



RISING ABOVE THE THRESHOLD

HOW EXPANSIONS IN FINANCIAL AID CAN
INCREASE THE EQUITABLE DELIVERY
OF POSTSECONDARY VALUE FOR
MORE STUDENTS

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JUNE 2023



TABLE OF CONTENTS

- INTRODUCTION 3
- METHODOLOGY 5
- HOW INSTITUTIONS PERFORM AGAINST THRESHOLD 0 7
- HOW WOULD FINANCIAL AID EXPANSIONS CHANGE THE NUMBER OF INSTITUTIONS PROVIDING A MINIMUM ECONOMIC RETURN? 9
 - DOUBLING THE FEDERAL PELL GRANT..... 9
 - INVESTING IN FREE COLLEGE PROGRAMS 11
- LOOKING FORWARD:
RECOMMENDATIONS TO INCREASE AFFORDABILITY 14
- CONCLUSION..... 16
- APPENDIX:
TECHNICAL DOCUMENTATION AND DETAILED METHODOLOGY..... 17
- NOTES 27

INTRODUCTION

There is overwhelming evidence that pursuing a college education provides substantial economic and non-economic benefits to students.¹ But how much a degree is worth depends heavily on the institution a student attends. Unfortunately, value also is still influenced by a student's race, income, and gender, due to inequities in our higher education and workforce systems.²

Institutional leaders, federal and state policymakers, and other stakeholders all have a role to play in delivering equitable value: the economic and non-economic benefits that accrue to students, their families, their communities, and society. This report assesses economic value for students by using publicly available data to estimate the number of colleges that provide a minimum economic return for students (defined as "Threshold 0") and explores policy interventions that would increase equitable value.

This analysis builds on the work of the Postsecondary Value Commission,³ which sought to define postsecondary value, measure postsecondary value, and develop an action agenda to expand and improve value, all while centering equity in postsecondary policymaking. The Commission focused on equitable value for Black, Latinx and/or Hispanic, Indigenous, underrepresented Asian American, Native Hawaiian, and Pacific Islander (AANHPI) students, students from low-income backgrounds, and women—as well as the intersectional identities within and across these groups (e.g., low-income White students and men of color). Evidence shows that the postsecondary education system currently fails to ensure that these students receive returns on their investments through equitable access, completion, affordability, and workforce outcomes.

As part of its work, the Commission developed a framework that conceptualizes the economic and non-economic benefits that postsecondary education can provide to students, their families, our workforce, and society. That framework includes six economic value thresholds that measure individual outcomes and return on investment (Figure 1).



Equitable Postsecondary Value

Students experience postsecondary value when provided equitable access and support to complete quality, affordable credentials that offer economic mobility and prepare them to advance racial and economic justice in our society.

As defined by the Postsecondary Value Commission

FIGURE 1

The Postsecondary Value Framework's Economic Value Thresholds

| | |
|----------|--|
| 0 | Minimum Economic Return: Students meet this threshold if they earn at least as much as a high school graduate plus enough to recoup their total net price within ten years. |
| 1 | Earnings Premium: Students meet this threshold if they reach at least the median earnings in their field of study, which accounts for expected variations in pay across fields. |
| 2 | Earnings Parity: Informed by the University of Texas System's research on in-field pay inequities, this threshold measures whether students of color, students from low-income backgrounds, and women meet the median earnings of their more advantaged peers (White students, high-income students, or men). |
| 3 | Economic Mobility: Informed by Opportunity Insights' measurement of economic mobility across institutions, this threshold measures whether students earn enough to enter the fourth (upper middle) income quintile regardless of field of study. |
| 4 | Economic Security: While sufficient earnings can create a stable life, wealth is key to building the type of security needed to withstand life's financial shocks, so this threshold measures whether students reach median levels of wealth. |
| 5 | Wealth Parity: Mirroring the earnings parity threshold, this threshold measures whether students of color, students from low-income backgrounds, and women reach the level of wealth attained by their more privileged White, high-income, or male peers. |

Source: Threshold definitions from the Postsecondary Value Commission's 2021 report, *Equitable value: Promoting economic mobility and social justice through postsecondary education*.

This paper focuses on students' minimum economic return as measured by Threshold 0, the lowest threshold. Students meet Threshold 0 if they earn at least as much as high school graduates in their state, plus enough to recoup their investment in college within 10 years. Affordability is a key factor in whether students reach Threshold 0, and thus receive value—in other words, whether their returns are worth their investments. For example, a more expensive institution requires higher post-college earnings in order to deliver a minimum economic return on investment. Institutions can improve their value by working to increase the earnings their students receive after college and/or by decreasing the net cost of their education, after accounting for grant aid.

Affordability is a key lever that policymakers can pull to improve postsecondary value, especially for students from low-income or low-wealth backgrounds. This analysis focuses on the affordability lever and models how changes to state and federal financial aid programs would increase the number of institutions where the typical student earns more than Threshold 0. While there are other factors that influence economic value, as well as valuable non-economic benefits of postsecondary education, they are not covered in this paper.

METHODOLOGY

Using publicly available data from the American Community Survey, the Integrated Postsecondary Data System (IPEDS), and the College Scorecard, this report examines whether colleges deliver a minimum economic return to their students and demonstrates how changes to state and federal financial aid programs would increase value. Students' minimum economic return is measured by the Postsecondary Value Framework's "Threshold 0," which assesses whether students are better off financially than if they had not attended college.

To calculate Threshold 0 for each institution, we use publicly available data on median earnings for high school graduates and students' total investment in each college. We use the U.S. Census Bureau's 2021 five-year American Community Survey microdata⁴ to calculate median earnings for high school graduates in each state. To estimate students' total investment in college, we use IPEDS and College Scorecard data.

For each college, we calculate the net price (cost of attendance minus grant aid) paid each year by the typical student. This annual net price estimate is multiplied by an estimate of the number of years it takes the average graduate to finish a credential. This resulting measure of cumulative net price is amortized over a 10-year period to account for the cost of student loan interest and to translate the total investment into an annual figure. Threshold 0 is calculated by adding the resulting annualized student investment amount to the median high school graduate earnings. To assess whether a college is providing a minimum economic return, we compare students' median earnings 10 years after they enter college with the Threshold 0 amount.

Our report also explores how doubling the federal Pell Grant and implementing first- and last-dollar free college programs, sometimes called tuition-free college promise programs, would boost the number of institutions where the typical student earns more than Threshold 0.

Our approach to modeling a doubled federal Pell Grant makes simplifying assumptions because of the limitations of using institution-level data. We model the impact of institutions receiving twice as many Pell Grant dollars than they receive under current conditions. To do this, our calculations subtract each institution's average Pell Grant award from its annual net price under the status quo. Because net price calculations already include the average grant aid from all sources, including the Pell Grant, this approach effectively double counts the Pell award. Our modeling understates the full impact of doubling the Pell Grant because we are not able to account for the increase

CALCULATING THRESHOLD 0

Threshold 0 = Median high school graduate earnings in state + total student investment in college, annualized over 10 years

in grant aid to students who would become newly eligible for Pell Grants if the maximum award were doubled.⁵ Our approach also does not account for the precise Pell award for each student or for future changes to Pell eligibility due to the FAFSA Simplification Act.^a Accounting for the full mechanics of the Pell Grant program would require student-level data with granular information on income and other factors that influence Pell Grant eligibility and award amounts.

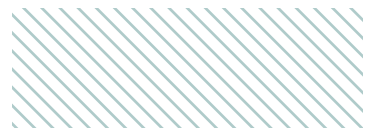
Finally, we also model two versions of free college programs: first-dollar and last-dollar. First-dollar free college programs effectively provide grant amounts equivalent to the institution's full tuition and fees, regardless of other grants and scholarships students may receive. To model the impact of those programs, we exclude each institution's listed tuition and fees from the calculated cost of attendance. In contrast, last-dollar free college programs only cover the tuition costs remaining after other grant aid is applied. To model the impact of those programs, we first subtract the average grant aid amount from the listed tuition and fees to calculate the average tuition and fees remaining, if any.^b Then, we subtract that remaining amount of tuition and fees from the net price.

Because free college programs are typically only available to students attending public institutions, we only model the impact of free college programs on public colleges. Our modeling assumes the broadest possible application of free college programs at public colleges by assuming that all students at those colleges would be eligible for benefits. In practice, free college programs are generally limited to students who meet residency requirements, and states often impose other requirements that limit eligibility to a subset of the student population.

Colleges are only included in our analysis if we can access median earnings of their former students and there are sufficient data available to calculate Threshold 0. For more details about our methodology, the institutions in our analysis, example calculations, and data limitations, see the appendix.



- a. Starting in the 2024-25 award year, the FAFSA Simplification Act will expand the Pell Grant to more students and will link eligibility to family size and the federal poverty level. More information can be found at "What Is the FAFSA Simplification Act?" on the Federal Student Aid website, <https://studentaid.gov/help-center/answers/article/fafsa-simplification-act>.
- b. If the average grant aid exceeds tuition and fees, we treat the institution as having \$0 tuition and fees remaining.



HOW INSTITUTIONS PERFORM AGAINST THRESHOLD 0

At the majority (83 percent) of institutions—representing 93 percent of undergraduates—students receive at least a minimum economic return on their investment. In other words, students’ typical earnings meet or exceed the Threshold 0 benchmark within 10 years of starting college (see Table 1). Meeting this minimum economic return threshold requires that students’ median earnings after college exceed those of the typical high school graduate in their state, plus a measure of their investment in college. In these terms, nearly all public and private nonprofit institutions leave students better off financially in comparison to similar adults who did not pursue postsecondary education. On average, the typical post-school earnings at these institutions are about \$8,981 above Threshold 0, indicating that students receive a meaningful increase in their financial well-being after attending college.

However, 507 institutions in our analysis do not meet the Threshold 0 benchmark. The majority of these institutions are private for-profit or private nonprofit institutions, which typically require students to make a larger financial investment than public institutions, thus requiring higher post-college earnings in order to surpass Threshold 0 and recoup their investment. For colleges that do not meet Threshold 0, students’ earnings fall, on average, \$4,064 below the Threshold 0 amount.

Our analysis was limited to colleges with sufficient data to calculate Threshold 0 and earnings for former students. Though the vast majority of public four-year, public two-year or less, and private nonprofit four-year colleges have sufficient data to include in our analysis, only 14 percent of for-profit colleges and 36 percent of private nonprofit two-year colleges have sufficient data for Threshold 0 calculations (see appendix Table A-2). Because of the prevalence of missing data for the private for-profit and private nonprofit two-year-or-less sectors, the median earnings, total enrollment, and percentage of these institutions failing to meet T0 in Table 1 should be interpreted with caution.

▶ ▶ **“AT THE MAJORITY (83 PERCENT) OF INSTITUTIONS—REPRESENTING 93 PERCENT OF UNDERGRADUATES— STUDENTS RECEIVE AT LEAST A MINIMUM ECONOMIC RETURN ON THEIR INVESTMENT.”** ◀ ◀ ◀ ◀

TABLE 1
How Institutions Perform Against Threshold 0 (T0) by Sector

| | MEDIAN EARNINGS LESS THAN T0 | MEDIAN EARNINGS MEETING OR EXCEEDING T0 | PERCENTAGE MEETING OR EXCEEDING T0 |
|---|------------------------------|---|------------------------------------|
| Overall | | | |
| Number of institutions | 507 | 2,414 | 82.6% |
| Undergraduate enrollment | 1,486,151 | 18,324,942 | 92.5% |
| Median earnings relative to T0 | -\$4,064 | \$8,981 | |
| Sector | | | |
| Public Four-Year | | | |
| Number of institutions | 16 | 512 | 97.0% |
| Undergraduate enrollment | 46,881 | 6,656,558 | 99.3% |
| Median earnings relative to T0 | -\$1,992 | \$12,972 | |
| Private Nonprofit Four-Year | | | |
| Number of institutions | 173 | 820 | 82.6% |
| Undergraduate enrollment | 285,038 | 2,682,361 | 90.4% |
| Median earnings relative to T0 | -\$4,828 | \$11,703 | |
| Public Two-Year or Less | | | |
| Number of institutions | 111 | 877 | 88.8% |
| Undergraduate enrollment | 581,499 | 8,515,833 | 93.6% |
| Median earnings relative to T0 | -\$1,825 | \$5,863 | |
| For-Profit | | | |
| Number of institutions | 170 | 128 | 43.0% |
| Undergraduate Enrollment | 516,696 | 402,831 | 43.8% |
| Median earnings relative to T0 | -\$5,076 | \$8,182 | |
| Private Nonprofit Two-Year or Less | | | |
| Number of institutions | 37 | 77 | 67.5% |
| Undergraduate enrollment | 56,037 | 67,359 | 54.6% |
| Median earnings relative to T0 | -\$5,724 | \$15,478 | |

Note: Only institutions with sufficient data to estimate both Threshold 0 and student earnings are included in the analysis. Due to missing data for some institutions, total enrollment underestimates the number of students in each category. Further, the percentage of for-profit and private nonprofit two-year institutions failing to meet T0 and the median earnings of their former students should be interpreted with caution, due to high levels of missing data in these sectors.

Source: IHEP analysis of American Community Survey, IPEDS, and College Scorecard data.



HOW WOULD FINANCIAL AID EXPANSIONS CHANGE THE NUMBER OF INSTITUTIONS PROVIDING A MINIMUM ECONOMIC RETURN?

Students' real challenges with affording the cost of college have contributed to concerns about the value of a postsecondary education.⁶ Policymakers, researchers, and student success advocates have explored a variety of policy proposals to address these challenges and increase affordability for more students. Our analysis examines two of these proposals—doubling the maximum federal Pell Grant and implementing free college programs—to understand the impact on the value students would receive if implemented.

DOUBLING THE FEDERAL PELL GRANT



For decades, the federal Pell Grant has served as the bedrock of our nation's financial aid system, providing essential need-based aid to bring college within reach for students from low- and moderate-income backgrounds. However, the grant has failed to keep pace with rising costs. In 1975–76, the maximum Pell Grant covered over 75 percent of the cost of attending a four-year public college; by 2018–19, the grant covered only about 28 percent of that cost.⁷ Doubling the maximum Pell Grant award would help restore its purchasing power and significantly improve affordability for students from low-income backgrounds, expanding their access to higher education and decreasing their need to borrow student loans.⁸

The higher education community has galvanized around the importance of doubling the Pell Grant to restore its purchasing power and open the doors of opportunity to more students. Research has demonstrated the clear impact of need-based grant aid on college access and completion,⁹ but less has been done to measure its impact on *value*. By reducing net price, doubling the Pell Grant results in lower Threshold 0 amounts, which means that colleges with slightly lower student earnings can meet the threshold to deliver a minimum economic return. Doubling the Pell Grant increases the value that students—particularly students living with low incomes—receive from higher education. (For more details on the modeling approach, see the methodology section or appendix.)




Table 2 shows that doubling the maximum federal Pell Grant would lead 95 additional institutions, enrolling more than 600,000 students, to provide a minimum economic return to their students. And because the Pell Grant is need-based, doubling it delivers the increased value—through lower net prices—to students with financial need.

TABLE 2
Additional Institutions that Would Meet Threshold 0 Under a Doubled Federal Pell Grant

| OVERALL | NUMBER OF INSTITUTIONS | ENROLLMENT |
|------------------------------------|------------------------|------------|
| | 95 | 610,925 |
| Sector | | |
| Public Four-Year | 8 | 28,793 |
| Private Nonprofit Four-Year | 30 | 102,621 |
| Public Two-Year or Less | 29 | 255,745 |
| For-Profit | 22 | 188,716 |
| Private Nonprofit Two-Year or Less | 6 | 35,050 |

Note: Only institutions with sufficient data to estimate both Threshold 0 and student earnings are included in the analysis.
Source: IHEP analysis of American Community Survey, IPEDS, and College Scorecard data.

▶▶▶ “DOUBLING THE PELL GRANT INCREASES THE VALUE THAT STUDENTS RECEIVE FROM HIGHER EDUCATION” ◀◀◀



INVESTING IN FREE COLLEGE PROGRAMS

Over the past decade, the interest in and prevalence of free college programs—sometimes called tuition-free college promise programs— have grown as policymakers seek solutions to the affordability challenges facing today’s students. These programs vary widely in design in terms of which institutions and which students can participate.

There are two primary types of free college programs: first-dollar and last-dollar. Some free college programs are designed as last-dollar, meaning that funding is provided to cover all remaining tuition and fees only after other sources of grant aid are applied. Because the federal Pell Grant and other need-based sources of aid provide substantial grant amounts to students from low-income backgrounds, last-dollar programs often provide these students limited additional support, if any. Previous IHEP research on last-dollar programs in New York and Tennessee found that low-income students are particularly unlikely to benefit from these types of programs,¹⁰ even though students from low-income backgrounds continue to face difficulties covering housing, meals, and other basic needs.¹¹ More generous program designs, referred to as first-dollar models, instead provide students funding equivalent to full tuition and fees, allowing them to use other sources of grant aid for living expenses and other costs of attending college.

Students at public two-year colleges with first-dollar free college programs would see their total net price **decline by more than six times** the amount they would with a last-dollar program (\$4,056 vs. \$625), and students at public four-year institutions would see their net price **drop \$7,700 more** under a first-dollar program.

Design Matters for Free College Programs: First-Dollar and Last-Dollar Scholarships

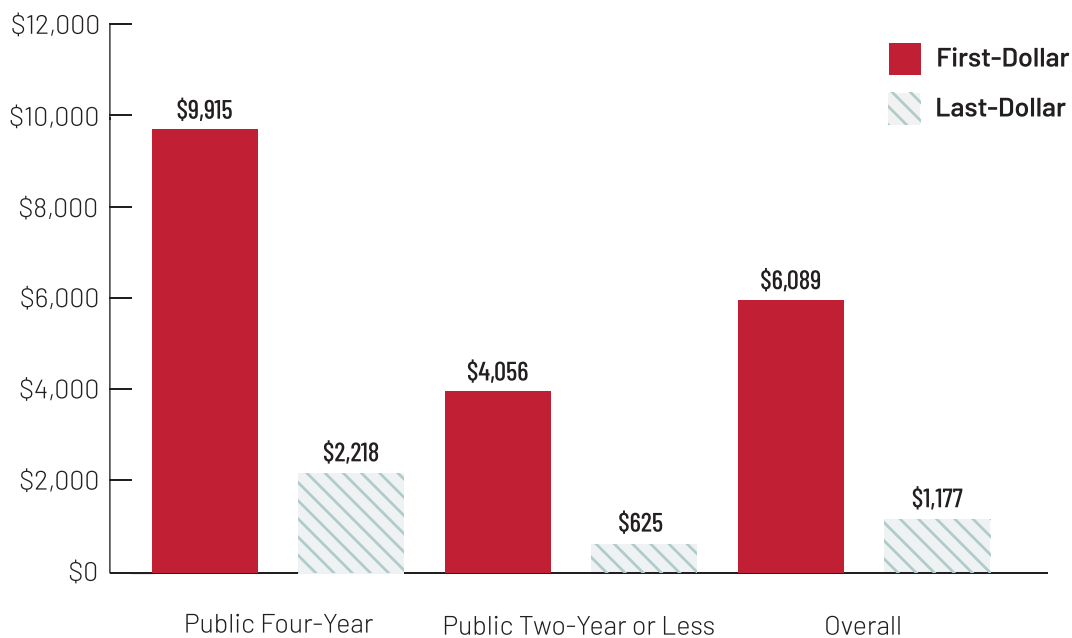
First-dollar: Free college programs that provide a grant amount equivalent to the full amount of an institution’s tuition and fees, regardless of other grants and scholarships students receive, which allows students to use other aid towards living costs and other non-tuition expenses. In this model, the free tuition scholarships are applied first.

Last-dollar: These programs only cover tuition costs that remain after accounting for other sources of grant aid; the aid is applied to tuition and fees last. Under these types of programs, students do not receive additional benefit if their tuition payments were already fully covered by other grant aid.

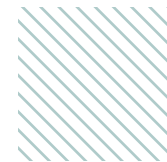
To assess the impact of these programs on value, we modeled whether first-dollar and last-dollar free college programs change institutional performance against T0. This analysis includes only public institutions, because private nonprofit and for-profit institutions are typically excluded from state- or locally funded free college programs.¹² Our modeling estimates the broadest possible application of free college programs at public colleges, by assuming that all students at those colleges would be eligible for benefits. In practice, free college programs often are limited to in-state students, two-year institutions, or those who meet other eligibility requirements.¹¹ (For more methodological details and example calculations, see the methodology section or appendix.)

While first-dollar free college programs notably increase value for students, last-dollar programs do not achieve the same impact. Students at public two-year schools with first-dollar free college programs would see their total net price decline by more than six times the amount they would with last-dollar programs (\$4,056 vs. \$625), and students at public four-year institutions would see their net price drop \$7,700 more, on average, under first-dollar, as compared with last-dollar, programs (see Figure 2).

FIGURE 2
Average Additional Aid Received Under First-Dollar and Last-Dollar Free College



Source: IHEP analysis of American Community Survey, IPEDS, and College Scorecard data.



Implementing first-dollar free college programs nationwide would lead 12 additional public four-year institutions and 32 additional public two-year institutions to meet the minimum economic return threshold, thus delivering greater value to students (see Table 3). These 44 institutions serve approximately 216,000 students annually.

In contrast, implementing last-dollar free college programs would only lead to one additional public four-year college and two public two-year colleges meeting Threshold 0. Last-dollar free college programs have a much smaller impact because they only cover outstanding tuition and fees after other grant aid is applied, which can result in only a small difference in actual net price for students. Existing grant aid already covers tuition and fees for some students, particularly at public two-year colleges, which tend to have low tuition already.¹³ For these students, affordability barriers consist largely of non-tuition expenses, such as room, board, books, and supplies, so last-dollar programs are unlikely to measurably improve value for students.

TABLE 3
Additional Institutions That Would Meet Threshold 0 under a First-Dollar or Last-Dollar Program

| TYPE OF FREE STATE COLLEGE PLAN | FIRST-DOLLAR | | LAST-DOLLAR | |
|---------------------------------|------------------------|----------------|------------------------|---------------|
| | NUMBER OF INSTITUTIONS | ENROLLMENT | NUMBER OF INSTITUTIONS | ENROLLMENT |
| Overall | 44 | 215,746 | 3 | 11,149 |
| Sector | | | | |
| Public Four-Year | 12 | 42,136 | 1 | 3,540 |
| Public Two-Year or Less | 32 | 173,610 | 2 | 7,609 |

Note: Only institutions with sufficient data to estimate both Threshold 0 and student earnings are included in the analysis. Source: IHEP analysis of American Community Survey, IPEDS, and College Scorecard data.

This analysis measures the value impact of free college programs for students who already are enrolled in higher education. However, one of the primary goals of free college programs is to increase college accessibility and enrollment through clear messaging about zero tuition costs.¹⁴ Students cannot reap the value of higher education if they do not attend in the first place. Programs that simplify messaging and encourage students to enroll could help more of them benefit from the economic mobility that college can provide. These enrollment impacts are important, although they are outside the scope of this paper.

LOOKING FORWARD:

RECOMMENDATIONS TO INCREASE AFFORDABILITY

The ways institutions, states, and the federal government design policies to address affordability has a measurable impact on the postsecondary value students receive. College is still the best option for people seeking upward economic mobility. But there is much to be done to ensure students have the financial support in college to achieve economic stability after college.

To address the shortcomings and inequities in the postsecondary value students experience, policymakers must address affordability, particularly for students for whom costs serve as a substantial barrier and burden. To do so, federal and state policymakers must create and expand need-based financial aid programs, eliminate overly restrictive eligibility criteria that make it difficult for students with financial need to access support, and make aid available to pay for tuition and fees as well as non-tuition expenses including living costs and basic needs.

To achieve these goals, we recommend the following:

- **Double the Pell Grant.** Doing so would help an additional 95 institutions meet Threshold 0 and deliver a minimum economic return to their students. Doubling the federal Pell Grant would also increase value for students from low-income backgrounds who are attending institutions that already deliver the minimum economic return, by reducing the cumulative cost of their credentials.
- **Invest in first-dollar free college programs.** A first-dollar approach increases affordability—and as a result, postsecondary value—for students and ensures students with the highest levels of financial need receive additional aid. First-dollar programs have a substantially greater impact on postsecondary value than last-dollar programs.
- **Fund non-tuition expenses for students from low-income backgrounds.** In many cases, non-tuition expenses exceed tuition costs.¹⁵ Funding transportation, health care, and child care expenses reduces affordability barriers for students by addressing basic needs, which facilitates college completion.
- **Avoid narrow restrictions on eligibility for student aid.** Eligibility for need-based financial aid—whether in the form of Pell Grants, other grant aid, or free college programs—should be as inclusive as feasible. When funds are scarce, they should be targeted based on financial need rather than other factors. For example, aid should be open to students from low-income backgrounds regardless of whether they attend part time, enroll immediately after high school or later in their careers, transfer institutions, or work in another state after graduation.

- **Invest in four-year pathways.** Free college programs are often limited to public two-year institutions; however, these programs would reach more students were they expanded to include public four-year colleges. Public investments to support affordability for students at public-four-year institutions would address stratification within postsecondary education and help ensure the equitable delivery of postsecondary value.
- **Provide support for completion.** Federal and state policymakers should fund completion support aimed at decreasing time-to-degree and increasing completion rates.

Just as providing financial support to students will help improve the equitable delivery of postsecondary value, gathering better data will enable insights into institutional disparities in terms of economic returns:

- **Disaggregate earnings data by race/ethnicity.** ED should publish disaggregated earnings by race/ethnicity in the College Scorecard, for both institutions and programs, as those data become available.
- **Improve earnings data for non-completers.** At the program level, ED should publish earnings outcomes of students who leave college without a degree, in addition to the outcomes it already publishes for program completers. It should also publish institution-level earnings outcomes disaggregated by completion status, in addition to the overall earnings outcomes that include both completers and non-completers.

AFFORDABILITY

Federal and state policymakers must create and expand need-based financial aid programs, eliminate overly restrictive eligibility criteria that make it difficult for students with financial need to access support, and make aid available to pay for tuition and fees as well as non-tuition expenses including living costs and basic needs.



CONCLUSION

Postsecondary institutions have the power to provide a better living and a better life for all students. However, this analysis shows that those economic returns are not universal. To ensure that all students can access high-quality, affordable education that leads to a meaningful career, economic returns, and a fulfilling life, colleges and policymakers must act.

Affordability solutions are one way to improve economic returns for students and help even more of them realize the value a postsecondary education can deliver. This analysis tests proposed policies and includes recommendations to address a critical element of the value equation: student investment. Investment in postsecondary education is a key component of determining whether students are receiving a minimum economic return from higher education—in other words, whether they are better off financially than if they had never attended college at all. If policymakers double the Pell Grant and invest in first-dollar free college programs, more students would receive measurable postsecondary value.

The Postsecondary Value Commission developed resources, including the Postsecondary Value Framework, to kick-start a field-driven equitable value movement.¹⁶ This brief demonstrates how that framework can be used for practical policy analysis and policy development. Since the release of the Commission's findings in 2021, the higher education community has embraced a new approach to policy development that, building on the momentum of the access and completion movements, seeks to ensure postsecondary education lives up to its potential of providing critical benefits—both economic and non-economic—to individual students and society writ large. Such student-centered, data-informed, and equity-focused policy can turn the goal of delivering equitable postsecondary value into a reality.



APPENDIX:

TECHNICAL DOCUMENTATION AND DETAILED METHODOLOGY

Using publicly available data from the American Community Survey, the Integrated Postsecondary Data System (IPEDS), and the College Scorecard, this report examines whether colleges deliver a minimum economic return to their students and demonstrates how changes to state and federal financial aid programs would help improve postsecondary value. Students' minimum economic return is measured by the Postsecondary Value Framework's Threshold 0, which assesses whether students are better off financially than if they had not attended college. Students meet Threshold 0 if they earn at least as much as a high school graduate, plus enough to recoup their investment in college within 10 years.

This appendix describes the dataset construction, data sources used, and the methodology behind variables in our analysis. Readers can refer to the relevant documentation files (see Table A-1) for detailed descriptions of the underlying variables.

TABLE A-1
Data Source Documentation and Further Information

| DATASET | DOCUMENT TYPE | LINK |
|---|----------------------------------|----------------------|
| College Scorecard | Data Dictionary | Link |
| | Technical Documentation | Link |
| IPEDS | Overview | Link |
| | Glossary | Link |
| American Community Survey (ACS), downloaded through IPUMS USA | Technical Documentation from ACS | Link |
| | IPUMS USA Overview | Link |

UNIVERSE

The analyses included in this report are based on data from postsecondary institutions present in the most recently published (MERGED2021_22_PP) College Scorecard institution-level data file, which was last updated in April 2023. This file includes all IPEDS institutions that participate in Title IV aid programs, excluding administrative offices, schools that have missing data on degree and certificate completions (preventing institution category classification), or those that have no valid Office of Postsecondary Education identification number (OPEID). This universe was pared down by restricting it to the subset of institutions (a) whose predominant credential awarded is an undergraduate credential, (b) which are located in the 50 states or the District of Columbia, and (c) which report positive undergraduate enrollment.

MISSING DATA

Colleges were only included in our analysis if we had access to the median earnings of their former students and sufficient data to calculate Threshold 0. The institution-level earnings data in the College Scorecard are suppressed when the number of students in a cohort is too small, in order to protect student privacy.¹⁷ In estimating students' total investment in college, we only included colleges operating on a standard academic calendar, which report cost of attendance to IPEDS across a full academic year. Some institutions operate on a calendar year that differs by program or offer programs on a continuous basis, and report costs to IPEDS for their largest programs. Due to the complexity of integrating program-level cost data, which cover differing lengths of time, we did not include those colleges in our analysis.

Table A-2 shows the number of institutions in our overall universe (as described above) and the number and percentage of those institutions with sufficient data for our analysis. Of the 5,615 total institutions in our universe, only 2,921 have sufficient data for our analyses. Data coverage is highest for public four-year, private nonprofit four-year, and public two-year colleges.



TABLE A-2

Number and Percentage of Institutions with Sufficient Data for Analysis

| | UNIVERSE | INSTITUTIONS WITH USABLE DATA | PERCENTAGE WITH USABLE DATA |
|------------------------------------|----------|-------------------------------|-----------------------------|
| Total | 5,615 | 2,921 | 52% |
| Public Four-Year | 565 | 528 | 93% |
| Private Nonprofit Four-Year | 1,217 | 993 | 82% |
| Public Two-Year or Less | 1,317 | 988 | 75% |
| For-Profit | 2,199 | 298 | 14% |
| Private Nonprofit Two-Year or Less | 317 | 114 | 36% |


Note: All institutional classifications are based on the College Scorecard's indicator of the predominant credential awarded.
 Source: Authors' analysis of IPEDS and College Scorecard institution-level data files.

CALCULATING THRESHOLD \emptyset

The Postsecondary Value Commission's Threshold \emptyset is designed to measure whether students are better off after having attended a particular program. Deliberately named $T\emptyset$, the threshold assesses whether students receive at least a minimum economic return on their postsecondary investment. A college is considered to deliver this minimum economic return, and thus pass the threshold, if the median earnings of its former students are higher than the median high school graduate earnings in the state, plus enough to recoup their total investment.^c

THRESHOLD \emptyset

Threshold \emptyset = Median high school graduate earnings in state + Total student investment in college, annualized over ten years



c. Threshold \emptyset also can be measured at the student level, allowing an analysis of the percentage of students at an institution or program who pass the threshold, and we encourage institutions, systems, and states to incorporate this nuance, just as the University of Texas System has done on the Equitable Value Explorer: <https://equity.postsecondaryvalue.org/ut-system>. However, publicly available data do not allow this student-level calculation, so we use median earnings, which means that an institution or program is considered to pass $T\emptyset$ if 50 percent or more of its students pass $T\emptyset$.



EARNINGS OF HIGH SCHOOL GRADUATES AND GED HOLDERS

We use the U.S. Census Bureau's 2021 five-year American Community Survey microdata to calculate median earnings for high school graduates and GED holders in each state. These earnings estimates are based on individuals with positive earnings between the ages of 22 and 40 who are not enrolled in a postsecondary institution in the three months prior to the survey interview. The ACS earnings measure INCEARN includes income from wages and from any self-owned business or farm. While business and farm earnings can include negative figures, we exclude any zero or negative income values from our threshold calculations. These earnings values are reported in 2021 dollars in the ACS and adjusted to 2022 dollars using the annual CPI-U.

TOTAL STUDENT INVESTMENT

To estimate students' total investment in college, we use publicly available data from the U.S. Department of Education's IPEDS surveys. First, for each college, we calculate the net price paid each year by the typical student. Net price is defined as the total cost of attendance (including tuition and non-tuition costs) minus grant and scholarship aid. This annual net price estimate is then multiplied by an estimate of the number of years it takes the average graduate to finish a credential, and the resulting measure of cumulative net price is amortized over a 10-year period to account for the cost of student loan interest.


The cost of attendance data in this analysis are taken from the 2021 Institutional Characteristics IPEDS survey and include colleges' published costs for tuition and fees, books and supplies, room and board, and other expenses for first-time, full-time (FTFT) students. The latter two components are estimated separately for students living on campus, off campus with family, or off campus without family, and we weight the average cost of attendance for an institution based on the distribution of its students' living arrangements. We also apply the estimated room and board expenses for students living off campus and not with family to those living off campus with family, to acknowledge that many students living with family still purchase food and/or pay rent.^d As discussed under "Missing Data" above, our analysis is limited to colleges that operate on a standard academic calendar and report cost of attendance to IPEDS across a full academic year.^e

We estimate net price by subtracting average grant aid awarded to all FTFT degree-seeking students, as reported in the 2021 Student Financial Aid IPEDS survey, from the annual cost of attendance calculated above. Although IPEDS includes its own net price calculations, those estimates are limited to financial aid recipients and include incomplete costs for students who live with family.

Because the Threshold 0 calculation requires an estimate of students' total investment in college, we multiply the annual net price by the estimated number of years it takes the average graduate

d. IPEDS currently does not allow colleges to report room and board costs for students living with family.

e. Some institutions operate on a calendar year that differs by program or offer programs on a continuous basis, and report costs to IPEDS for their largest programs. Due to the complexity of integrating program-level cost data, which cover differing lengths of time, we did not include those colleges in our analysis.



at a particular institution to finish a credential. There are no institution-level data publicly available that track graduates' actual time to degree, so we estimate time to credential using data from the 2020 and 2021 IPEDS Graduation Rate (GR) surveys.^f Estimated time to credential is calculated as a weighted average of the completion times among FTFT students graduating within 150 percent of the expected completion time. For predominantly bachelor's degree granting institutions, IPEDS collects the number of completers within four, five, and six years. We calculate estimated time to credential as the weighted average of the number of years it takes those students to complete, omitting both non-completers and those taking longer than six years to complete.

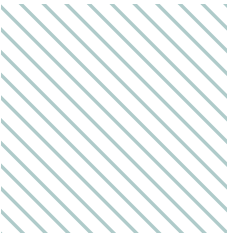
At predominantly associate's and certificate granting institutions, we estimate an analogous measure as the weighted average of the number of years to complete a credential among those who complete within three years. For instance, a predominantly associate's-degree granting institution with 10 students who take two years to complete and 20 students who take three years to complete would have an estimated time-to-credential of 2.66 years. $[(2 \times 10) + (3 \times 20)] / 30 = 2.66$.

In cases where colleges do not have available graduation rate data to estimate time to credential, we apply assumptions about expected time to credential. For institutions that report no completers within 150 percent of normal time to completion, we use the 150 percent time frame (six years for four-year institutions, and three years for two-year institutions) as their estimated time to credential. For institutions that do not report GR data to IPEDS, we assume that certificates take one year and associate's and bachelor's degrees take 125 percent of normal time to completion (2.5 years for AA; 5 years for BA).

Because approximately 70 percent of students who finish a bachelor's degree complete with student debt,¹⁸ which incurs additional costs due to interest, we estimate the cost of student loan interest. We assume that cumulative net price is amortized over 10 years, using the 2021–22 federal undergraduate student loan interest rate (3.73 percent). Finally, this amortized amount is added to the median earnings of high school graduates from the ACS, resulting in a unique Threshold 0 value for each institution.

POST-COLLEGE EARNING OUTCOMES

The post-college earnings used in our analysis are the median earnings measured 10 years after students enter an institution, from the College Scorecard. These earnings data were collected most recently in calendar years 2019 and 2020 for students who first enrolled between 2008–09 and 2009–10. These values are adjusted to real 2022 dollars using the Consumer Price Index for All Urban Consumers (CPI-U).



f. We pool the 2020 and 2021 GR surveys in order to increase the number of completers in each category, which improves the reliability of estimates. This is particularly important for developing estimates of time to credential for race/ethnicity and gender subgroups of students

EXAMPLE CALCULATION

To add clarity to the technical dimensions of Threshold \emptyset , we demonstrate the calculation using hypothetical values from a sample institution in California that predominantly awards bachelor's degrees.

FIGURE A-1
Example Calculation for $T\emptyset$

| COMPONENT OF $T\emptyset$ CALCULATION | VALUES FOR HYPOTHETICAL COLLEGE |
|--|--|
| Median earnings for individuals aged 22-40 with a high school diploma or GED in California | \$28,297 |
| Weighted cost of attendance (COA) | \$24,000 on-campus COA x 10% students on campus + \$29,000 off-campus COA x 90% students living off campus = \$28,500 weighted COA |
| Average grant aid (all sources) to first-time full-time undergraduates | \$2,000,000 grant aid awarded 200 FTFT students = \$10,000 in average grant aid |
| Annual net price | \$28,500 weighted COA - \$10,000 average grant aid = \$18,500 annual net price |
| Time to credential | 4 years |
| Cumulative net price | \$18,500 annual net price x 4 years enrolled = \$74,000 |
| Cumulative net price, amortized over ten years | \$8,472 per year ^g |
| $T\emptyset$ | \$28,297 median earnings of HS Diploma or GED recipients in California + \$8,472 annual cost of education = \$36,769 Threshold \emptyset |
| Median annual earnings for hypothetical college | \$45,750 |
| Results | \$45,750 Median post-college earnings > \$36,769 (Threshold \emptyset amount) |

g. The annual payment amount above assumes that the full cost of the degree (\$74,000) is repaid at a 2.75% interest rate in 120 monthly payments over a ten-year period.

The median earnings for students at this hypothetical college are higher than $T\emptyset$. This tells us that typical students will meet the minimum economic return threshold, and they will be better off financially than had they not attended postsecondary education.

MODELING AFFORDABILITY POLICIES

To better understand how the design of affordability policies and programs impacts postsecondary value, we model the impact of key programs on the number of institutions with median student earnings that would meet or exceed a revised Threshold 0.

DOUBLING PELL

Our approach to modeling a doubled federal Pell Grant makes simplifying assumptions due to the limitations of institution-level data. We model the impact of institutions receiving twice as many Pell Grant dollars as they receive now. Our calculations subtract each institution's average Pell Grant award from its annual net price under the status quo. Because net price calculations already include the average grant aid from all sources, including the Pell Grant, this approach effectively double counts the Pell award and assumes that students would receive additional funding if the maximum Pell award were doubled.

To calculate both the average grant aid and the average Pell award, we rely on data from the 2021 Student Financial Aid (SFA) IPEDS Survey. We calculate average grant amounts awarded to all students, regardless of whether they received each form of aid. Our calculation divides the total amount of grant aid awarded (from all sources and from Pell Grants specifically) to FTFT undergraduates at each institution by the financial aid cohort of FTFT undergraduates. While IPEDS calculates its own averages for aid awarded, those figures include only students who receive that type of aid. Our calculations vary from the official IPEDS figures, particularly at institutions where only a small percentage of students receive Pell Grants or other types of grants or scholarship aid. Including all students allows us to better understand the impact of doubling the Pell Grant on the average net price across the entire institution, rather than the effect for Pell recipients only.

To illustrate our calculation, consider an institution with 100 FTFT undergraduate students that awards \$1,000,000 in grant aid from all sources and \$500,000 in federal Pell Grants. The \$1,000,000 in total grant aid includes Pell Grants awarded. Under the status quo, that institution would provide an average of \$10,000 in grant aid to each FTFT student (\$1,000,000 divided by 100 students). If the institution receives twice the amount of Pell Grant dollars (an additional \$500,000), it would award a total of \$1,500,000 in grant aid to its students, which would increase its average grant aid awarded to \$15,000.

Table A-3 shows how doubling the amount of Pell Grant dollars institutions receive would affect the average grant aid awarded. Across all colleges, doubling those Pell dollars would increase the average grant aid awarded from \$8,501 to \$11,280.





TABLE A-3
Average Grant Aid, Average Pell, and Average Grant Aid Under a Doubled Pell Grant

| SECTOR | AVERAGE GRANT AID AMONG FTFT DEGREE-SEEKING UGs | AVERAGE PELL AWARDED AMONG FTFT DEGREE-SEEKING UGs | AVERAGE GRANT AID UNDER A DOUBLED FEDERAL PELL GRANT |
|------------------------------------|---|--|--|
| Public Four-Year | \$8,322 | \$2,190 | \$10,512 |
| Private Nonprofit Four-Year | \$21,426 | \$2,137 | \$23,563 |
| Public Two-Year or Less | \$4,646 | \$2,620 | \$7,265 |
| For-Profit | \$4,116 | \$3,362 | \$7,478 |
| Private Nonprofit Two-Year or Less | \$6,497 | \$2,911 | \$9,408 |
| Total | \$8,501 | \$2,779 | \$11,280 |

Source: IHEP analysis of American Community Survey, IPEDS, and College Scorecard data.

Note that our modeling makes simplifying assumptions due to the limitations of institution-level data and underestimates the impact of expansions to Pell Grants. Doubling the maximum Pell Grant would also expand the number of students eligible for Pell Grants, but we cannot model that impact without student-level data with granular information on income and other factors that influence Pell Grant eligibility and award amounts. Those data are not available in IPEDS or the College Scorecard.

Additionally, for current Pell Grant recipients, doubling the maximum Pell award could result in more than double the award amount received.¹⁹ Because the grant amount students receive is determined by the difference between the maximum award and their expected family contribution (EFC), an increase in the maximum award should increase the grant award for current recipients' dollar for dollar. It is not possible to model those precise impacts without student-level data. For that same reason, our calculations do not account for future changes in aid eligibility due to changes in the FAFSA Simplification Act.²⁰

▶▶ **“ACROSS ALL COLLEGES, DOUBLING THOSE PELL DOLLARS WOULD INCREASE THE AVERAGE GRANT AID AWARDED FROM \$8,501 TO \$11,280”** ◀◀◀



FREE COLLEGE PROGRAMS (FIRST-DOLLAR AND LAST-DOLLAR)

We modeled two versions of free college programs: first-dollar and last-dollar. The differences between those approaches are explained below. Because all of the free college programs we reviewed are restricted to students attending public institutions, we only modeled the impact of free college programs on public colleges. Our modeling estimates the broadest possible application of free college programs at public colleges, by assuming that all students at those colleges would be eligible for benefits. In practice, free college programs can be limited to in-state students or those who meet other requirements.

To assess the impact of free college policies, we modeled the number and share of public institutions with students who, on average, would earn at least enough to meet Threshold 0 (minimum economic return) through both first- and last-dollar free college programs. Our analysis uses cost of attendance information from the 2021 Institutional Characteristics (IC) Survey from IPEDS and average grant aid from the 2021 Student Financial Aid Survey from IPEDS. Note that our calculations use tuition and fees for students attending in-state or in-district; out-of-state students would typically pay higher tuition amounts.

First-dollar free college programs provide a grant amount equivalent to the institution's full tuition and fees, regardless of other grants and scholarships that students may receive. In first-dollar programs, grants to cover tuition are applied "first" and other aid can be used to cover living costs and other non-tuition expenses. To model the impact of first-dollar programs, we exclude each institution's listed tuition and fees from the calculated cost of attendance (COA).

For instance, consider an institution with a COA of \$10,000, tuition and fee charges of \$2,000, and \$1,500 average grant aid awarded. To estimate the impact of a first-dollar free college program, we first calculate an annual net price of \$8,500 (\$10,000 COA minus \$1,500 average grant aid) under the status quo. Then, we subtract an additional grant amount of \$2,000 (the amount of tuition and fees), to get a revised annual net price of \$6,500.

In contrast, last-dollar free college programs only cover the tuition costs remaining after other grant aid is applied. In other words, the aid is applied to tuition and fees "last." Under last-dollar programs, students would not receive any additional benefit if their tuition were already fully covered by other grant aid. To model the impact of last-dollar programs, we first subtracted the average grant aid amount from the listed tuition and fees to calculate the average tuition and fees remaining, if any.^h Then, we subtracted that remaining amount of tuition and fees from the net price.

In the institution example above, there is \$500 remaining in tuition and fees after grant aid is applied (\$2,000 tuition and fees minus \$1,500 average grant aid). A last-dollar free college program would cover that \$500 in remaining tuition and fees, so we would subtract that \$500 from the \$8,500 net price to calculate a \$8,000 revised net price.

Table A-4 shows our estimates for the average additional amount of grant aid students at public

h. If the average grant aid exceeds tuition and fees, we treat the institution as having \$0 tuition and fees remaining.

colleges would receive under first-dollar and last-dollar free college programs.

TABLE A-4
Average Additional Grant Aid Under First-Dollar and Last-Dollar Free College Programs

| | AVERAGE ADDITIONAL AID RECEIVED UNDER FIRST-DOLLAR FREE COLLEGE (LISTED TUITION AND FEES) | AVERAGE ADDITIONAL AID RECEIVED UNDER LAST-DOLLAR FREE COLLEGE |
|-------------------------|---|--|
| All public institutions | \$6,089 | \$1,177 |
| Public Four-Year | \$9,915 | \$2,218 |
| Public Two-Year or Less | \$4,056 | \$625 |

Note: All institutional classifications are based on the predominant degree awarded from the College Scorecard.

Source: Authors' analysis of IPEDS Student Financial Aid and Institutional Characteristics data files.

OTHER VARIABLES

Institutional sector is based on the type of each institution (public, private nonprofit, and private for-profit) and the predominant degree awarded, with institutions primarily awarding certificates or associate's degrees designated as "Two-Year or Less" and those awarding predominantly bachelor's degrees designated as "Four-Year" institutions.

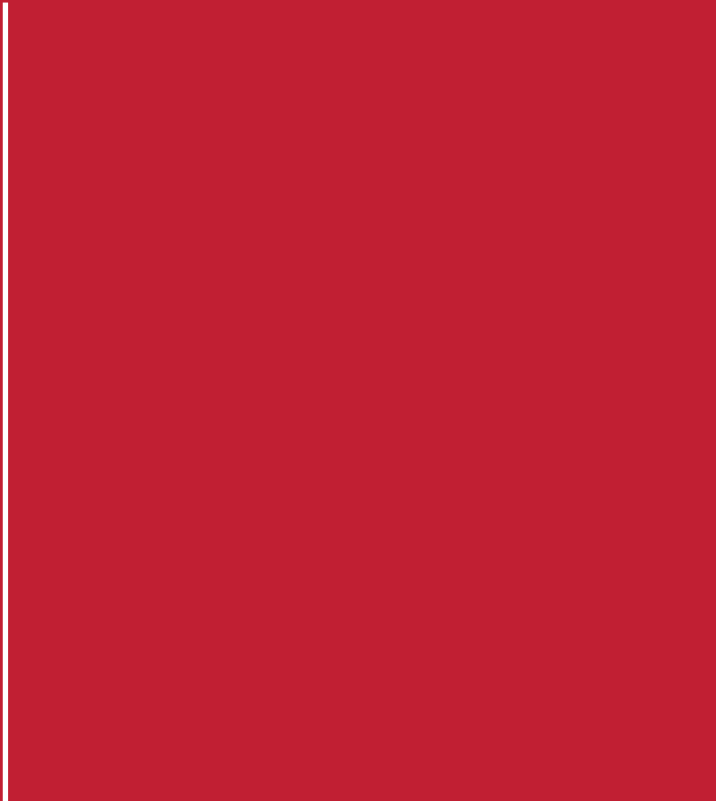
Enrollment counts are based on 12-month annual unduplicated head counts of undergraduates from the College Scorecard. Those enrollment data are broken out by gender and race/ethnicity.

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