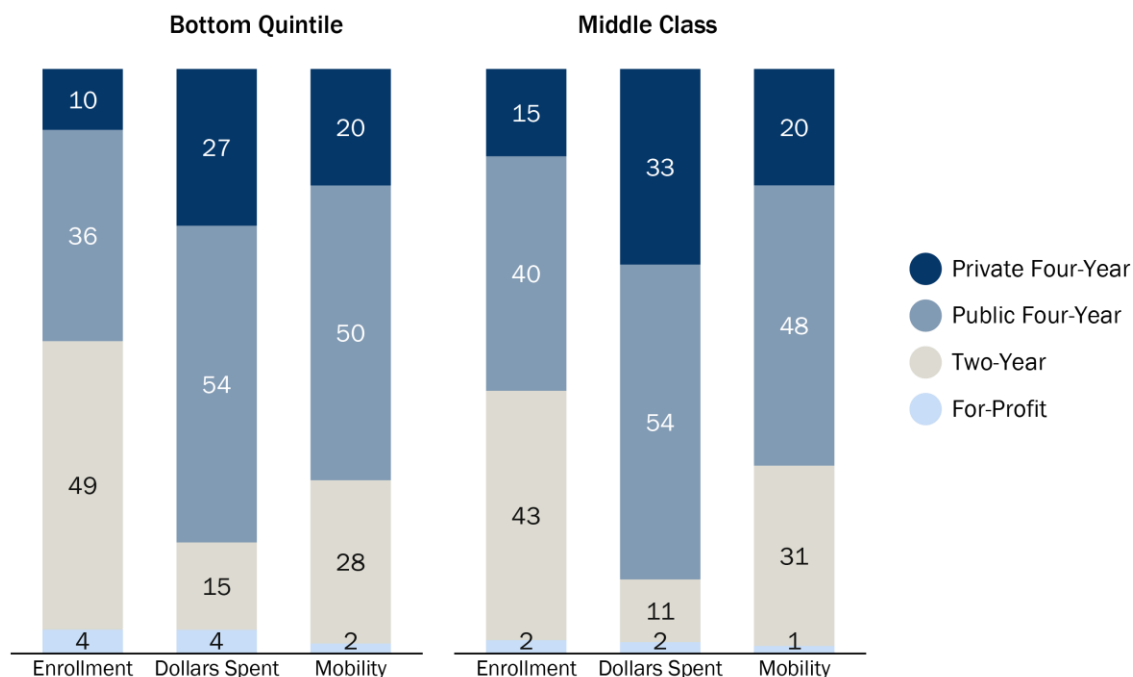
The second set of bars shows the same estimates for middle-class students. For the middle class, selective four-year colleges account for the largest share of upward mobility – 43 percent – which is disproportionate relative to their enrollment share of 34 percent, but slightly less than their 50 percent share of estimated spending. Two-year colleges account for the largest share of enrollment—43 percent—but only 11 percent of spending and 31 percent of upward mobility.

typical number of years students attend may vary across colleges and the instructional spending is the average, not marginal, cost. Nevertheless, this back-of-the-envelope calculation can give us some sense of how spending is distributed across types of colleges.

The patterns in Figure 8 for bottom-quintile and middle-class students are similar, though middle-class students are somewhat more likely to attend selective and highly selective four-year colleges and less likely to attend two-year colleges. Highly selective colleges' contribution to upward mobility is disproportionate relative to their enrollment, but still small due to their small enrollment share. Highly selective colleges spend more per student, so their share of mobility is also lower than their share of spending. Two-year colleges account for large shares of enrollment but small shares of spending—as students spend less time enrolled and spending per student is lower—and moderate shares of upward mobility. Selective four-year colleges account for the lion's share of upward mobility—but an even larger share of spending.

Figure 9 shows the same analysis by sector. The two-year and for-profit colleges are defined as in Figure 8, but here we divide four-year colleges not by selectivity but by whether they are public or private. Public colleges, including two-year and four-year colleges, account for almost 80 percent of upward mobility on both measures. This follows from the simple fact that most students attend public colleges. Private colleges account for a disproportionately large share of upward mobility relative to their enrollment, but they also have high instructional spending. Public four-year colleges are the workhorses of upward mobility, accounting for large shares of enrollment, spending, and upward mobility. But two-year colleges provide a lot of “bang for the buck”, since they have low spending. For-profits offer upward mobility roughly proportional to their enrollment, though they didn't enroll many students in these cohorts. Again, it is important to note that these cohorts pre-date a considerable expansion in the for-profit sector and increasing concerns about predatory practices.

Figure 9. Share of Enrollment, Expenditure, and Mobility, by Sector



Source: Authors' calculations using Mobility Report Cards data from Opportunity Insights.

Notes: Figure shows the distribution of enrollment, estimated per-pupil instructional spending, and mobility for bottom-quintile and middle-class children by college sector. Colleges were assigned to sector based on highest degree offered and whether they are public, non-profit, or for-profit according to IPEDS data (see text for details). Estimated per-pupil expenditure assumes students in four-year colleges attend for 4 years and students in two-year colleges attend for 1.5 years, on average. Colleges with fewer than 200 students per cohort in the IRS data are excluded.

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Discussion

Attending college is associated with upward mobility for students who grow up in low-income and middle-class families. But not all colleges offer the same opportunities for upward mobility, and whether and where young adults attend college depends heavily on their parents' income. In this paper, we develop a new measure of Middle-Class Mobility, incorporating measures of both access for the middle class and upward mobility conditional on attendance. We show that the extent to which different colleges contribute to Middle-Class Mobility varies considerably across selectivity tier and sector, but also within each category. The [accompanying interactive](#) shows MCM and BTM mobility rates for individual institutions. Although our analysis does not identify causal pathways that can be manipulated to improve outcomes for middle-class students, it does highlight several patterns of interest to policymakers.

The colleges with the best outcomes for middle-class students, namely selective and highly selective four-years, are the least accessible types of institutions for these students. On the other hand, two-year colleges are quite accessible—enrolling nearly half of middle-class students—but their students do not experience the same upward mobility, compared to those enrolling in four-year colleges. [New research from Opportunity Insights](#) shows that these differences are not fully explained by differences in SAT/ACT scores. Low- and middle-income students attend less-selective colleges than their higher income peers even when they have the same test scores. While the better outcomes enjoyed by students who attend more-selective, four-year colleges are due in part to differences in academic preparation, research suggests that at least part of the difference is a causal effect of colleges: [students benefit from access to more-selective colleges](#).

Colleges attended by lower- and middle-income students also spend much less per student, compared to the more-selective colleges attended by their affluent peers. Instructional spending has been shown to have [large, positive impacts](#) on degree completion. On the one hand, the relatively low spending at two-year colleges and four-year publics means that those institutions offer value. On the other hand, those institutions have low completion rates, so the largely low- and middle-income students they serve would likely benefit from higher spending. Policymakers should be especially mindful to protect these institutions from deep cuts in response to the COVID-19 crisis.

The team at Opportunity Insights [suggest changes to admissions policies](#) at selective four-year colleges to improve access. We agree. But the effectiveness of this strategy for improving upward mobility could be limited if low- and middle-income students face other barriers to enrollment or if those colleges fail to deliver the same benefit when they become more accessible. Policymakers should be at least as concerned about boosting support for the colleges already serving millions of low-income and middle-class students, especially public two-year and moderately selective four-year colleges.

Segregation of higher education—where the children from low- and moderate-income families attend less-selective, under-resourced colleges, and higher-income peers attend better-resourced colleges, regardless of their tests scores—acts as a drag on intergenerational mobility. A combination of changes in policies to reduce segregation and inequality of funding across higher education is urgently needed to realize the promise of higher education as an engine for middle-class mobility.

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