

THE AFFORDABILITY CONUNDRUM

Value, Price, and Choice in Higher Education

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Value, Price, and Choice in Higher Education Today

Introduction

The average net cost of tuition and fees for one year of enrollment at a four-year public institution was \$3,770 in 2015, up nearly 30% from a decade earlier.¹ This means that students who complete their degrees in four years at a public university must come up with \$15,000 above and beyond what they need to cover their normal cost of living, and many must do so while taking a break from working or reducing their hours to fit in course work.

That's a bigger challenge than the one faced by the previous generation: students who began their postsecondary career in 1990 needed to come up with just \$8,000 (in today's dollars).² As is often expressed in anecdotes, tuition in those days could be raised through a combination of pinching pennies and saving wages from a summer or part-time job.³

College affordability, in short, has taken on a new meaning. While investments in education still tend to be worth it, with an average financial return of 15% for students who complete a degree,⁴ the price tag is daunting and raises questions about how students and their families should think about what is affordable to them. In the past, the affordability of a college degree was largely determined by how much you'd put away in a savings account, by how much your family was willing to chip in, or by how much of your income you were willing to devote to paying tuition and fees. Today, students are increasingly relying on debt to finance their education, even among families for whom net costs have remained relatively flat.⁵ In 2000, the typical student covered 38% of his tuition and fees with debt. That percentage had increased to 50% by 2013.⁶ Even very well-off families are now financing their children's education using student debt, whereas in the past it was a resource primarily utilized by the middle class.

In this environment, answering the question of whether college is affordable is not a simple task. But that is what we seek to do. We aim to explore the answer to two kinds of questions: For whom is college affordable? And why? We'll also measure how affordability varies across types of institutions.

This paper uses data from the National Postsecondary Student Aid Study (NPSAS) to analyze what families are paying for college and how they are financing these expenses, broken out by income level, race, and selectivity and sector of the institution. Then we compare actual student experiences with a recently published college affordability benchmark, the Rule of 10, highlighting when and where attending college is or is not meeting that definition of affordability. We examine why some student experiences meet the benchmark for affordability while others fall short. Finally, we discuss the merits and the shortcomings of the Rule of 10 and offer an alternative framework for assessing college affordability.

Key Findings:

- ✓ Family income, unsurprisingly, is highly predictive of the price of a student's degree. Dependent students from the lowest income quartile pay \$38,841, on average, for their degrees, while students from the highest income quartile pay \$92,341.
- ✓ The average student takes on \$16,498 in debt over the course of his degree, which covers about 30% of over-all college costs. Students themselves earn an average of \$16,248 during their enrollment, which could cover another 30%. The remaining 40%, \$21,346, must be coming from elsewhere, such as savings, parents' current earnings, unreported support from friends and family, or other forms of credit not counted as student loans.
- ✓ The highest levels of borrowing are among students whose parents are in the second-to-highest income quintile (household income of \$66,705–\$108,872). These students borrow, on average, \$5,819 per academic year—44% more than the lowest-income students (household income less than \$29,257), who borrow, on average, \$4,045 per year. This suggests that in many cases, high levels of borrowing are being driven by choice rather than necessity, as more well-off families tend to have options other than debt for paying the price of enrollment and could borrow less if the students attend a lower-price institution.
- ✓ Students who attend highly selective institutions pay a premium. Among students at public four-year institutions, the sticker price for four years of enrollment at the most selective schools is, on average, \$8,235 higher than the average for all institutions in this sector. This effect is even more pronounced among private nonprofit schools, where the most selective institutions charge, on average, \$27,096 more than the sticker price for all schools in the sector.
- ✓ We estimate that 68% of undergraduates are paying more than what the Rule of 10 suggests is affordable. On average, students paid twice the amount indicated by the Rule of 10, often with the help of loans and student earnings that exceeded the contribution from work indicated by this benchmark.
- ✓ Price-based benchmarks, like the Rule of 10, can provide insight into the liquidity-based notion of affordability. The problem, however, with price-based benchmarks for affordability is that they can tell us nothing about whether a degree is worth its price over the long run.

College Affordability: The Rule of 10 Compared with How Students and Their Families Finance College Education

College, many now assert, has become unaffordable. The problem with that premise, which often leads to disagreement among experts both on the nature of the problem and on the appropriate solution, is that not everyone is using the same definition of affordability. Defining a common benchmark for affordability has the potential to facilitate more fruitful policy discussions about this issue.

In 2015, Lumina Foundation published an affordability benchmark for higher education.⁷ The benchmark, which it calls “the Rule of 10,” holds that students and families should pay no more for college than the savings that they can accumulate by setting aside 10% of their discretionary income for 10 years, plus student earnings from working 10 hours a week while enrolled.⁸

The Rule of 10 is a price-based benchmark for affordability, meaning that it assesses students' ability to pay based on the cash that they and their families have on hand. It does not consider borrowing as an instrument available to students, nor does it consider whether a degree is “worth it” in the long run.

A price-based benchmark may not be the optimal means for people to determine their best course of action when it comes to college enrollment, an issue we will return to in a later section. But it can serve as an instrument for examining the financial burden facing students today and how that burden varies across different students and groups of students at different institutions. It can also be a helpful tool in examining issues of equity in access to higher education. And that is how we will use it in this report.

The first step toward understanding affordability is to measure how much students and their families are paying for college and how they are paying it. For this exercise, we use the U.S. Department of Education's quadrennial National Postsecondary Student Aid Study, which provides information about college students and the schools they attended during the 2011–12 academic year.

These data are compiled from a combination of colleges' administrative records and federal student aid databases. They provide an accurate measure of what students were charged by the school they attended and what sources of aid they used to cover those costs.⁹ We exclude part-time students; therefore, the statistics discussed throughout this paper reflect college costs and affordability for full-time attendance. College prices and affordability statistics reflect the total cost of attendance as reported in the NPSAS data set, which includes tuition, fees, room, board, and other related expenses. Comparing these data with the Rule of 10 requires several assumptions and interpretations that we explain in the **Appendix**.

Looking at the universe of full-time undergraduates enrolled in the 2011–12 academic year, we find that the average net cost that students will face over the duration of their degrees is \$54,092 (**Figure 1**). This figure reflects the published cost of attendance at the student's institution (including living expenses), minus

all grants, scholarships, and tuition discounts, multiplied by the number of years required to complete the program of study. Without very detailed information on household budgets (the NPSAS does not provide such information), we cannot say exactly how households come up with that sum, but some measurable financial behaviors can give us insights into how they make it work.

For instance, we know that, on average, students and their families will take on \$16,498¹⁰ in debt, which covers about 30% of the cost of their degrees. The data also indicate that students earn an average of \$16,248 over the course of their enrollment (including federal work-study funds). That could cover another 30% of overall costs. The remaining 40%, \$21,346, that students and families pay for their education must be coming from elsewhere, such as savings, parents' current earnings, unreported support from friends and family, or other forms of credit not counted as student loans.

FIGURE 1.

Education Finances over the Course of a Degree by Student Characteristics

Source: NPSAS and authors' analysis; see Appendix for details.

		Actual Student Finances				Recommendations from the Rule of 10			Share of Students Paying More than Recommended by the Rule of 10
		Net Cost	Total Loans	Student Earnings	Out-of-Pocket Expenses	Net Cost	Student Earnings	Savings	
	All Students	\$54,092	\$16,498	\$16,248	\$21,346	\$35,135	\$11,277	\$23,857	68%
Level	Seeking an associate degree	\$22,039	\$4,717	\$11,320	\$6,003	\$22,524	\$7,250	\$15,274	59%
	Seeking a bachelor's degree	\$78,774	\$25,090	\$21,167	\$32,517	\$44,660	\$14,500	\$30,160	82%
Dependency Status	Dependent student	\$64,254	\$18,819	\$10,117	\$35,318	\$46,024	\$12,264	\$33,760	66%
	Independent student	\$39,355	\$13,131	\$25,140	\$1,084	\$19,343	\$9,846	\$9,497	70%
Income Quartiles for Dependent Students	Less than \$29,257	\$38,841	\$13,486	\$9,607	\$15,748	\$13,124	\$11,194	\$1,931	77%
	\$29,257–\$66,705	\$54,269	\$18,612	\$10,430	\$25,227	\$28,659	\$11,957	\$16,702	71%
	\$66,705–\$108,872	\$71,573	\$22,251	\$11,300	\$38,022	\$49,892	\$12,603	\$37,289	65%
	Greater than \$108,872	\$92,341	\$20,929	\$9,130	\$62,282	\$92,431	\$13,304	\$79,127	52%
	All independent students	\$39,355	\$13,131	\$25,140	\$1,084	\$19,343	\$9,846	\$9,497	70%
Race/Ethnicity	White	\$58,452	\$17,474	\$16,615	\$24,364	\$41,434	\$11,623	\$29,811	66%
	Black or African-American	\$42,198	\$18,419	\$17,709	\$6,069	\$21,219	\$10,508	\$10,710	73%
	Hispanic or Latino	\$42,387	\$13,439	\$14,739	\$14,209	\$26,758	\$10,374	\$16,385	65%
	Asian	\$66,937	\$14,447	\$12,997	\$39,494	\$34,986	\$12,229	\$22,757	76%
	American Indian or Alaska native	\$35,299	\$12,866	\$14,440	\$7,994	\$24,175	\$10,298	\$13,877	62%
	Native Hawaiian/other Pacific Islander	\$45,324	\$14,086	\$14,339	\$16,898	\$27,571	\$10,364	\$17,207	64%
	More than one race	\$53,826	\$18,765	\$22,539	\$12,522	\$32,136	\$11,274	\$20,861	70%
	Foreign students	\$82,637	\$950	\$5,471	\$76,216	\$35,442	\$12,175	\$23,266	79%

College finances differ radically, depending on the type of institution (**Figure 2**). Students attending private nonprofit colleges pay a net price of \$101,518 over the duration of their program of study—higher, by far, than any other type of institution. Students at these institutions also have the highest level of borrowing, with the average borrowing at \$30,939 (between students and their parents). If we assume that students contribute all their work earnings to cover their college costs, students and their families are coming up with another \$53,673 from other sources. (In the figures, we refer to this sum as the out-of-pocket expense.)

Public institutions, both two- and four-year, are the lowest-cost sectors. Students attending public four-year institutions face a net cost of \$64,082, which results in less debt and out-of-pocket costs than those of their peers at nonprofit institutions. At public two-year colleges, the net cost is also relatively low, at just \$17,419. Students at these schools have the lowest levels of borrowing, taking on \$2,238 of debt, on average, over their course of study. This average is driven by students taking on small balances but also by many students not borrowing at all (only 18% of students at public two-year colleges take on student debt).¹¹

For-profit colleges are perhaps the biggest outliers. Students attending these schools—which predominantly offer two-year degree programs—have more earnings from work than students attending other types of institutions. The average student attending a for-profit institution will earn \$28,103 from employment over the course of study. This is more than triple what students at community colleges are earning (\$9,762) and close to double what typical students at public (\$14,250) and nonprofit four-year institutions (\$16,905) are

earning. Despite the higher earnings from work, borrowing at for-profit institutions greatly exceeds borrowing at public two-year institutions, which offer the most similar programs of study. For these students, the average level of indebtedness amounts to \$15,505, more than six times the level of borrowing among students at two-year public institutions.

Interestingly, we find that the combination of earnings and debt actually exceeds the net cost of attendance for students attending for-profit institutions. These students are more likely to be independent (80% are independent, compared with 50% at public two-year institutions) and may even be supporting families of their own.¹² Independent students face challenges in financing education that are unique, compared with students who still rely on financial support from their families.

Household Income and College Affordability

The figures discussed thus far are top-level statistics for all full-time undergraduates. However, there is considerable variation in costs as well as financing strategies within that population. We begin by considering how college affordability varies across the income distribution. (Independent students are considered separately because their financial circumstances are fundamentally different from those of dependent students who rely on financial support from their parents.)

Dependent students from the lowest income quartile pay \$38,841, on average, for their degrees, while stu-

FIGURE 2.

Education Finances over the Course of a Degree by Institution Characteristics

Source: NPSAS and authors' analysis; see the Appendix for details.

		Actual Student Finances				Recommendations from the Rule of 10			Share of Students Paying More than the Rule of 10
		Net Cost	Total Loans	Student Earnings	Out-of-Pocket Expenses	Net Cost	Student Earnings	Savings	
Public Four-Year	All	\$64,082	\$20,048	\$14,250	\$29,784	\$44,054	\$14,054	\$30,000	76%
	Less selective	\$60,566	\$20,640	\$15,178	\$24,749	\$41,287	\$13,922	\$27,365	77%
	Very selective	\$75,032	\$18,205	\$11,361	\$45,467	\$52,670	\$14,466	\$38,205	75%
Private Nonprofit Four-Year	All	\$101,518	\$30,939	\$16,905	\$53,673	\$49,607	\$14,183	\$35,424	86%
	Less selective	\$89,078	\$33,005	\$19,593	\$36,481	\$46,131	\$14,024	\$32,107	85%
	Very selective	\$125,191	\$27,009	\$11,790	\$86,393	\$56,221	\$14,485	\$41,736	88%
Public Two-Year	All	\$17,419	\$2,238	\$9,762	\$5,419	\$14,982	\$7,164	\$7,818	83%
Private For-Profit	All	\$40,243	\$15,505	\$28,103	-\$3,365	\$10,347	\$8,913	\$1,433	87%

Education Finances Versus the Rule of 10

We estimate that over two-thirds (68%) of undergraduates are paying more for their education than what the Rule of 10 suggests is affordable. Based on the financial characteristics of the population examined in our analysis, the benchmark suggests that the average student could afford a total net price of \$35,135. This sum comes from a \$23,857 contribution from savings and \$11,277 from the student wages while enrolled. On average, students paid nearly twice this amount, often with the help of loans and student earnings that exceeded the contribution from work recommended by the Rule of 10. The average student earned \$5,000 in excess of the recommendation, driven largely by students working more hours per week than was prescribed by the benchmark. Students, on average, worked 16 hours each week during their enrollment.

The Rule of 10 does not consider loans, but borrowing is a major part of how students finance their degrees. On average, undergraduates and parents borrowed \$16,498. Combining student earnings and borrowing did not tend to cover the net cost of enrollment. Even after families contributed an amount equal to the level of savings recommended by the Rule of 10, the aver-

age shortfall was \$2,510. Students and their families are necessarily finding a way to finance this additional sum, probably by devoting more savings than is prescribed by the benchmark, or perhaps through using other forms of credit such as home equity or credit cards.

The Rule of 10 provides useful metrics for examining how the ability to pay varies across categories of students and types of institutions. Students in four-year programs, for example, can afford to pay significantly more for their degrees than those in two-year programs. They can do so largely because their families have higher incomes and can save more for college. Based on household earnings and characteristics, these students' families would have saved \$30,160 if they had been putting away 10% of the household's income over the course of 10 years. Families of students in two-year programs would have saved just \$15,274 by following the Rule of 10 recommendation, reflecting the fact that these students come from lower-income households and are also more likely to be financially independent.

dents from the highest income quartile pay \$92,341 (Figure 1). These findings partly reflect the fact that high-income students choose more expensive institutions, as we'll discuss in the next section, but also reflect that these students tend to choose longer programs of study. Independent students face financial circumstances similar to those of students from the least well-off households, with the average total cost of a degree coming to \$39,355.

One artifact of higher-income students spending more for their degrees than lower-income students is that they tend to borrow more than the lower-income students. The highest-income students borrow an average of \$5,391 per academic year; lowest-income students borrow an average of \$4,045 per year (Figure 3). The highest average level of borrowing is by students in the second-to-highest income quintile. These students, coming from families with household income ranging from \$82,000 to \$120,470, borrow an average of \$5,819 per academic year. These numbers suggest that, in many cases, high levels of borrowing may be being driven by choice rather than necessity, as more well-off families tend to have options other than debt for paying the price of enrollment and could generally opt to attend a lower-price institution if they were averse to borrowing.

Grant aid is another important determinant of college affordability that varies with income. The prices that students face are not only a function of the institution they choose and the duration of their enrollment but also their eligibility for financial support through institutional, state, and federal aid programs. Most federal aid programs are means-tested, such that benefits disproportionately accrue to the least well-off students, but state and institutional aid policies vary substantially. This analysis allows us to take a closer look at the net impact of these different sources of aid on college affordability.

Grant aid has the most significant impact on independent students and students from the lowest-income households. Students from households in the lowest income quintile receive, on average, \$1,157 from state aid programs and \$4,059 from the federal Pell Grant program. Each of these benefits phases out as family income rises. Students from the most affluent households receive, on average, only \$338 in state grants and \$12 in Pell Grants.¹³ Perhaps more surprising, institutional aid rises as household incomes move up the income scale. This finding reflects two factors: higher-income students chose higher-cost institutions; and institutions employ a high-price and high-discount-tuition pricing strategy.

FIGURE 3.

Annual Student Finances by Income*

	Sticker Price		Net Price		Total Loans	Grant Aid				Tax Benefits	
	COA (Cost of Attendance)	Tuition	COA	Tuition		All Sources	Pell	Institutional	State		
Income Quintile	Less than \$24,330	\$20,909	\$9,543	\$12,070	\$3,096	\$4,045	\$8,838	\$4,059	\$2,646	\$1,157	\$476
	\$24,330–\$50,617	\$22,737	\$11,220	\$14,474	\$4,576	\$4,557	\$8,262	\$2,816	\$3,327	\$1,140	\$1,108
	\$50,617–\$82,000	\$23,826	\$11,851	\$18,006	\$6,738	\$5,751	\$5,820	\$481	\$3,475	\$772	\$1,646
	\$82,000–\$120,470	\$25,387	\$12,941	\$20,320	\$8,460	\$5,819	\$5,067	\$26	\$3,541	\$403	\$1,642
	Greater than \$120,470	\$30,373	\$16,916	\$25,333	\$12,388	\$5,391	\$5,040	\$12	\$3,652	\$338	\$1,290
	Independent students	\$18,297	\$7,382	\$14,665	\$4,591	\$4,479	\$3,633	\$2,364	\$503	\$284	\$871

*For definitions of sticker price, cost of attendance, etc., see “Key Terms” at the end of this report.

Source: NPSAS and authors’ analysis; see Appendix for details.

Family Income and the Rule of 10

On average, students are paying more for their college degrees than is considered affordable, according to the Rule of 10. However, the gap between the recommendation and the actual cost narrows significantly as family income rises, starting with students from the lowest-income families paying \$26,000 more than recommended and the highest-income families paying almost exactly the recommended cost. The share of students facing costs above the affordability benchmark also declines with family income. About two-thirds of all low-income students (68%) pay more than the

recommended benchmark, and a bit more than half of upper-income (52%) students do so.

Among dependent students, actual costs are 40% higher than the Rule of 10 suggests is affordable. However, for independent students, the gap is far greater. The actual net cost, \$39,355, is more than double the \$19,343 indicated by the Rule of 10. This suggests that the challenge of paying for college out of savings and wages earned while enrolled is far more difficult for independent students who do not have the advantage of parental contributions.

It is often claimed that the middle class is being left behind when it comes to student aid. Our analysis suggests that this is true to some degree, but not entirely. The combination of state and federal benefits is consistently progressive throughout the income distribution—but there is a decent-size cliff in aid eligibility that results in middle-income students (household income between \$50,617 and \$82,000) receiving only a little more than half of the sum of state and federal aid received by students in the lowest two income quintiles. However, financial shortfalls for students from middle-income households are worsened by their choosing more expensive institutions than lower-income students.

means that the combination of all federal benefits (grants plus tax benefits) is less progressive than most observers realize.¹⁴

How Price and Affordability Vary with Student Choices

In discussing the allocation of student aid, many often forget that significant federal support for education is allocated through the tax code in the form of tuition tax credits and deductions. These programs operate at an annual expense of \$20 billion in forgone revenue, an amount two-thirds as large as the Pell Grant program (\$28 billion in 2016). The tax code delivers the largest benefits to middle- and upper-income students, which

Many students can choose from a range of schools and degree programs, and those choices affect the affordability of their degrees. To explore the role of student choice in a discussion of college affordability, we’ve calculated a choice premium for each student in the data set by comparing the average sticker price for each sector (i.e., two-year public, four-year public, etc.), with the sticker price charged at the institution that the student actually attended (**Figure 4**). Students pay a premium if they selected a school with a sticker price above average for that sector and a “negative premium”



if the price is below average (figures in red). We then averaged these premiums across different student and institutional characteristics to examine how they interact with each student's ultimate choice of institution to attend. In this section, we express sticker prices and premiums relative to the total cost of the education, not the annual cost of attendance.

We find that lower-income students consistently choose less expensive schools, regardless of the sector they enroll in. For example, among students at public four-year colleges, lower-income students chose to attend four-year schools with sticker prices about \$5,454 below the average for the sector, while their higher-income peers are selecting schools with sticker prices \$7,868 above the sector average. This gap is more pronounced in the private nonprofit sector, with lower-income students selecting schools whose sticker prices are \$17,686 below the sector average, while their higher-income peers select schools with sticker prices \$20,167 above the sector average.

Students from different racial groups also chose different types of institutions, with minority students choosing less expensive institutions, on average. For example, black students who attend private nonprofit schools select institutions with a sticker price \$24,700 less, on average, than that of the sector as a whole. Put differently, black students attending private nonprofit institutions select schools with a sticker price of \$76,790, on average, while their Asian peers select institutions with a sticker price of \$129,014, on average.

Choices also appear to be informed by the selectivity and perceived quality of the school that a student attends; those who attend highly selective institutions pay a premium to do so. Among students at public four-year institutions, the sticker price at the most selective schools is, on average, \$8,235 higher than the average for all institutions in this sector. Among private nonprofit schools, the most selective institutions charge prices that are, on average, \$27,000 more than the average sticker price for all schools in the sector.

Getting What You Pay For: Problems with the Rule of 10

Students and families may, of course, have good reasons for choosing less affordable colleges. If they believe that a more expensive school is likely to offer a high return on their investment, it is economically ra-

tional to attend. In the same vein, a more affordable college might be overpriced relative to the value of the degree it offers.

The problem is that benchmarking affordability based on price alone is akin to a one-sided financial balance sheet—one that displays only a company's liabilities and ignores its assets. In this case, the liability is the price for the education, and the asset is the education and the future earnings that a student will gain from it. That is why a better affordability benchmark would take both sides of the balance sheet into account. But before we delve into such an approach, other limitations of using a price-based benchmark are worth discussing—limitations that have more to do with the diversity and complexity of the undergraduate population.

Family Size and the Time It Takes to Earn a Degree

Consider the following example that Lumina provides in illustrating its Rule of 10 benchmark:

A family of four consistently making an average of \$50,000 could afford to contribute \$1,500 (in total) to college education for students in the family, based on the idea that they could save \$12.50 per month for 10 years. Any students enrolled could also contribute \$3,625 per year from work (assuming 10 hours per week at \$7.25 per hour in pre-tax earnings). Any financial contribution required of the family beyond these work and savings expectations would be considered unaffordable.¹⁵

Let's assume that both children in the example above will pursue four-year degrees and complete those degrees on time after attending full-time. Based on those assumptions, and the information provided in Lumina's example, the benchmark holds that an affordable education for each child in the family is one that does not cost more than \$15,252 in total for the four-year degree. Nearly all the ability to pay comes from the \$14,500 that the students will provide by working 10 hours a week while enrolled. Only \$750 would be contributed by the parents in the family via savings.

Because there are two children in the family, the savings prescribed by the benchmark, \$1,500, is divided in half, such that each child received only \$750 to help pay for their education. And each student pursues a four-year degree (we assume that the savings are divided evenly), making the parents' contribution from savings \$750 per child for a four-year degree. Note that the Rule of 10, therefore, includes household size adjustments at two points—one in figuring how much the family can save and another in determining how far those savings

FIGURE 4.

Total Sticker-Price Premiums

		All Students		Public Four-Year		Private Nonprofit		Public Two-Year		Private For-Profit	
		Premium	Sticker Price	Premium	Sticker Price	Premium	Sticker Price	Premium	Sticker Price	Premium	Sticker Price
Income Quartile	Less than \$29,257	-\$1,230	\$33,321	-\$5,454	\$27,104	-\$17,786	\$83,693	-\$325	\$3,878	-\$1,701	\$20,240
	\$29,257–\$66,705	\$1,998	\$42,020	-\$1,090	\$31,468	-\$7,470	\$94,009	\$311	\$4,515	\$3,196	\$25,136
	\$66,705–\$108,872	\$4,035	\$47,824	\$1,506	\$34,064	\$5,073	\$106,553	\$348	\$4,552	\$4,373	\$26,313
	Greater than \$108,872	\$11,757	\$62,515	\$7,868	\$40,426	\$20,167	\$121,647	\$782	\$4,986	\$2,713	\$24,653
Race	White	\$491	\$38,227	\$844	\$33,402	-\$10	\$101,470	\$112	\$4,315	\$845	\$22,785
	Black or African-American	-\$5,106	\$25,788	-\$5,297	\$27,261	-\$24,689	\$76,790	-\$264	\$3,940	-\$537	\$21,403
	Hispanic or Latino	-\$2,274	\$27,804	-\$5,493	\$27,064	\$3,042	\$104,522	-\$762	\$3,442	-\$2,806	\$19,135
	Asian	\$8,972	\$50,370	\$5,156	\$37,714	\$27,535	\$129,014	\$3	\$4,206	\$2,292	\$24,233
Selectivity	Very selective	\$16,111	\$77,447	\$8,235	\$40,793	\$27,096	\$128,575	~	~	~	~
	Moderately selective	-\$1,843	\$51,162	\$1,539	\$34,097	-\$9,861	\$91,618	~	~	~	~
	Minimally selective	-\$5,176	\$56,786	-\$6,842	\$25,716	-\$2,936	\$98,544	~	~	~	~
	Open admission	-\$27,878	\$19,996	-\$17,676	\$14,882	-\$63,584	\$37,895	~	~	~	~
	All Students		\$35,681		\$32,558		\$101,480		\$4,203		\$21,940

~Selectivity is not reported for these institutions.

Source: NPSAS and authors' analysis; see Appendix for details.

go. Any benchmark, in short, is complicated by factoring in the circumstances of families with varying numbers of children.

Now consider how the figures that make up the Rule of 10 change under different scenarios. If only one child attends college, the family's savings are worth twice as much, making college more affordable. Similarly, if one or both children instead pursue a two-year degree at a local community college instead of a four-year degree, the parents' fixed contribution from savings is now worth twice as much because it is spread over two, not four, years. That makes a two-year degree more affordable from the parents' perspective, while the students' contribution remains constant, at \$3,625 per year.

Because four-year degrees cost more and require students and families to distribute savings over a longer period, any price-based affordability benchmark will lead to a counterintuitive conclusion: four-year degrees are more likely to be unaffordable, particularly for low-income families, despite it being well-documented that there are sizable economic returns to a student who completes a bachelor's degree. In other words, without a way to assess value relative to the price of the education, benchmarks based on price alone will suggest that a greater investment in an education always reduces affordability.

Living Expenses for Part-Time Students Complicate Affordability Estimates

Dealing with individual student choices about enrollment intensity (i.e., part-time versus full-time) complicates attempts at measuring affordability, particularly if living costs are considered part of the cost. Part-time students tend to take longer to accumulate the credits needed to finish their degree programs, extending the amount of time during which living costs must be covered. They also spend less time in class and have less schoolwork to complete out of class than full-time students in the same degree program, freeing up additional hours for a job. These facts create a trade-off that students and any proposed affordability benchmark must explicitly or implicitly consider: Is full-time enrollment preferable because it speeds the time to a degree, or do the additional wages from part-time enrollment more than offset the additional living expenses?

Under the Rule of 10, if the student enrolls part-time, the family contribution from savings is unchanged. But the benchmark could change with respect to the hours that a student might work. The Rule of 10 holds that students work only 10 hours a week—presumably, if they are attending full-time—but it is silent about what the work threshold should be for those attending part-time. In the example above, if we assume that the work threshold increases to 20 hours for these students, now each student can afford to contribute \$7,250 per year, doubling the figure for when they attend full-time.

To be sure, attending part-time will increase the living expenses that students incur because their enrollment spans twice the amount of time. If a student's living costs are low, attending part-time appears as the more affordable option under the benchmark; the additional earnings from work more than offset the additional costs of a longer enrollment period. If living costs are high relative to the student's earnings, the effect is the opposite.

Independent Students

The undergraduate population comprises nearly as many independent students (i.e., students who are no longer supported by their parents) as dependent students, and these students face different challenges with respect to college affordability. Independent students do not have the advantage of being able to rely on their parents for financial assistance, yet many of these students are still quite young and have not necessarily spent time in the workforce or accumulated savings under other means. How should an affordability benchmark treat these students, given their relatively limited opportunity to accumulate savings? Moreover, how should it reflect that a more expensive degree might generate higher returns in terms of future earnings but looks unaffordable, relative to their current earnings?

The Rule of 10 uses the same standards for independent students as dependent students. While that keeps the standard simple and universal, it seems more suited to dependent students.

For example, the savings component of the benchmark is based on the student's earnings over the past 10 years, regardless of whether he has been in the workforce at all, or working full-time during that period. The benchmark holds that independent students also contribute the same level of earnings from work while enrolled as dependent students—10 hours a week at the minimum wage while enrolled full-time. Yet independent students are likely to have different family obligations from dependent students while enrolled in college. These factors suggest that an affordability benchmark should take such circumstances into account.

What Is an Affordable Amount of Debt?

The Rule of 10 does not incorporate a measure for affordable student debt, even for independent students whose lower earnings, on average, leave them with little savings to put toward their educations. The benchmark is composed solely of family savings and student earnings.

The Rule of 10 notes that an affordable payment on a student loan is 10% of a student's future discretionary income. But that statement does not clearly signal an affordable amount that the student could borrow.

However, the Rule of 10 suggests that families who were unable to save what the benchmark deems affordable could borrow that amount instead.

Even so, that is a level of debt that bears no relation to the payoff that the student would earn in higher wages from his education. It is a suggested level of borrowing based on what a student's parents earned in the past 10 years. And for independent students, whose incomes are generally low, that approach suggests that an affordable level of debt is only a few thousand dollars. Most credentials that students earn, however, should allow them to earn future incomes that would justify higher levels of debt.

Considering a New Definition of Affordability

Miscommunication often plagues policy conversations about college affordability due to the imprecise nature of this concept. For many, the notion of college affordability is about financial constraints caused by a lack of cash on hand. In other words, can students come up with the cash to make the payments for tuition and fees as well as cover their cost of living? For others, affordability means value. Is college worth it?

To confuse matters further, some also talk about college affordability as if it's about whether parents can pay for their children to attend college. This notion is often conjured by politicians when trying to appeal to the concerns of middle- and high-income families. But it is disconnected from the reality that only about two-thirds of students go directly from high school to college, and that those who do tend to come from more well-off families.¹⁶ This is not the notion of college affordability that policy-makers should be concerned about.

Price-based benchmarks, like the Rule of 10, can provide insight into the liquidity-based notion of affordability. Guidelines on how much students and their families earn and save can give a sense of how difficult it will be to cover the up-front costs of college without having to utilize debt.

But it tells us nothing about the answer to the question about whether a particular degree, at a particular price, is worth it. A price-based benchmark always indicates that a lower-cost educational experience is more affordable than a higher-cost option. But sometimes the lower-cost option is not advisable.

For example, our analysis shows that by the Rule of 10, two-year degree programs are more affordable than four-year programs, simply because of their shorter duration. However, because of the higher rates of completion and greater economic returns to four-year degrees, if students could succeed in either path, they would find greater economic well-being from pursuing a bachelor's degree.

Similarly, affordability benchmarks based on contributions from student earnings can often indicate that part-time enrollment is more affordable than full-time enrollment. However, we know that students who enroll full-time tend to have higher rates of degree completion and thus greater financial returns. They can also complete the degree and gain access to higher earnings more quickly. Just as a car that does not start is not an affordable mode of transportation, even if it has a small price tag, an educational opportunity that does not lead to future opportunities is not affordable, no matter the cost.

It's not wrong to incorporate the concept of liquidity into a discussion of college affordability and related policies. After all, students can't enroll in college if they can't come up with the money to pay their tuition and fees. But a value-based perspective would also be helpful in informing consumers and policy. This perspective is especially relevant because federal policy has created a robust lending system that all students can access, regardless of their financial circumstances, such that liquidity constraints—insufficient cash on hand—are generally not a problem for students who are not averse to debt.

With students facing higher costs than ever before, a value-based notion of affordability is critical for helping students make decisions that benefit them financially. Likewise, a value-based notion of affordability is necessary for aiding policymakers in designing safety nets like IDR (Income-Dependent Repayment) and ensuring that benefits are delivered to where they are needed most. The dissonance between these two concepts of affordability may be related to differences in the way that people characterize spending on higher education. Economically minded observers tend to view spending on education as an investment. As with a factory con-

sidering purchasing a new piece of machinery, whether it's affordable depends primarily on anticipated future cash flows rather than how much is in the bank. More practically minded observers tend to characterize education spending as consumption, despite recognizing the future benefits. Therefore, affordability is assessed as a function of the ability to pay out of current income and savings.

For higher education to function as a mechanism for social mobility, we need to recognize a value-based framework for assessing affordability. That is, affordability is a function not only of liquidity constraints but also of long-run financial return from more consistent employment and higher earnings. Otherwise, financially advantageous educational opportunities will be passed over for opportunities with a smaller price tag, even when the prospects are worse.

Appendix

Methodology for the Data Set in Figures 1–4

While the NPSAS provides rich data about a student's family, including household income, it does not tell us what the family earned in the past. Nor does it provide information about savings that the family may have set aside for college. Therefore, to calculate the savings indicated by the Rule of 10, we assume that a student's household income (or that of the parents, in the case of dependent students) in the nine years before the 2011–12 school year was constant and perfectly kept pace with inflation over that time.

We also needed to make an assumption about how many children in a family (in the case of dependent students) will pursue a higher education, as the NPSAS does not indicate this. That information matters because the amount that a household should save for college, as indicated by the Rule of 10, is a fixed share of family income and therefore must be divided among the children who pursue an education. We assume that all children in the family of a dependent student will attend some form of postsecondary education. Additionally, we assume that families distribute these savings equally among their children, regardless of the type of degree program each child may choose.

The NPSAS provides a snapshot of a single year of enrollment, so we do not know from the data how long students take to complete their degrees. We assume that a student completes a degree program in the exact amount of time it requires (i.e., a four-year degree takes four years to complete). Clearly, this is not true for all students, and the costs to students who take additional time to complete their degrees would be higher than those described here.

The NPSAS does not include the aid that a student or family receives through federal tuition tax benefits.¹⁷ We impute a value that the student or family could have received for these benefits, based on whether they file federal income taxes. We assigned students and families the tax benefit (there are three different benefits) that provided the largest financial value. We use this value to demonstrate the total that families from different income brackets receive, but it is not included in our degree-length estimates of net cost.

To calculate the choice premium for different types of institutions, we first calculate the average sticker price for a single year within each institutional sector. We then calculate the difference between this average and the actual sticker price at the institution that a student attends.

Key Terms

Institutional grants are awarded by the school that a student attends—typically, on the basis of financial need or on academic merit.

Net cost: tuition refers to the total amount that a student pays for tuition and living expenses, excluding any grant aid or other aid that does not have to be repaid. Net cost is calculated using annual estimates normalized to reflect the length of each student’s degree program.

Net price–cost of attendance (COA) is the sticker price for tuition plus an estimate of housing and other living expenses, less any federal, state, institutional, or other grant aid that the student receives.

Out-of-pocket expenses are a residual that reflects any leftover expenses after all loans and student work earnings are subtracted from net cost. Out-of-pocket expenses can be covered through a family’s savings, availability of other debt, including credit cards, or by spending less on living expenses than institutional estimates indicate is typical. We calculate out-of-pocket expenses using annual estimates normalized to reflect the length of each student’s degree program.

Pell Grants are awarded to students with demonstrated financial need by the federal government.

Rule of 10 net cost is the amount considered affordable under Lumina Foundation’s proposed Rule of 10, including family savings and student earnings from work. We calculate this figure using annual estimates normalized to reflect the length of each student’s degree program.

Rule of 10 savings reflects the best available estimate of what a family would be able to save by setting aside 10% of its income for 10 years. Because historical income data are unavailable, this figure assumes that family income is constant for the previous 10 years. It reflects the savings available for the entire length of a student’s degree program.

Rule of 10 student earnings reflects the earnings that a student would generate by working 10 hours per week at the minimum wage. We calculate this number using annual estimates normalized to reflect the length of each student’s degree program.

Selectivity uses NPSAS definitions to classify institutions based on a combination of the percentile ranking of the percent of applicants admitted to a school and the percentile ranking of the average ACT or SAT scores of admitted students. For some measures, we report only institutions that are considered by NPSAS to be very selec-

tive and all others separately; for others, we report measures for every category measured by NPSAS. For-profit and two-year schools are not classified according to selectivity because they typically do not reject applications.

Share of students paying more than recommended by Rule of 10 is the percentage of undergraduates whose actual expenses exceed the Lumina threshold for their degree program.

State grants are aid dollars given by the state government and are typically awarded on the basis of financial need or on academic merit.

Sticker price: tuition refers to the advertised price listed by a university before grant aid or other discounting is applied.

Sticker price–cost of attendance (COA) includes the advertised tuition costs, along with an estimate of costs for housing, books, and other expenses. Living costs are estimated by the institution. Sticker price does reflect grant aid that a student may receive.

Student earnings reflects actual income from work while students are enrolled in a course of study, over the duration of their degrees. The survey data report one year of earnings while the student is enrolled. We normalized these data to reflect the length of each student’s degree program; therefore, our figures are estimates.

Tax benefits are available to families that pay tuition expenses in a given tax year and meet certain eligibility criteria. These estimates reflect the average tax credit, assuming that all families who both file taxes and pay tuition claim the credit or deduction that maximizes the benefit. For more information, see Jason Delisle and Kim Dancy, “A New Look at Tuition Tax Benefits,” *New America*, Nov. 2015.

Total grants include all sources of aid that do not need to be repaid, including federal Pell and other grant awards, state grants, and institutional grants or discounts.

Total loans include any borrowing by students or their parents for tuition costs and living expenses, including federal and private student loans. As noted, total loans reflect annualized amounts as reported in the data set, or they are calculated using estimates normalized to reflect the length of each student’s degree program based on the data, which reflect only one year of enrollment.

Endnotes

- ¹ Jennifer Ma et al., “Trends in College Pricing 2015,” College Board.
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- ³ Ethan Wolff-Man, “Summer Jobs Used to Be Able to Pay for College. Not Anymore,” *Money*, July 25, 2016.
- ⁴ Jaison R. Abel and Richard Deitz, “Do the Benefits of College Still Outweigh the Costs?” Federal Reserve Bank of New York, *Current Issues in Economics and Finance* 20, no. 3 (2014).
- ⁵ Jason Delisle, “Shifting Burdens: How Changes in Financial Aid Affected What Students and Families Paid for College from 1996 to 2012,” *New America*, Apr. 2016.
- ⁶ Michael Greenstone and Adam Looney, “Rising Student Debt Burdens: Factors Behind the Phenomenon,” Brookings Institution, The Hamilton Project, July 5, 2013.
- ⁷ Lumina Foundation, “A Benchmark for Making College Affordable: The Rule of 10,” Aug. 2015.
- ⁸ The Rule of 10 defines discretionary income as a family’s earnings above 200% of the federal poverty guidelines.
- ⁹ An update will be published in late 2017, when data from 2015–16 are published.
- ¹⁰ This is the average for all students, including those who do not borrow.
- ¹¹ Authors’ calculation, using the National Postsecondary Student Aid Study, 2011–12.
- ¹² Authors’ calculation, using the National Postsecondary Student Aid Study, 2011–12. Figures are for full-time students only. For all students, regardless of attendance intensity, 80% of students at for-profit institutions are independent and 60% of students at public two-year colleges are independent.
- ¹³ Authors’ calculations, from “Analytical Perspectives, Budget of the U.S. Government: Fiscal Year 2017,” Office of Management and Budget.
- ¹⁴ Jason Delisle and Kim Dancy, “A New Look at Tuition Tax Benefits: National Survey Data Reveal the Surprising and Not-So-Surprising Effects of Policy Changes,” *New America*, Nov. 2015.
- ¹⁵ Lumina Foundation, “A Benchmark for Making College Affordable,” p. 6.
- ¹⁶ Terry Hartle and Chris Nellum, “Where Have All the Low-Income Students Gone?” *Higher Education Today*, American Council on Education, Nov. 25, 2015.
- ¹⁷ Higher-education tax benefits include the \$2,500 American Opportunity Tax Credit and two other benefits: the \$2,000 lifetime learning credit and the \$4,000 deduction for tuition and fees.



Abstract

Has college become unaffordable? Decades ago, the small share of students lucky enough to go to college largely paid their tuition out of pocket. But today, more and more students are pursuing higher education, and they increasingly rely on debt to do so. Price alone—and whether students have the cash on hand to pay it—is no longer an adequate measure of affordability.

This paper explores the answer to two kinds of questions: For whom is college affordable? And why? We'll also measure how affordability varies across types of institutions.

We use data from the National Postsecondary Student Aid Study (NPSAS) to analyze at length what families are paying for college and how they are paying for it, broken out by income level, race, and selectivity and sector of the institution. We also compare actual student experiences with a recently published college affordability benchmark, the “Rule of 10”—highlighting when and where attending college is or is not meeting its definition of affordability. We find that while a price-based benchmark of affordability, like the Rule of 10 (which excludes borrowing), is useful in assessing the up-front costs of higher education, it is limited in its ability to address broader questions of value. That is, price-based benchmarks cannot provide an answer to the question of whether a college education is affordable, or whether a particular degree, at a particular price, is worth it.

For example, by the Rule of 10, two-year degree programs are more affordable than four-year programs, simply because of their shorter duration. However, because of the higher rates of completion and greater economic returns to four-year degrees, if students could succeed in either path, they would find greater economic well-being from pursuing a bachelor's degree.

For higher education to function as a mechanism for social mobility, we need to recognize a value-based framework for assessing affordability. That is, affordability is a function of both liquidity constraints and long-run financial return from more consistent employment and higher earnings. Otherwise, financially advantageous educational opportunities will be passed over for opportunities with a smaller price tag, even when the prospects are worse.