

Who Wins? Who Pays?

The Economic Returns and Costs of a Bachelor's Degree



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Executive Summary

Given the importance of a college education to entering and staying in the middle class and the high cost of obtaining a bachelor's degree, *Who Wins?* and *Who Pays?* are questions being asked today at kitchen tables and in the halls of government throughout the nation. This study shows that the answers are different than what is commonly found in the media.

Much of the current debate about the cost and value of higher education has focused on how much students pay, how much they borrow, and how poorly some of them are being educated. Much less attention is being paid to how well or how badly taxpayers are being served both by the institutions they are helping to fund and by the students they have helped to graduate.

Using publicly available data, we look at who wins and who pays across the full spectrum of higher education institutions in the United States, combining information on “institutional control” (public, private not-for-profit, or private for-profit college or university) and selectivity (ranging from open admission to most selective, based on *Barron's Profiles of American Colleges*).

We focus on two critical questions:

- Do students who earn a bachelor's degree and participate in the labor force experience returns, such as higher wages, that justify the costs incurred by them in earning that degree?
- Do taxpayers get a positive return on their investment in the nation's colleges and universities?

The answer to the first is “yes.”

- In terms of wages, a bachelor's degree, whether from a public, a not-for-profit, or a for-profit institution, pays a handsome net financial reward in comparison to a high school diploma—a reward that over a lifetime can vary, on average, from more than \$230,000 at less selective not-for-profit colleges (such as the University of Bridgeport in Connecticut and Dowling College in New York) to well over \$500,000 at the most competitive public or not-for-profit institutions (such as the University of California at Los Angeles and Amherst College).

The answer to the second question is more complicated.

- Taxpayers benefit from the higher state and federal income taxes paid on the higher salaries earned by college graduates, varying from \$60,000 in additional taxes paid over the work life of a graduate from a less selective public institution to almost \$150,000 in additional income taxes paid over the work life of a graduate from the most selective not-for-profit colleges or universities.
- However, taxpayers also subsidize the education that students receive in most colleges and universities. This takes the form mostly of direct state appropriations for public universities and tax exemptions for not-for-profit ones.
- Taxpayers subsidize bachelor's degrees in nearly all not-for-profit institutions at around \$8,000 per degree. In public institutions, the taxpayer investment is more than \$60,000.
- Taxpayer subsidies increase dramatically among the most selective institutions, from almost \$60,000 in the most selective not-for-profit institutions to well over \$100,000 in the most selective public institutions.
- Because for-profit institutions do not receive state subsidies and pay taxes rather than receive tax exemptions, even after including the cost of government-funded financial aid, taxpayers benefit by around \$6,000 per bachelor's degree.

From the data presented in this study, we conclude that:

- Given the financial return to graduates for each completed bachelor's degree, the high cost of dropouts, and the high dropout rates in less selective public colleges and universities, the states and the Federal Government must focus their resources and policies on increasing retention and degree completion at less selective institutions.

- Given that the lowest levels of taxpayer support go to the institutions that enroll the highest percentage of students from low-income families, nontraditional students, and minority students, the states and the Federal Government must reverse their policies and focus their support for completion on the neediest students.

A college education is an expensive investment—in time, money, and effort—and it is getting more so each year. As costs escalate, students, parents, and taxpayers need to be sure that the returns to the graduate, and ultimately to the nation, justify the cost. But how can they be certain?

- Given that the research on cost shows that not-for-profit and for-profit institutions are the best deal for taxpayers, to lower cost and increase capacity, the states and the Federal Government should support high-quality, nontraditional providers.
- Given that state and federal policy discussions concerning how and who to fund must be informed by reliable data drawn from institutions across all types of control and levels of selectivity, the states and the Federal Government should move to make such data available, and the latter should move to scrap the antiquated and inadequate federal Integrated Postsecondary Education Data System (IPEDS) in favor of a data system based on student-level data that can measure the success of the growing number of “nontraditional” college students, who now make up the majority of postsecondary students in the country.

Introduction

A college education is an expensive investment—in time, money, and effort—and it is getting more so each year. As costs escalate, students, parents, and taxpayers need to be sure that the returns to the graduate, and ultimately to the nation, justify the cost. But how can they be certain?

There are the myriad rewards for earning a college degree that represent a high value to our society and are quantifiable, such as the tendency of college-educated adults to be healthier, live longer, and be more actively engaged citizens (for example, by voting and volunteering at higher rates). More personal rewards, such as a commitment to lifelong learning, are more difficult to measure. But most students, their families, taxpayers, and their government officials need answers to a more focused set of questions pertaining to the financial benefits and costs of a bachelor's degree.¹

¹ We understand that restricting our analysis to students who actually graduate with a bachelor's degree presents only a limited window on costs because far too many colleges have low graduation rates. However, when we measure taxpayer efficiency, as will become evident below, we consider the costs for all students, including those who do not finish.

Among these are the two questions we study in this report:

- Do students who earn a bachelor's degree and participate in the labor force experience returns, such as higher wages, that justify the costs incurred by them in obtaining that degree?
- Do taxpayers get a positive return on their investment in the nation's colleges and universities?

To answer these questions, we first need to be clear about what is included in our calculations, which are limited to direct, economically measurable costs and benefits.

From the perspective of the graduate, we measure:

- Costs, which include the *actual outlays* for earning the degree, including tuition paid, books, room and board, and foregone wages
- Benefits, which include current salaries and earnings over the graduate's work life

From the perspective of the taxpayer, we measure:

- Costs, which include direct appropriations and foregone taxes
- Benefits, which include taxes derived from the higher salaries and earnings of graduates

Clearly, in this report we are viewing bachelor's degrees solely from the perspective of the financial returns on the investments made in these degrees by students and taxpayers. This, however, is not to suggest that we are satisfied with the costs and benefits associated with current retention and graduation rates. To the contrary, we strongly support President Obama's emphasis on increasing postsecondary completion rates for all types of degrees and certificates. It is in light of this national commitment that one of the purposes of our report is to show just how valuable completion is to both students and taxpayers—and to help emphasize further the urgent need for colleges and universities to work even harder to get students across the finish line.²

One reason that completing a bachelor's degree is so important is that graduation pays off for both the graduate and the taxpayer. According to the U.S. Census Bureau,³ the salaries of college graduates with a bachelor's degree between the ages of 25 and 34, working year-round, average around 46 percent more than those of someone who has attended some

college but has not completed a degree. The contrast is even greater compared to someone with just a high school diploma: College graduates out-earn high school graduates by about two thirds. Moreover, many analysts predict that, even in today's challenging economic context, the demand for college-educated adults will grow over the foreseeable future, which should make the rewards for completing college even greater.⁴

One reason that completing a bachelor's degree is so important is that graduation pays off for both the graduate and the taxpayer.

While these salary figures show that a bachelor's degree pays, the federal and state governments, who underwrite much of higher education, have increasingly limited financial resources to support colleges and universities. Moreover, as college tuition and fees grow faster than median household income, the ability of students and families to pay for college is declining.⁵ In turn, the question of whether there is a return to student and taxpayer investments in college degrees—and the size of these returns—is becoming ever more important.

We will be able more precisely to measure financial returns to graduates as states begin to match student-level data with measures of student success in the labor market using, for instance, unemployment insurance records, but that will take place state-by-state during the course of the next decade or so. In the meantime, in this study we explore these important questions by using the best data sets currently available.

2 Although we focus only on bachelor's degrees in this report, we recognize that this is only one piece of postsecondary credentials awarded in the United States. Therefore, the results in this study should not be read as applicable across all degrees or certificate programs. Furthermore, for some sectors of higher education, bachelor's degrees are only a small part of their degree production. Based on data from the 2007–08 National Postsecondary Student Aid Study (NPSAS: 08), only 13.6 percent of degree recipients at for-profit colleges received bachelor's degrees, another 30.5 percent earned associate's degrees, and 55.9 percent completed certificates. In stark contrast, at not-for-profit institutions, 90.1 percent received bachelor's degrees, 6.1 percent received associate's degrees, and only 3.8 percent received certificates. At public institutions, the corresponding percentages are 49.8 percent received bachelor's degrees, 41.3 percent received associate's degrees, and 8.9 percent received certificates.

3 See http://www.census.gov/hhes/www/cpstable/032010/perinc/new04_001.htm.

4 Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018*. Washington, DC: Georgetown University, Center on Education and the Workforce. Retrieved April 13, 2011, from <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/FullReport.pdf>.

5 See, for example, http://www.forbes.com/2011/02/01/college-education-bubble-opinions-contributors-louis-lataif_print.html.

Organization, Sources, and Sample

We begin with an examination of the starting and estimated work life salaries of bachelor's degree holders in a set of categories of schools we have created based on what the federal government calls "institutional control" (i.e., is a college or university public, private not-for-profit, or private for-profit?) and the school's level of selectivity. We use these data to estimate the return to the graduate, comparing salaries to the earnings of high school graduates and considering the costs a student incurred in earning the degree. We then look at how much more income tax is generated by the higher salaries associated with a bachelor's degree. We next estimate the taxpayer costs of a bachelor's degree in each of the 11 categories we have identified. We also highlight how the benefits and costs of gaining a bachelor's degree differ across types of schools. We conclude with some policy recommendations that follow from these results.

Throughout, we explain the methods we used and the assumptions we made in order to permit other researchers to duplicate our findings or develop estimates based on other assumptions and models. (Details on our methods and data sources are found in the Appendix.)

In the first part of this study—on student costs and benefits—we combine data, on the costs of obtaining a bachelor's degree, from the U.S. Department of Education's 2008 National Postsecondary Aid Study (NPSAS: 08) with salary data on graduates from almost 1,000 campuses reported by *PayScale.com*. As explained below, these data are analyzed at the campus level.⁶

In the second part of this report, we estimate the average annual and total cost and benefits to taxpayers of a bachelor's degree—again, at different levels of institutional selectivity and control. Here we use data on student loans from the U.S. Department of Education's Office of Federal Student Aid and data on revenues and expenditures from the National Center for Education Statistics (NCES) through its Integrated Postsecondary Education Data System (IPEDS), which is an annual survey of colleges and universities eligible to receive Title IV financial aid funding. Additional data

⁶ Although NPSAS: 08 data are at the individual student level, we aggregated these data to the campus level. *PayScale.com* reports data at the campus level. In both cases, we used the U.S. Department of Education's Integrated Postsecondary Education Data UNITID variable to identify the institution we analyze. For more information on salaries at the campus level, see *PayScale.com*'s most recent report at <http://www.payscale.com/best-colleges>. For a description of how *PayScale.com* collects its data and validates them, see http://www.payscale.com/resources_methodology.

are drawn from the Board of Governors of the Federal Reserve System, the Tax Foundation, and the Internal Revenue Service.

We started with NPSAS: 08 as the sample by which to identify students in colleges and universities pursuing bachelor's degrees. The NPSAS: 08 sample includes about 114,000 undergraduate students, 64,951 of whom were pursuing a bachelor's degree, and around 14,000 graduate students, all of whom were randomly selected from more than 1,600 postsecondary institutions. The sampled students represent approximately 21 million undergraduate students and 3 million graduate students who were enrolled in postsecondary education between July 1, 2007, and June 30, 2008. To be included in the NPSAS: 08 study, students must have been enrolled at an institution that was eligible to participate in Title IV federal student aid programs and was located in a state, the District of Columbia, or Puerto Rico. For this study, we restricted our sample to students pursuing a bachelor's degree.

To calculate financial benefits for students and taxpayers by institution, we needed an estimate of salaries (as a measure of financial return). We used *PayScale.com*'s 2010 salary report, which reports starting salary and mid-career salary data for bachelor's degree holders from 999 schools. We merged these salary data with NPSAS: 08 using each school's IPEDS UNITID. We also incorporated data on the selectivity of each school from *Barron's Profiles of American Colleges*.⁷ Once we excluded students in not-for-profit or public schools not classified by Barron's, students missing NPSAS: 08 cost data, or students missing *PayScale.com* data, 39,139 students were left in our study.⁸

We compared the demographic representativeness of our sample with the full NPSAS: 08 baccalaureate sample and found few differences other than that our sample had a slightly higher percentage of whites (1.7 percent) and their Expected Family Contribution for financial aid purposes was also higher (by \$786) (see Appendix Table 3). We also compared the cost of earning a degree for our sample with the full NPSAS sample and again found few differences (see Appendix Table 4).

It is unlikely that all of the students pursuing bachelor's degrees in NPSAS: 08 are actually represented in the *PayScale.com* data of "survivors" (the ones who actually graduate, and then among these, the ones who, interested in knowing what other college graduates seeking employment earn, decide to submit salary data to *PayScale.com*). But as just noted, we do not find noteworthy differences between the full NPSAS: 08 baccalaureate sample and our sample, and, therefore, we are confident that the results are representative of four-year college graduates. Of course, this does not mean the same thing as being nationally representative of all college students (approximately half of whom do not graduate) or the U.S. population as a whole (a quarter of which never enrolls in college).

⁷ Barron's Educational Series, Inc. (2009, 2011). *Barron's profiles of American colleges*. Hauppauge, NY.

⁸ The students in our sample represent 60 percent of students pursuing undergraduate degrees.

Who Wins?

Financial Returns to Graduates

Because colleges and universities differ in how they are financed and because they vary so widely in their selectivity, we investigate student labor market success and taxpayer costs and benefits in 11 different categories of institutions of higher education that grant bachelor's degrees. To create these categories, we begin by grouping each institution by control (public, not-for-profit, and for-profit) and then partitioning schools within each of these three groups by selectivity, as measured by *Barron's Profiles of American Colleges*. Appendix Table 1 highlights the variables used by Barron's to divide institutions into six categories of selectivity (ranging from "noncompetitive" through "most competitive").

Because few students attend colleges in some of the resulting categories,⁹ we combined public and not-for-profit schools in the noncompetitive and less competitive levels of selectivity. Moreover, all

for-profit campuses covered by Barron's, for which we have both NPSAS and *PayScale.com* data, are in the less competitive category. Therefore, there is only one group for for-profit institutions. In the end, we have 11 categories of campuses for which we calculate cost and returns.¹⁰

In calculating the *net returns to a bachelor's degree*, we take into account the present value of the stream of earnings that accrue to graduates earning bachelor's degrees¹¹ minus the direct costs to students earning the degree (e.g., tuition, books, room and board), the "opportunity costs" of earning the degree represented by the wages the student could have earned if he or she had not attended college, and the federal and state income taxes students paid. We measure earnings and opportunity costs at one point in time and over the work life of the graduate by calculating what economists call the net present value (NPV) of the

9 Less than 1 percent of students attend noncompetitive private not-for-profit campuses, and only about 3 percent of students attend noncompetitive public ones.

10 Appendix Table 2 lists some representative schools in each of these categories. The full list of schools in any category or categories we use is available upon request.

11 Here, as elsewhere, we use the IPEDS graduation rates at four, five, and six years to create a weighted average of how long it takes students to graduate from each campus represented in our sample.

stream of earnings.¹² Table 1 reports this net return during the first 10 years after graduation and over a lifetime of work (which, following the U.S. Census and research practice,¹³ we set as 40 years).¹⁴

Table 1 shows that, regardless of the control or the level of selectivity of the school from which they graduated, the net lifetime return to students earning a bachelor's degree is positive. But the returns to students vary significantly across our analytic categories, as does the timing of the returns. For example, because our calculations take into account the costs students incurred earning the degree, and given the higher costs of attending a not-for-profit private institution, during the first decade after graduation, no matter what the level of selectivity, the net financial returns are, on average, higher for public and for-profit institution bachelor's graduates than for graduates of not-for-profit colleges and universities.

We also see that the first decade's net returns to students graduating from for-profit institutions are comparable to those of graduates from public institutions of roughly the same or even greater levels of selectivity (from "non" and "less competitive" up to and including "very competitive").¹⁵ However, in comparison with the two highest categories of public institutions—institutions that enroll about one fifth of the students covered by Barron's—the financial returns to graduates of for-profit institutions fall significantly behind.

Table 1: Students Gain from the Higher Income of Their Bachelor's Degree: Net Present Value of Additional Earnings Compared to a High School Diploma

| Education Sector | First Decade | Lifetime |
|-----------------------------|--------------|-----------|
| Non/Less Competitive | | |
| For-Profit | \$59,536 | \$283,707 |
| Public | \$40,786 | \$306,404 |
| Not-for-Profit | (\$2,343) | \$234,557 |
| Competitive | | |
| Public | \$44,072 | \$338,961 |
| Not-for-Profit | (\$12,710) | \$248,025 |
| Very Competitive | | |
| Public | \$61,549 | \$405,261 |
| Not-for-Profit | \$3,933 | \$350,222 |
| Highly Competitive | | |
| Public | \$93,418 | \$522,565 |
| Not-for-Profit | (\$4,719) | \$418,046 |
| Most Competitive | | |
| Public | \$93,018 | \$524,473 |
| Not-for-Profit | \$42,685 | \$552,060 |

Table 1 also shows that lifetime returns increase with selectivity, regardless of control. Moreover, on average, the investment in the most selective not-for-profit institutions has the greatest payoff over a graduate's work lifetime—graduates from these schools have the highest earnings of any group of students, surpassing their peers who attended the most selective public institutions.¹⁶ But Table 1 also makes evident that except for institutions in this most selective category, graduates of public institutions have a higher lifetime return than students graduating from the more expensive not-for-profit institutions. Consequently, one of the best ways for a student to cut college costs is to enroll at an in-state public college—not surprisingly, however, that option, with its high level of public subsidies, is also far more expensive for taxpayers than if the student attended almost any not-for-profit college or university (see Table 3 on p. 12).

12 We use net present value to turn a stream of earnings that will be generated over many years into a value today. NPV is the same standard used by federal government economists. For an easy-to-follow description, see http://en.wikipedia.org/wiki/Net_present_value. Appendix Table 6 presents the net present value of the first decade and estimated lifetime returns of high school graduates.

13 Day, J. C., & Newburger, E. C. (2002). *The big payoff: Educational attainment and synthetic estimates of work life earnings*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. Retrieved April 13, 2011, from <http://www.census.gov/prod/2002pubs/p23-210.pdf>.

14 While the NPSAS: 08 sample covered students pursuing bachelor's degrees between July 1, 2007 and June 30, 2008, *PayScale.com* reports salaries using data collected in 2010. However, all of our dollar figures in this table and other tables have been converted to 2010 dollars. (See Appendix Table 7 for details.)

15 See Appendix Table 7 for details.

16 We are making no inference here about the value added of particular schools. Graduates of these most selective private schools may have done as well regardless from where they actually graduated. For more information on this issue, see Dale, S. B., & Krueger, A. B. (2002). Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics*, 117(4), 1491-1527.

Finally, graduates from for-profit institutions do better over their lifetimes than graduates from not-for-profit institutions in the non/less competitive and competitive categories. However, lifetime earnings of graduates from for-profit institutions lag those of graduates from public institutions in the non/less competitive category by about 8 percent, a gap that grows as selectivity increases.

In short, although graduates from “marquee” colleges and universities reap the greatest financial returns, there is a significant return awaiting graduates from even the least selective institutions—those without a widely recognizable brand name, which happen to award the majority of the nation’s bachelor’s degrees.

Furthermore, despite some arguments that the nation is producing far more bachelor’s degree holders than we need,¹⁷ the labor market is signaling strong demand for bachelor’s degree recipients. Even if the skills of a particular job do not require a bachelor’s degree, the fact that an applicant holds a bachelor’s degree signals a variety of attributes that are valued by employers. Indeed, a bachelor’s degree may not be an automatic ticket to a good job and a middle-class lifestyle, but, on average, students who complete their studies earn clear, positive returns on the time and money they invest in earning that degree, whether from a public, not-for-profit, or for-profit college or university.

Returns to Taxpayers Through Tax Receipts

Table 2 focuses on the net present value of the returns taxpayers receive from the higher income taxes that graduates with bachelor’s degrees pay relative to the income taxes high school graduates pay.¹⁸ As explained in the Appendix, we have calculated the federal tax on

Table 2: Taxpayers Gain from the Higher Income of College Graduates: Net Present Value of Additional Federal and State Income Taxes

| Education Sector | First Decade | Lifetime |
|-----------------------------|--------------|-----------|
| Non/Less Competitive | | |
| For-Profit | \$20,958 | \$54,842 |
| Public | \$19,623 | \$60,160 |
| Not-for-Profit | \$17,350 | \$52,173 |
| Competitive | | |
| Public | \$20,686 | \$66,772 |
| Not-for-Profit | \$19,110 | \$58,262 |
| Very Competitive | | |
| Public | \$23,883 | \$78,183 |
| Not-for-Profit | \$23,889 | \$78,669 |
| Highly Competitive | | |
| Public | \$30,263 | \$97,177 |
| Not-for-Profit | \$28,060 | \$93,653 |
| Most Competitive | | |
| Public | \$30,175 | \$98,728 |
| Not-for-Profit | \$37,297 | \$147,134 |

the basis of current tax rates and assumptions about the rate of growth of salaries, based on the data we observe from *PayScale.com*. Most states also have state income taxes, and, given that we calculate state taxpayer costs (see below), we also include the added benefits that accrue to state taxpayers from the higher incomes graduates earn.

The question of whether there is a return to student and taxpayer investments in college degrees—and the size of these returns—is becoming ever more important.

However, calculating added state income taxes is more complicated than calculating the federal tax, which is uniform across the nation. While we are working on a series of state reports that will take into account more direct information about state-by-state costs and returns, here we take a more simplified approach. Nationwide, according to the U.S. Census,¹⁹ state income taxes collected in 2010 were approximately 25 percent of federal income tax collections. Therefore,

17 See, for instance, <http://www.businessinsider.com/college-educated-wasting-degree-2010-10> and http://chronicle.com/blogs/innovations/new-evidence-that-college-is-a-risky-investment/28350?sid=at&utm_source=at&utm_medium=en.

18 By investing in higher education, taxpayers receive other benefits beyond higher tax receipts—like avoided costs of incarceration, social services, taxpayer-supported health care, and the like. Important as they are, these fall outside the focus of this study.

19 For state tax data for 2010, see <http://www.census.gov/govs/qtax/>; Table 3 Latest Tax Collections by State.

we first calculated the federal taxes paid by the bachelor's graduates from within each of the 11 categories of schools we are using, and then we *increased* that calculated amount by 25 percent to reflect state income tax collections.

We know that some states, including some large ones such as Florida and Texas, have no income taxes. Meanwhile, some states, such as California and New York, have income tax rates far higher than other states. Consequently, our numbers necessarily include error if applied to any specific state; moreover, given the lack of uniformity in the distribution of types of schools (by control and selectivity) across the states, there may be error in the aggregate numbers as well. These potential errors aside, we believe that the 25 percent calculation of the added state taxpayer benefit is reasonable for this national overview and expect that our future state-by-state reports will overcome much of the error resulting from the use of this uniform calculation.

With this caveat in mind, note that while the returns to the graduates we reported in Table 1 subtract the costs of getting that degree, the returns to the taxpayer via income taxes do not.²⁰ Financial aid and other taxpayer costs are considered in the next section.

No matter what form of control is considered, during the first decade, the return to the taxpayer ranges between \$17,000 for each bachelor's graduate from non/less competitive institutions to \$30,000 for each graduate from highly competitive institutions. Tax returns increase slightly with higher selectivity until the very last category, where graduates from the most selective not-for-profit institutions pay on average almost one-quarter more in taxes than graduates of the most selective public institutions.

The pattern changes somewhat when it comes to taxes paid on lifetime earnings (assuming current tax rates). On average, bachelor's graduates from non/less competitive and competitive institutions pay taxes in the range of approximately \$52,000 to \$67,000, with graduates from public institutions paying the most. The range then narrows substantially for graduates from very competitive institutions, where graduates from public and not-for-profit schools pay nearly the same taxes over their working lives. Among graduates of highly competitive institutions, public school graduates pay slightly more. But this difference is reversed among graduates of the most competitive schools, where taxes paid over a lifetime by graduates of not-for-profit institutions average nearly 50 percent more than what graduates from public institutions pay.

Clearly, taxpayers derive substantial benefits from the higher wages bachelor's graduates earn in comparison to high school graduates. And although the tax benefits that flow from graduates in the most selective colleges are greater than from less selective ones, the numbers of graduates from these highly and most selective institutions is small relative to the number of graduates from other schools. Therefore, from the taxpayer perspective, the payoffs from the graduates of the schools producing the most graduates, regardless of their status as public, not-for-profit, or for-profit institutions, are substantial.

²⁰ We also do not take into account either the net return to taxpayers from relevant local taxes or the cost to taxpayers represented by the deductions available to those who qualify, for example, for the Hope Scholarship Credit or Lifetime Learning Tax Credit, which could reduce federal income tax liability by as much as \$2,500 in 2010. While we are not implying these balance each other, some degree of offsetting is taking place. For more information on estimates of the benefits students and their families have received from federal education tax credits and tax deductions for education-related expenses, see <http://nces.ed.gov/pubs2006/2006186.pdf>.

Who Pays?

Cost to Taxpayers per Degree

College graduates with a bachelor's degree generate substantial financial rewards both for themselves and for taxpayers. However, earning a bachelor's degree carries costs. In the previous section, we calculated the returns to the individual graduate taking into account the costs graduates themselves incurred via tuition, fees, books, room and board, and lost income. When we reported taxpayer benefits, we did not include an estimate of the costs taxpayers incur through government subsidies, an issue we now explore.

To develop our overall estimates of taxpayer costs, we calculate a number of intermediate measures, including direct government support (for example, government grants for student tuition, such as Pell Grants), direct government subsidies (such as state appropriations to support public colleges and universities), foregone taxes (including foregone taxes on endowment contributions and foregone sales taxes), interest paid by students on loans,²¹ and taxes paid. Many of these intermediate measures are drawn from the Integrated Postsecondary Education Data System (IPEDS) for each of the

institutions in our sample, while others come from the Federal Reserve System, the Internal Revenue Service, the Tax Foundation, the federal Office of Management and Budget, and the U.S. Treasury Department.

Taxpayer costs to educate a student range from an actual gain from for-profit schools of nearly \$800 per student per year all the way up to a taxpayer cost of more than \$23,000 in the most selective public institutions.

Using these data, we calculate the average costs to taxpayers per full-time equivalent (FTE) student and per bachelor's degree within each of our 11 categories of institutions. Table 3 summarizes the results of the calculations we used to estimate taxpayer costs per student per year and for each bachelor's degree awarded (see Appendix Table 8 for the full set of calculations).

Given that state appropriations support mostly public colleges and universities, at each level of selectivity, taxpayers are investing far more in students in public institutions than in not-for-profit ones. Taxpayer costs, then, increase with selectivity, quite steeply for public

²¹ See the section *Accruing Principal* in the Appendix for details and limitations on the calculations used in estimating interest on loans.

institutions. Indeed, Table 3 shows that taxpayer costs are substantially higher among the most selective institutions. We recognize that this is driven in part by the mix of graduate and undergraduate students in these schools—but our analysis is constrained by IPEDS data, which do not allow a partition of expenses along these lines.

The range of annual taxpayer costs to educate a student, excluding specific research-related costs enumerated in IPEDS,²² is substantial, ranging from an actual *gain* for taxpayers from for-profit schools of nearly \$800 per student per year all the way up to a taxpayer *cost* of more than \$23,000 in the most selective public institutions.²³ When we calculate the taxpayer cost per degree,²⁴ we estimate that taxpayers are investing around \$108,000 for each degree awarded by the most selective public institutions in the country, which is between 60 percent to 72 percent more than the amount they are investing in students in less selective institutions. In contrast, taxpayers *gain* an average of about \$6,000 per bachelor's degree granted by for-profit institutions. This net benefit received by taxpayers from each student studying at the for-profit institutions in our sample is

Table 3: Student Costs or Benefits to Taxpayers: Annually and per Degree

| | Annual Cost/ Benefits per Student | Total Cost/ Benefits per Bachelor's Degree |
|-----------------------------|---|--|
| Non/Less Competitive | | |
| For-Profit | \$788 | \$6,107 |
| Public | (\$7,895) | (\$67,618) |
| Not-for-Profit | (\$1,033) | (\$8,031) |
| Competitive | | |
| Public | (\$8,729) | (\$62,658) |
| Not-for-Profit | (\$1,405) | (\$8,724) |
| Very Competitive | | |
| Public | (\$10,534) | (\$61,240) |
| Not-for-Profit | (\$1,536) | (\$8,681) |
| Highly Competitive | | |
| Public | (\$14,370) | (\$74,360) |
| Not-for-Profit | (\$1,869) | (\$8,894) |
| Most Competitive | | |
| Public | (\$23,617) | (\$108,007) |
| Not-for-Profit | (\$13,216) | (\$58,732) |

likely to surprise some readers, especially those who have primarily focused on “price” (what students are asked to pay) rather than “cost” (which includes what taxpayers pay) when analyzing different sectors of higher education. While the details on the assumptions and calculations leading to our estimates are found in Appendix Table 8, here we summarize the main steps in our analysis.

Even as taxpayers funnel more money to more selective institutions, the number of students from low-income families who benefit from these higher subsidies declines.

We begin by calculating the amount the institutions in our sample receive from federal, state, and local governments, including grants to students for tuition (e.g., Pell Grants) along with state and local subsidies as reported by IPEDS, but excluding amounts spent on research.²⁵ IPEDS data are from the 2007–08 academic

22 Although a share of the state subsidy for the public research institutions also supports their research mission, there is no way of calculating this share using our data. A reviewer of this study suggested that one reasonable proxy would be to take the difference in average faculty salaries between baccalaureate and research institutions. Although this is a rough proxy, it suggests an amount that can be treated as the “research premium.” According to a recent Midwestern Higher Education Compact’s Average Faculty Salaries report (see <http://www.mhec.org/pdfs/facsalaries2010.pdf>), this research premium is 37 percent for full professors, 17 percent for associate professors, and 19 percent for assistant professors.

23 The most competitive public institution category (made up mostly of flagship research institutions) in our sample is composed of only four universities for which we had the requisite data. Together, they enroll approximately 90,000 students compared to the more than 1 million students enrolled in public competitive universities. These research universities cost taxpayers much more than nonresearch campuses because they receive substantially more federal and state subsidies. For example, a flagship such as the University of North Carolina at Chapel Hill receives about twice as much in state appropriations and nine times as much in government contracts per FTE student as other public campuses in North Carolina.

24 Calculated by multiplying the annual cost per student per year by an estimate of the amount of time it takes on average for a student to earn a bachelor's degree at the institutions in our sample and taking into account dropout rates (see the section Funds Paid to Government in the Appendix).

25 As noted above, we do not measure state appropriations supporting the research mission of research universities.

Table 4: Public Institutions Cost Taxpayers More Than Private Ones: Examples of Annual Net Cost or Benefit per FTE Student, 2010 Dollars

| | Non/Less Selective For-Profits | Non/Less Selective Publics | Non/Less Selective Not-for-Profits |
|--|--------------------------------|----------------------------|------------------------------------|
| Total Amount Received from Government | \$246,987,677 | \$4,504,066,609 | \$64,209,498 |
| Total Amount Paid to Government | \$331,109,879 | (\$97,121,925) | (\$6,029,340) |
| Total Annual Benefit (Cost) to Taxpayers | \$84,122,203 | (\$4,601,188,534) | (\$70,238,838) |
| Number of FTE Students | 106,755 | 582,785 | 67,997 |
| Annual Taxpayer Cost per FTE student | \$778 | (\$7,895) | (\$1,033) |

year, and we adjust these amounts by changes in the consumer price index to reflect 2010 dollars.²⁶

In the next step, we subtract the funds received *from* governments from the amount these institutions *pay* to the governments, including federal, state, and local taxes paid or foregone by the institutions²⁷ and the interest paid by students²⁸ on their loans.²⁹ Some may perceive a double-counting of taxes (once in the net benefit [paid] calculation and again when we calculate

foregone taxes). However, our calculations are based on the answer to a simple question: Did an institution pay taxes? If the answer is “yes,” then the taxes paid are “credited” to taxpayers. If the answer is “no,” the foregone taxes are treated as an implicit subsidy (i.e., “expenditure”) that taxpayers must ultimately cover.

The result is the total annual benefit or cost to taxpayers. That amount is divided by the total number of full-time equivalent students in the institutions making up the sample of each of the 11 categories in order to calculate the annual benefit or cost to taxpayers per student per year. Once again, we adjust this amount to 2010 dollars.

As an example, Table 4 shows the “bottom line” calculations for the non/less selective institutions by control. The flows between schools in each sector clearly differ—for-profit institutions receive more money from the government in the form of Pell Grants, but this revenue is far less than the amount of direct subsidies that public institutions receive. When we look at the other side of the ledger—payments made by these institutions back to the government—we see that the tax exemptions granted to not-for-profit and public institutions cost taxpayers millions of dollars per year, while the for-profit institutions pay more than \$300 million in taxes annually. Strictly from a taxpayer perspective, for-profit institutions represent

26 We used 2007–08 IPEDS data to match the year NPSAS data were collected. We updated these figures to 2010 data to match the salary data reported by *PayScale.com*.

27 Public and private not-for-profit institutions are tax-exempt and do not pay tax on investment income, increases to endowments (gifts), and real estate or operating revenues. For-profit institutions pay sales tax on revenues (which include Pell and Title IV loans) and income taxes on operating profits and investment income. In this study, we treat the foregone tax payments as an implicit subsidy and, therefore, a cost to the taxpayers. In contrast, taxes paid are a benefit received by taxpayers. Because there is no database covering the payments in lieu of property taxes made by public and not-for-profit colleges and universities, we were unable to account for them in our calculations. Moreover, these are voluntary payments and should not be treated the same as taxes. To see how the landscape on payments in lieu of property taxes is becoming an increasingly important issue as localities feel fiscal stress, see <http://chronicle.com/article/Payments-in-Lieu-of-Taxes-/63804/>.

28 As a point of clarification, we note that, like Pell Grants, which are awarded to individuals and not the schools they attend, these interest payments are made by individuals, not institutions.

29 Because the government uses collection methods that are hard for an individual to avoid (e.g., wage garnishment), the Federal Budget takes into account that the government collects 100 percent on average for each Title IV dollar loaned (“principal”), regardless of default rates. Given that the interest accrued while students are in school is included in the principal, we assume that the taxpayer benefits by an amount equal to the interest charged on unsubsidized loans (at 6.8 percent interest rate) and PLUS loans for parents of dependent students and graduate or professional degree students (at 8.5 percent interest rate) disbursed during the period. See the section Funds Paid to Government in the Appendix.

Table 5: More Selective, Higher Investment per Student Institutions Enroll Fewer Students with Pell Grants

| Barron's Rating | Percent Students with Pell Grants | Average Annual Government Subsidy per Student ³¹ |
|----------------------|-----------------------------------|---|
| Non/Less Competitive | 45.36 | \$6,056 |
| Competitive | 32.33 | \$7,189 |
| Very Competitive | 22.43 | \$8,288 |
| Highly Competitive | 15.45 | \$10,625 |
| Most Competitive | 11.29 | \$15,102 |

a better deal than tax-exempt not-for-profit or public institutions.³⁰

One final trend should be highlighted. Our estimates point out that taxpayers are investing far more for each bachelor's degree awarded by the most selective institutions than they are investing in educating students in less selective institutions. But even as taxpayers funnel more money to more selective institutions, the number of students from low-income families who benefit from these higher subsidies declines. This is made clear in Table 5, which shows that the concentration of Pell Grant students falls dramatically with increasing levels of selectivity just as the level of subsidy increases. Combining Pell Grant enrollments by selectivity with levels of taxpayer subsidies shows a perverse pattern: Students from low-income families are concentrated in colleges and universities that get the lowest levels of taxpayer support.

Overall Financial Returns to Taxpayers per Degree

In this final analysis, we estimate the net benefit to the taxpayer for bachelor's graduates from each of the 11 categories of schools by adding the net lifetime returns to taxpayers (lifetime taxes paid by degree holders, from Table 2) to the total cost to taxpayers per bachelor's degree (from Table 3). In Table 6, we see that, in most cases, taxpayers more than share in the added income that graduates earn, making a "profit"

even after netting out the subsidies they put into America's colleges and universities.

Not surprisingly, at every level of selectivity, taxpayers gain less from public institutions than from private ones, whether these are not-for-profit or for-profit. The two categories where schools are on average in the "red" from the taxpayers' perspective include only public institutions. We have noted in the Appendix that our cost estimates for the most selective public institutions (mostly flagship schools) are likely to be the most inflated because IPEDS, our primary data source for costs, does not allow us to estimate separately the state and other subsidies to graduate

Table 6: Net Financial Return or Loss to Taxpayers per Degree: Lifetime Tax Payments Minus Taxpayer Subsidy

| | |
|-----------------------------|-----------|
| Non/Less Competitive | |
| For-Profit | \$60,948 |
| Public | (\$7,458) |
| Not-for-Profit | \$44,143 |
| Competitive | |
| Public | \$4,113 |
| Not-for-Profit | \$49,537 |
| Very Competitive | |
| Public | \$16,944 |
| Not-for-Profit | \$69,988 |
| Highly Competitive | |
| Public | \$22,816 |
| Not-for-Profit | \$84,759 |
| Most Competitive | |
| Public | (\$9,278) |
| Not-for-Profit | \$88,402 |

30 We recognize that taxpayers *choose* to subsidize the education provided by these institutions. However, we believe that funding decisions by taxpayers and their representatives should be informed by better information about the size of these subsidies and, just as important, who is getting them.

31 The average annual government subsidy per student is derived from Appendix Table 8 by adding the total annual benefit (cost) to taxpayers of each of the Barron's ratings and dividing this sum by the total number of students in that rating.

students compared to bachelor's degree students—and these institutions have the highest level of graduate students compared to other public institutions. But even if we adjusted this taxpayer loss, it is clear from a simple profit/loss perspective that public flagships are expensive institutions to run.

Although graduates from “marquee” colleges and universities reap the greatest financial returns, there is a significant return awaiting graduates from even the least selective institutions—those without a widely recognizable brand name, which happen to award the majority of the nation’s bachelor’s degrees.

We recognize that more is involved in evaluating these flagship campuses than simple profit/loss calculations and that we need to consider their importance in generating basic research, producing the next generation of researchers, and creating knowledge—ingredients essential to maintaining the competitiveness of the American economy. These benefits may balance out the taxpayer costs these institutions incur for producing bachelor's degree students, but this is a policy decision for governors, state legislators, and other stakeholders to make, informed by accurate considerations of costs.

Finally, we need to draw attention to the costs incurred by the nation's high college dropout rates. Policymakers in the states and the federal government, along with the nation's leading foundations, are now focusing on a productivity-driven “completion agenda” aimed at increasing the number of Americans with postsecondary credentials. Decreasing the number of college dropouts is important not only to ensure the competitiveness of the American economy in the future, but also because high dropout rates increase the cost of college degrees substantially. In Appendix Table 9, we have calculated how much, on average, the cost per degree could be lowered if the number of dropouts were reduced by 50 percent. Among non/less competitive and competitive public institutions, the cost of the

degree drops by more than \$10,000 (from \$67,000 to \$53,000 and from \$62,000 to \$51,000, respectively). Not surprisingly, a recent study on the cost of dropouts reports that they cost the nation well over \$1 billion each year in taxpayer dollars.³²

Among not-for-profit schools, the savings are much smaller in dollar amounts, but the percentages of the higher cost attributable to the higher dropout rates are about the same as at the less selective public colleges and universities. As expected, the savings from a 50 percent reduction in dropouts decline dramatically as one moves through more selective institutions (i.e., very, highly, and most competitive), where the costs are driven by other factors besides dropout rates. Indeed, a 50 percent reduction in dropouts at Barron's most competitive institutions amounts to savings of no more than 4 percent.

32 Schneider, M. (2010). *Finishing the first lap: The cost of first-year student attrition in America's four-year colleges and universities*. Washington, DC: American Institutes for Research. Retrieved April 13, 2011, from http://www.air.org/files/AIR_Schneider_Finishing_the_First_Lap_Oct101.pdf.

Who Wins? Who Pays?

Given the importance of a college education to joining and staying in the middle class and the high cost of obtaining it, *Who Wins?* and *Who Pays?* are questions being asked today at kitchen tables and in the halls of government throughout the nation. This study shows that the answers are somewhat different than what is commonly found in the media. Much of the current debate about the cost and value of higher education has focused on how much students pay, how much they borrow, and how poorly some of them are being educated. Much less attention is being paid to how well or how badly taxpayers are being served both by the institutions they are helping to fund and by the students they have helped to graduate. This study has sought to rectify this imbalance.

From the taxpayer perspective, the payoffs from the graduates of the schools producing the most graduates, regardless of their status as public, not-for-profit, or for-profit institutions, are substantial.

The answers to *Who Wins?* and *Who Pays?* must be pieced together from several not fully adequate databases that, while available to all, are not easily deciphered. Piecing these disparate data together required us to make

choices from among plausible but often quite different assumptions. Given the importance of the questions at hand, we provide a detailed Appendix explaining our methods and data sources so that readers can weigh the logic behind the methods we used and the assumptions made to reach the conclusions we present.

Among these conclusions, the following stand out:

Q: *Who Wins?*

A: *Students who complete their bachelor's degree, no matter where.*

Despite some arguments that the nation is producing more bachelor's degree recipients than it needs, the labor market is signaling something quite different. A bachelor's degree, whether from a public, a not-for-profit, or a for-profit institution, pays a handsome net financial reward in comparison to a high school diploma—a reward that over a lifetime can range, on average, from a net present value in 2010 dollars of more than \$230,000, at non/less selective not-for-profit colleges, to more than \$550,000 at the most competitive not-for-profit institutions.

While during the first decade after graduation the costs of attending a not-for-profit institution, on average, leave bachelor's graduates with a lower financial return compared to those from public or for-profit institutions, over a lifetime, the highest earnings are found among graduates of the most selective not-for-profit colleges. In other words, a degree from an Ivy League university or a similarly elite not-for-profit campus pays off, as long as the graduate lives out his or her full work life.³³

However, except for institutions in the most selective category, graduates of public colleges and universities have a higher net lifetime return than students in the more expensive not-for-profit institutions. As for bachelor's graduates of for-profit institutions, the value of whose degrees has recently been questioned by the media and some appointed and elected officials, during the first decade, their net returns are on average higher than those of graduates from public institutions of roughly the same or even somewhat higher levels of selectivity, and higher than the net returns to graduates from not-for-profit institutions at all levels of selectivity. Over their lifetime, graduates from for-profit institutions on average have done nearly as well as graduates from public colleges (\$284,000 versus \$306,000) and better, by 21 percent, than graduates from not-for-profit institutions in comparable categories of selectivity—and 14 percent better than graduates of not-for-profit schools in the next higher “competitive” category.

33 As noted earlier, this study does not consider the value added of an education at these institutions—students with the credentials to get into one of these marquee universities may do quite well in the labor market, regardless what school they attended. We also do not consider the substantial differences in earnings between graduates in different fields. Some majors could make the cost of an Ivy League degree impossible to offset even over a work life of 40 years. We also recognize a similar problem in the comparison of the earnings of college graduates versus high school graduates. Because the distribution of high school graduates who choose to attend college is not random, some of the salary gains we observe could be driven by characteristics that are common among those who pursue a college degree rather than being the result of any value that a college education added.

Q: Who Wins?

A: Taxpayers, who make a net profit from bachelor's degree graduates from almost all categories of institutions.

Taxpayers derive significant benefits from the higher wages college graduates earn relative to high school graduates. During the first decade following graduation, when most graduates are still in the early stages of their career, the net return to taxpayers is between \$17,000 and \$30,000 per graduate from schools in most levels of selectivity. The largest taxpayer gain comes from graduates of not-for-profit schools in the most competitive category, where graduates pay on average more than \$37,000 in additional taxes.

The returns to taxpayers via additional tax receipts across the lifetime of bachelor's graduates range from \$52,000 at non/less competitive not-for-profit schools to nearly \$150,000 at the most competitive not-for-profit institutions. Except in the case of graduates from the most competitive not-for-profit institutions, graduates from public institutions, on average, provide a greater return to taxpayers via their income taxes.

The benefit to the taxpayer among graduates from for-profit institutions is, on average, slightly higher than that from graduates from non/less competitive not-for-profit colleges but lower than that from graduates in all other categories of control and levels of selectivity. As with first-decade results, graduates of the most competitive not-for-profit colleges and universities on average return to taxpayers more than graduates from equally selective public institutions.

Q: Who Pays?

A: Taxpayers, whose net return on their total investment in bachelor's degrees varies widely.

While taxpayers derive substantial benefits from the higher wages college graduates earn relative to high school graduates, they also are investing substantial

amounts of money in colleges and universities to gain those benefits—and these investments are skewed toward more elite schools. We estimate that taxpayers are investing around \$108,000 for each degree awarded by the most selective public institutions in our sample, far in excess of the amount they are investing in the degrees of students in non/less competitive public institutions (\$68,000) or even very competitive ones (\$61,000). Taxpayers also subsidize the costs of degrees in not-for-profit institutions, but at much lower levels. But even here, students graduating from the most selective not-for-profits receive far higher taxpayer subsidies than students who attend less selective ones. In contrast, taxpayers *gain* on average approximately \$6,000 per bachelor's degree granted by the for-profit institutions in our study.

When it comes to the overall financial return to taxpayers per degree—that is, when lifetime taxes paid by degree holders are compared to the total cost to taxpayers for each bachelor's degree—we calculate that taxpayers absorb losses producing graduates from public institutions that are classified as non/less competitive and most competitive. Taxpayer financial benefits from graduates of public competitive, very competitive, and highly competitive schools are positive but lower than from graduates from not-for-profit colleges. At the same time, on average, the benefit to taxpayers from graduates of for-profit and not-for-profit institutions, which receive significantly lower taxpayer subsidies, ranges from \$61,000 for the former to \$88,000 for the most competitive not-for-profit schools.

We have documented substantial taxpayer subsidies to students in most colleges and universities—through direct appropriations to public institutions or tax subsidies to not-for-profit colleges. The federal government also supports students directly through the Pell Grant program, which is targeted toward students with financial needs and is designed to allow them to attend college when they might otherwise have not been able to do so. But taxpayer subsidies

in the form of Pell Grants pale in comparison to the size of these other subsidies.³⁴ Moreover, when the percentage of Pell Grant enrollments by selectivity is combined with levels of taxpayer subsidies, we can see that students from low-income families and minority students—composing the fastest growing segment of the population—are concentrated in colleges and universities that get the lowest levels of taxpayer support.

While there may be legitimate reasons supporting these patterns of subsidies across institutions of higher education, we believe that in this time of fiscal shortages and challenges to higher education, debate must be informed by the data in this study.

34 While our focus in this study is not on the “price” of higher education—what students are actually asked to pay (except as an intermediate variable in Appendix Table 7)—the cost to students and their parents is so significant that it cannot be passed unmentioned. Details on how we arrived at the estimates on the annual and total cost of a bachelor's degree can be found in the Appendix (see Appendix Table 7). Here it is enough to underline that the total real cost of a bachelor's degree, the ticket to a middle-class life, ranges on average between \$82,000 at the for-profit colleges in our sample to \$198,000 at the most selective not-for-profit institutions. Meanwhile, the maximum annual Pell Grant in 2010 was \$5,550. As Kevin Carey recently observed in *The Chronicle of Higher Education*, “low-income undergraduates are actually much worse off than equivalent students were 30 years ago. A student without a Pell Grant in 1980 paid less out of pocket to attend a public four-year university than a student with a Pell Grant pays today” (http://chronicle.com/article/44-Billion-Ought-to-Buy-Some/126812/?sid=at&utm_source).

What Follows?

From the data presented in this study, several broad policy considerations seem appropriate:

- **Reward completion and retention.** Given the financial return to graduates for each completed bachelor's degree and the high cost of dropouts, the nation must focus its resources and policies on increasing degree completions and reenrollments. One way to do this is for states to make a substantial share of their appropriations based on performance rather than enrollment. A complementary process is for states to participate in the Alliance of States initiative of Complete College America and actively work to make college completion a top policy priority.³⁵ The U.S. Department of Education can contribute to this process by making continued Pell Grant eligibility subject to periodic performance reviews.³⁶
- **Focus support for completion on less selective institutions.** High dropout rates in less selective public colleges and universities are especially costly to taxpayers. In colleges and universities classified

Given the financial return to graduates for each completed bachelor's degree and the high cost of dropouts, the nation must focus its resources and policies on increasing degree completions and reenrollments.

in the three lowest levels of selectivity, reducing the number of dropouts by half would cut the cost of producing a graduate by more than 20 percent. Efforts to increase completion should be focused on these schools, where the problem of low graduation rates is most severe and where the payoffs are potentially the greatest.

- **Focus support for completion on the neediest students.** If the nation is to retain its competitive edge, it must reverse the current policies that today result in providing the lowest levels of taxpayer support to the institutions that enroll the highest percentage of students from low-income families, nontraditional students, and minority students—the fastest growing segments of the population. Through incentives that affect how appropriations of state support are made and how Title IV funds are administered, states and the U.S. Department

³⁵ See http://www.completecollege.org/alliance_of_states/.

³⁶ For example, see Klor de Alva, J., http://chronicle.com/article/The-Future-of-Pell-Grants-6/126820/?sid=cr&utm_source=cr&utm_medium=en.

of Education should help institutions improve the performance of their at-risk students.

- **Lower cost and increase capacity by supporting high-quality, nontraditional providers.** The Lumina Foundation for Education's *Four Steps to Finishing First in Higher Education* urges states to help expand and strengthen "lower-cost, nontraditional education options" through modification of their regulations so that these "education options...that operate across state lines, on-line institutions, and competency based institutions" can "lower cost to states and the taxpayer."³⁷ While some for-profit colleges and universities already fit this description, other models should also be looked at more closely, including those that are more radical departures from business as usual, such as Straighter Line³⁸ or Carnegie Mellon University's Open Learning Initiative.³⁹ These steps and more need to be taken to transform higher education into an affordable, successful endeavor because, as is becoming clear to many, "business as usual" will no longer work.⁴⁰
- **Better data is essential.** We believe state and federal policy discussions concerning how and who to fund must be informed by reliable data drawn from institutions across all types of control and levels of selectivity. These data must be in the public domain and must address what a degree actually costs both students and taxpayers and who is actually paying for these degrees. This ultimately will require scrapping the antiquated and inadequate federal Integrated Postsecondary Education Data System in favor of a data system based on student-level data that can measure the success of the growing number of "nontraditional" college students, who now make up the majority of postsecondary students in the country.

37 See http://www.collegeproductivity.org/sites/default/files/FourSteps_Step%203_NonTradit-1.pdf.

38 See <http://www.straighterline.com/>.

39 See <http://oli.web.cmu.edu/openlearning/>.

40 See the papers presented at the American Enterprise Institute's conference on "Degrees of Difficulty" available at <http://www.aei.org/event/100346>.

Appendix: Methods, Data Sources, and Tables

The analysis in the main body of the report is divided into two sections. The first analysis, summarized in Tables 1 and 2, estimates the benefits to graduates and to taxpayers. The second analysis focuses on taxpayer costs and is summarized in Tables 3 and 6 in the main text. The discussion in the Appendix follows this two-part division. We begin with a discussion of how we derived our estimates of benefits, followed by a discussion of our estimates of costs.

Calculating Benefits to Graduates and Taxpayers

Data and Sample

We use the U.S. Department of Education's 2007–08 National Postsecondary Student Aid Study (NPSAS: 08) as the sample by which to identify students in colleges and universities pursuing bachelor's degrees and to obtain data on the costs students absorb in earning a bachelor's degree. The NPSAS: 08 sample includes about 114,000 undergraduate students and 14,000 graduate students, randomly selected from more than 1,600 postsecondary institutions. The sample

represents approximately 21 million undergraduate students and 3 million graduate students who were enrolled in postsecondary education between July 1, 2007, and June 30, 2008. To be included in NPSAS:08, students were enrolled at an institution eligible to participate in Title IV federal student aid programs and located in a state, the District of Columbia, or Puerto Rico (NCES 2009166). For this study, we restricted our sample to students pursuing a bachelor's degree, totaling about 65,000 students in the NPSAS: 08 sample.

To calculate financial benefits for students and taxpayers by institution, we needed an estimate of salaries (as a measure of financial return). We used *PayScale.com's* 2010 salary report, which reports the average starting salary and midcareer salary data for bachelor's degree holders from each of 999 schools. We merged these salary data with NPSAS: 08 using each school's UNITID from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). We also added Barron's classification of selectivity to the set of schools. Once we excluded students in schools not classified by Barron's or who

were missing NPSAS: 08 cost data or *PayScale.com* data, 39,139 students remained in our study.⁴¹

To test the representativeness of our sample, we compared student characteristics using the NPSAS full baccalaureate sample and the sample used in our study. As Appendix Table 3 shows, there were few significant differences, and these were substantively small. Most notably, students in our sample come from slightly more affluent families (for example, their expected family contribution is almost \$800 more than students in the full sample) and, therefore, the average Pell Grant is somewhat lower (by about \$67 in the 2007–08 academic year).

Around 85 percent of the undergraduates in NPSAS: 08 for which we have other data are also in schools for which we also have salary data. We reran all cost calculations using the full NPSAS sample and, in Appendix Table 4, compare the results with those from our sample. We found no statistically significant differences.⁴²

Detailed Description of Variables and Calculations

Here, we define the variables used in the analysis of benefits and, where necessary, identify sources of the data.

- *Salary (PayScale.com)*: Includes average base annual salary or hourly wage, bonuses, profit sharing, tips, commissions, overtime, and other forms of cash earnings, as applicable; salary information is provided for both starting employees and midcareer employees. These data are reported at the IPEDS UNITID level.
- *Starting Employees (PayScale.com)*: Full-time employees with five years of experience or less in their career or field who hold a bachelor's

degree and no higher degree. The median starting employee in the *PayScale.com* data set is 25 years old and has two years of experience.

- *Midcareer Employees (PayScale.com)*: Full-time employees with at least 10 years of experience in their career or field who hold a bachelor's degree and no higher degrees. The median midcareer employee is 42 years old and has 15 years of experience.
- *Annual Net Price (NPSAS: 08)*: We calculate the net price using NPSAS: 08 variables: total student budget (BUDGETAJ) minus total aid (TOTALD) and weight each student observation by the appropriate NPSAS: 08 weight.⁴³ The net price represents the estimated “out-of-pocket” expense to students remaining after all financial aid received for the 2007–08 academic year. Because these data are from the 2007–08 academic year, they are converted to 2010 dollars using change in the consumer price index.⁴⁴
- *Total Net Price*: To calculate total price, we take into account the average number of years it takes a student to graduate with a bachelor's degree. Using the Integrated Postsecondary Education Data System (IPEDS), we begin with the four-year, five-year, and six-year graduation rates of students entering each school in the fall of 2002.⁴⁵ We then calculate a weighted total cost based on the four-, five-, and six-year graduation rates:

43 This and all other calculations use student-level NPSAS: 08 weights as appropriate.

44 We use the CPI for tuition and textbooks for tuition cost and cost of books, respectively, to bring costs reported in the 2007–08 school year to their 2010 equivalent in terms of purchasing power. Our primary interest is to compute the difference between the net present value of earnings and costs of attending schools in different categories. Therefore, we adjust all dollars to their 2010 values to facilitate the comparison of different income streams. We do not use the “replacement value” of what it would cost to earn a college degree today. Our adjustment understates the level of costs borne by students in 2010 given that the increase in college tuition and fees between 2008 and 2010 was higher than the change in the CPI (see <http://blog.american.com/?p=24510>).

45 Most students who graduate do so within six years of their initial enrollment. Those who take longer to graduate were not traditionally captured by available IPEDS data and are not included in our calculations.

41 The students in our sample represent 60 percent of students pursuing undergraduate degrees.

42 In Appendix Table 4, we present the results only for schools in the “competitive” category—the modal category for schools classified by Barron's. We found no differences in other categories, and full results are available upon request.

Total price = Annual net price × estimated number of years to degree⁴⁶

- *Annual Foregone Wages* (U.S. Census Bureau and NPSAS: 08): These equal the average annual opportunity cost of lost wages due to enrollment in college rather than entering the labor force after completing high school. This is calculated as the difference between the wages of a high school graduate and the income students report while enrolled in a bachelor's degree program. We use mean earnings for adults age 18–24 with a high school diploma (including GED), which according to the 2010 U.S. Census is \$16,238, as the proxy of what a student enrolled in a four-year degree program would have made if she or he had not enrolled in college. Again, we convert the income students report while enrolled to 2010 dollars first before taking the difference.
- *Total Foregone Wages*: Depending on the four-, five-, and six-year graduation rates of students entering the specific school in the fall of 2002, we calculate the total foregone wages using the following formula converted into 2010 dollars:

$$\text{Total foregone wages} = \text{Annual foregone wages} \times \text{estimated number of years to degree}$$
- *Annual Cost of the Bachelor's Degree*: This equals the annual net price plus annual foregone wages.
- *Total Cost of the Bachelor's Degree*: This equals total price plus total foregone wages, adjusted for time to complete the degree.

With these variables, we can now compute our key outcome variables.

- *Average Financial Return to Students by a Bachelor's Degree*: This is the net present value (NPV) of the income stream earned by a graduate starting at

46 Using four-, five-, and six-year graduation rates of students entering each school in the fall of 2002, we calculate estimated years to degree for each education sector based on their four-, five-, and six-year graduation rates using the following formula: (4-year graduation rate/total graduation rate) × 4 + (5-year graduation rate/total graduation rate) × 5 + (6-year graduation rate/total graduation rate) × 6.

age 25 projected forward through age 65. We know that some students may have begun their work lives earlier, and others may still not have finished their degrees by age 25, but we chose 25 years of age as the starting point because this is the median age for recent graduates in *PayScale.com's* data set.

- We calculate first decade and lifetime returns, respectively, building on the methodology used by the U.S. Census Bureau (Day & Newburger, 2002) as modified by Kantrowitz (2007).⁴⁷ We estimate expected earnings over an individual's work life using various expected annual growth rates in salaries for college graduates calculated for each school sector.⁴⁸ We apply these growth rates starting with salaries at age 25 through age 42 (the median midcareer employee age in *PayScale.com's* report). From that age on, we use growth rates calculated using U.S. Census income data to estimate the salary levels in the salary growth profile until age 65 (following the U.S. Census, we are using a work life of 40 years).
- To calculate the net present value of this calculated stream of earnings, we used the 2010 30-year Treasury bill interest rate as the discount rate: 4.5 percent.⁴⁹

47 See Day, J. C., & Newburger, E. C. (2002). *The big payoff: Educational attainment and synthetic estimates of work life earnings*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. Retrieved April 13, 2011, from <http://www.census.gov/prod/2002pubs/p23-210.pdf>. In addition, see Kantrowitz, M. (2007). The financial value of a higher education. *NASFAA Journal of Student Financial Aid*, 37(1), 19–27. Retrieved April 13, 2011, from <http://www.nasfaa.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=430>.

48 Using the starting salary at age 25 and midcareer salary at age 42 from *PayScale.com*, we estimated growth rate for this period for each school sector. Then, we used mean earnings from the U.S. Census for older age groups through age 65 to estimate the average income growth rates by decade. Once growth rates are calculated, we simulated salary profiles using the starting salary and growth rate for each school sector and then calculated their present values using the annual discount rate accordingly. 2009 mean earnings are from the U.S. Census website: http://www.census.gov/hhes/www/cpstables/032010/perinc/new04_001.htm.

49 See <http://www.whitehouse.gov/sites/default/files/omb/assets/a94/dischist.pdf>. The growth rate, annual income stream, and annual present value of income are available upon request.

- Once the income NPV is calculated, we deduct the total cost for an individual to obtain the bachelor's degree, the estimated NPV of federal and state income taxes, and the opportunity costs of going to college compared to the earnings of a high school graduate. This is the average financial return to the graduate. A positive value means the college graduate has a net benefit from the college education compared with a high school graduate.
- *Average Financial Return to the Taxpayers by a Bachelor's Degree Versus High School Diploma:* While most of the financial rewards to earning a college degree accrue to the individual, the federal and state governments “share” in these benefits by collecting taxes on the larger income stream.⁵⁰ The average financial return to the taxpayers equals the NPV of the average income tax (including both federal and state income taxes) an individual with a bachelor's degree will pay for the first decade and over his or her lifetime minus the same sums calculated for a high school graduate. In order to estimate financial return to taxpayers, we calculate tax as percentage of adjusted gross income (AGI) using the most recently available AGI and average total income tax data from the Internal Revenue Service.⁵¹ See Appendix Table 5 for these rates. As noted in the body of the study, we increase the additional federal tax payments by an additional 25 percent, which is the national average of state income tax collections relative to federal income tax collections.⁵²
- *Net Financial Return to Students by a Bachelor's Degree Versus a High School Diploma:* Our goal is to estimate the financial returns of a bachelor's degree compared to a high school graduate. Once we calculate the average financial returns to students, we further deduct the first decade and lifetime returns for individuals with a high school diploma (or GED). We present financial returns to a high school graduate and to taxpayers in Appendix Table 6.

We present the intermediate values for graduates from each of the 11 categories of institutions, and, at the bottom of Appendix Table 7, we present the values of the key outcome measures: the net financial return to the graduates and the average financial return to the taxpayers versus a high school degree. These are reported in the main body of the report in Tables 1 and 2.

Calculating Costs to Taxpayers

In the second part of our analysis, we estimate the costs of bachelor's degrees from the perspective of the taxpayers. To do this, we look at the flow of government money to each school and the return of funds to the government through taxes and other means.

We draw heavily from the IPEDS Finance survey, which has different reporting forms based mainly on which standards were used for each school's internal accounting: (1) public institutions report according to Governmental Accounting Standards Board (GASB) Statements 34 and 35, and (2) private institutions report according to Financial Accounting Standards Board (FASB) standards.⁵³ To make figures comparable, we combined several categories (described below) and calculated the total funds received from the government, the total amount paid to the government, and the difference between these. To make the results consistent and comparable with the NPSAS: 08 data used in the first part of the report, we use IPEDS data

50 Note that these tax payments are calculated on the additional incomes earned by college graduates relative to the taxes paid by high school graduates.

51 This is from IRS, 2008, “Appendix Table 1.1 Selected Income and Tax Items, by Size and Accumulated Size of Adjusted Gross Income, Tax Year 2008.” As of this writing, more recent data have not yet been released.

52 State tax data for 2010 are drawn from <http://www.census.gov/govs/qtax/>; Table 3 Latest Tax Collections by State.

53 In IPEDS, different forms are provided to institutions depending on control: Parts A through E of the public GASB reporting form, the private not-for-profit FASB reporting form, and the private for-profit F-3 reporting form.

collected in spring 2008 and then adjust them to 2010 dollars. We use the same set of 623 schools divided into the 11 categories we use throughout this report.

IPEDS does not report revenue or expense separated by undergraduate or graduate student status. Therefore, we first use the total reported cost divided by all FTE students in the school year to obtain annual cost per student. Because graduate education is more expensive than undergraduate education, our cost to taxpayers per undergraduate degree is likely overestimated. Among public institutions, this bias is most severe for highly and most selective institutions, where more than 20 percent of students are graduate students; there is little difference among the three less selective levels of public colleges and universities, where 85 percent or more of the students are undergraduates. Among not-for-profit schools, the pattern is less linear, but among the most selective not-for-profits, the costs are most overstated because more than one quarter of the students in these institutions are graduate students. In for-profit institutions, costs are also likely overstated because more than 20 percent of their students are at the graduate level—although the bias here may not be as severe because for-profit institutions tend not to invest heavily in the most expensive graduate degree programs, such as those in the natural and physical sciences.

Detailed Description of Variables and Calculations

In this section, we define the variables used in the analysis presented in Appendix Table 8:

Number of Students (IPEDS): This is the reported 12-month full-time equivalent (FTE) undergraduate enrollment and reported 12-month full-time equivalent (FTE) graduate and first professional degree enrollment.

- *Public and Private Not-for-Profit Sector*: Full-time equivalent (FTE) as reported in the IPEDS Fall 2008 submission was used given that state and federal governments use this figure to allocate resources.
- *For-Profit Sector*: The 12-Month Unduplicated Headcount was used; note that all students in this sector are considered “fulltime” for purposes of IPEDS submissions.
- *Percentage of Undergraduate Students*: Because we cannot differentiate expenditures between undergraduate and graduate programs, we report the percentage of undergraduate students in each of our 11 analytic categories to indicate the size of potential cost differentials that cannot be accounted for in our analyses.⁵⁴

Funds Received From Government

- *Direct Government Support/Student Grants for Tuition* (IPEDS):
 - Government Support to Public Institutions: Federal operating grants and contracts plus Federal appropriations
 - Government Support to Private Not-for-Profit Institutions: Federal grants and contracts plus Federal appropriations
 - Government Support to Private For-Profit Institutions: Sum of Pell, Academic Competitiveness, and National SMART grants
- *State and Local Subsidies* (IPEDS): State and local support received by institutions—includes state grants and contracts plus local/private grants and contracts as reported by IPEDS. Public and private not-for-profit institutions also receive state and local appropriations, while private for-profit institutions do not.
- *Federal Government Subsidies (Excluding Student Grants)*: The federal government traditionally provided two types of direct student loans: subsidized and

54 A recent State Higher Education Executive Officers (SHEEO) report suggested that undergraduate instruction averages around two thirds of the costs of graduate instruction. However, we did not use this finding because that study used only public institutions in four states. See Conger, S. B., Bell, A., & Stanley, J. (2010). *Four-state cost study*. Boulder, CO: State Higher Education Executive Officers. Retrieved April 13, 2011, from http://www.sheeo.org/finance/SHEEO_Cost%20Study%20Report_2010.pdf.

unsubsidized. The primary difference is the point at which interest begins to accrue. No interest accrues on a subsidized loan and no principal is due until the end of the six-month grace period that begins after a student graduates, leaves the institution, or drops below half-time enrollment (six units). Therefore, the government subsidized Title IV loans (FFEL⁵⁵ and Direct Loans) represent a cost to the federal government and the taxpayers. We estimate the costs of this subsidy to be the equivalent of the average three-month Treasury bill rate 2.91 percent⁵⁶ times the total subsidized loan disbursements made during academic year 2007–08.⁵⁷ As with other calculations, this was converted into 2010 dollars.

- Total subsidies via students = (Amount of subsidized Direct Loan + amount of subsidized Federal Family Education Loan) × 2.91%
- *Research Expense* (IPEDS): These expenditures are included in funds received from government. Because they are funds dedicated for specific activities that usually have little to do with bachelor degree production, they are subtracted from the amount received from government. Note that although a share of the state subsidy for the public research institutions also supports their research mission, due to the absence of a database by which to calculate these research-related amounts, we did not subtract that share from the amount received from government.

Funds Paid to Government

- *Accruing Principal*: This is what the student must pay as interest on non-subsidized loans while they are still in school. Given that this interest, accrued while students are in school, is included in the principal, we assume that the taxpayer benefits by an amount equal to the interest charged on this and any other types of loans while the student is in school.⁵⁸ We did not calculate the interest earned on unsubsidized and PLUS (Parent and Grad) loans that accrued while the student was in school on an NPV basis because these dollars are rolled into the “principal” loan balance in that same period and subject to future payments of interest. Because the government uses collection methods that are hard for an individual to avoid (e.g., wage garnishment), we assume that the government collects the full principal owed and do not discount the interest earned.⁵⁹ This is consistent with the Federal Budget, which also assumes that the government collects 100 percent on average for each Title IV dollar loaned (“principal”), regardless of default rates.⁶⁰ We used historical data from 2007–08 for all the input components.

We combine taxes foregone and taxes paid to measure the net tax flow between institutions and government. We are likely overstating the extent of foregone taxes because some institutions make voluntary payments in

55 The Federal Family Education Loan (FFEL) Program ended in 2010.

56 The average three-month Treasury bill rate is calculated as the average of Three-Month Treasury Constant Maturity Rates from June 2008 to July 2009. Data were obtained from Board of Governors of the Federal Reserve System (<http://www.treasury.gov/offices/domesticfinance/debt-management/interest-rate/index.html>).

57 These data are from the Federal Students Aid website: <http://federalstudentaid.ed.gov/datacenter/programmatic.html>. Under the “Loan Volume” heading, there are two programs listed—the Direct Loan and Federal Family Education Loan Program(s). Under each program is a drop-down menu; “AY2007–2008, Q4” was selected for each, and the following report(s) were downloaded: DL_Dashboard_AY2007_2008_Q4.xlsx and FL_Dashboard_AY2007_2008_Q4.xlsx. Amounts were pulled from the “Award Year Summary” tab, and, for each relevant category (Subsidized, Unsubsidized, Parent PLUS, and Grad PLUS), the amounts listed in the “\$ of Disbursements” column were used in the calculation.

58 We calculate the interest paid by the type of loan issued and the prevailing interest rate in 2008 based on the program funding source: unsubsidized loans: 6.8 percent; Parent PLUS: 8.4 percent for not-for-profit and for-profit; 8.2 percent for public institutions; Grad PLUS: 8.5 percent for not-for-profit and for-profit; 8.3 percent for public institutions.

59 In addition, while one could argue that these future interest dollar payments could be discounted, we did not take them into consideration here because of the limitations on accurately gathering the measure we would need, such as average length student loans outstanding, average student loan balances, and the like. What we do know, as noted here, is that the government collects 100 percent of the principal balance, and that is all that is included in our analysis.

60 We are using a uniform 100 percent rate, although the rates likely vary across school types. The government does not report its collection rates by individual schools or by sector. In addition, the recovery rate on defaulted loans is 112 percent of the default claim (gross recovery rate) and 85 percent net of collection charges on an NPV basis.

lieu of property taxes, but IPEDS does not collect these data, and we have found no other central data source that reports these payments.

- *Taxes Paid/Foregone Taxes:* Public and private not-for-profit institutions are tax-exempt and do not pay tax on investment income, increases to endowments (gifts), or operating revenues. For-profit institutions pay sales tax on revenues (which include Pell and Title IV loans) and income taxes on operating profits and investment income. In this study, we treat the lack of tax payments as a cost to the taxpayers while payment of taxes represents a benefit received by the taxpayers.⁶¹
- *Foregone Taxes on Investment Income:* According to the IRS, the standard federal corporate tax rate is 35 percent for income greater than \$18.3 million.⁶² State corporate tax rates vary from zero (e.g., in Nevada and Wyoming) to 9.99 percent in Pennsylvania. We use 5 percent as an estimate of the average state corporate tax rate across the nation and apply this rate to all education sectors.
 - Foregone taxes on investment income = Investment income \times 40% (35% federal plus 5% state tax)
- *Foregone Taxes on Endowment Contributions:* We assume that contributors to university endowments would generate taxable income levels that fall at least in the 25 percent federal tax brackets. It is likely that many of the individuals making contributions have taxable income levels that would fall in higher tax brackets, but we use this rate as a conservative estimate for calculating these foregone taxes.
 - Foregone taxes on endowments = Grants or gifts \times 25%
- *Foregone Sales and Other Taxes:* Because we do not have sufficient information to calculate exact foregone sales and use taxes for public and private not-for-profit universities, we use a 0.5 percent use tax rate to estimate the foregone sales and other taxes for other education sectors. The actual sales and other taxes would likely be higher for public and private not-for-profit universities, if they were charged.⁶³
 - Foregone sales and other taxes = Taxable revenue \times 0.5%
- *Total Taxes Paid:* Private for-profit universities pay corporate tax on investment income, income tax on total taxable revenue, and sales tax. As noted earlier, we consider payment of taxes a benefit received by the taxpayers. Total taxes paid equal the sum of:
 - Tax on Investment Income = Investment income \times (35% + 5%)
 - Tax on Corporate Profits = Taxable revenue \times 10.8%
 - Sales and Other Taxes = Taxable revenue \times 0.5%

We sum these numbers and adjust the 2008 numbers for inflation to create a measure of the total amount paid to the government in 2010 dollars.

- *Total Annual Benefit (Cost) to Taxpayers:* This is the sum of money paid to and money received from governments as measured above, in 2010 numbers.

With these overall sums, we calculate an *annual taxpayer benefit/cost* and then a benefit/cost per successful degree.

- *Total Annual Benefit (Cost) per Student:* Here, we divide the total annual benefit by the number of FTE students.

To convert this annual cost into a cost per bachelor's degree, we need to take into account the fact that many students fail to graduate. We first calculate the cost incurred by each graduate and then add an estimate of the costs incurred by dropouts.

61 We do not consider foregone taxes on operating revenues received by public or not-for-profit institutions because they have none, given that they are not organized as revenue-generating entities.
 62 Federal corporate tax rate data is obtained from <http://www.irs.gov/pub/irs-soi/02corate.pdf>; state corporate tax rate data is obtained from http://www.metrodenver.org/files/documents/site-selection/taxes/Tax_Corp_IncStateTax08.pdf and <http://www.taxfoundation.org/taxdata/show/230.html>.

63 This and the 10.8 percent corporate tax rate we use below are based on data obtained from a large for-profit institution.

IPEDS reports four-, five-, and six-year graduation rates.⁶⁴ By multiplying this graduation rate by the Graduate Rate Survey (GRS) cohort, we know the number of students who completed in each of these years. We multiply the number of students by the annual cost per student times the number of years to graduation. Summing gives us the cost incurred to produce a graduate within the six-year window defined by the Student-Right-To-Know (SRK) and Campus Security Act of 1990 (codified in 20 U.S.C. § 1092; U.S. Public Law 101-542).

We also include the costs incurred by students who do not graduate. IPEDS reports a first-year retention rate. We subtract this from 100 percent to get an estimate of the dropout rate. We multiply this rate by the size of the GRS cohort to calculate the number of students who dropped out in Year 1. Unfortunately, IPEDS does not report retention rates after the first year. However, using the Beginning Postsecondary Students (BPS) survey, Nate Johnson has calculated nationwide actual attrition rates in each year beginning in Year 2 and ending in Year 6.⁶⁵ Because we do not have annual rates for individual campuses, we use these national rates to estimate the number of dropouts each year in each campus. The rates (and hence the numbers) of dropouts fall dramatically over time, but the amount of money spent on each student increases year after year (i.e., a student who drops out after three years costs more than a student who drops out after one year). We add these additional costs to the direct outlays on each graduate. These costs are standardized by the number of graduates, which is our estimate of the cost per bachelor's degree.

Weighted Total Benefit/Cost to Taxpayers per Bachelor's Degree: The annual cost per student times a weighted graduation rate plus the annual cost per student times the number of dropouts in Years 1–6.

We present the intermediate values for graduates from each of the 11 categories of institutions, and, at the bottom of Appendix Table 8, we present the values of the key outcome measure: the weighted total benefit/cost to the taxpayers per degree.

⁶⁴ The incremental percentage of students who graduate beyond the sixth year is negligible and would not affect the results in any significant way.

⁶⁵ Johnson, N. (2011, March). *Unfinished degrees*. Paper prepared for the Delta Project on Postsecondary Education Costs, Productivity, and Accountability.

Appendix Tables

Appendix Table 1: Barron's Levels of Selectivity

| Degree of Admissions Competitiveness | General Criteria | Institutions* (Percentage) | Students* (Percentage) |
|--------------------------------------|--|----------------------------|------------------------|
| Noncompetitive | Only require evidence of graduation from an accredited high school; acceptance of 98% or more of applicants | 78 (5.6) | 325,332 (4.0) |
| Less Competitive | Median freshman test scores generally below 500 on the SAT and below 21 on ACT; admit students with averages below C who rank in top 65% of the graduating class; admit 85% or more of applicants | 185 (13.4) | 713,321 (8.8) |
| Competitive | Median freshman test scores between 500 and 572 on the SAT and between 21 and 23 on ACT; minimum high school GPAs between C and B-; accept between 75% and 85% of applicants | 660 (47.7) | 3,372,603 (41.5) |
| Very Competitive | Median freshman test scores between 573 and 619 on the SAT and between 24 and 26 on ACT; average high school GPAs no less than B-; accept between 50% and 75% of applicants | 274 (19.8) | 2,025,954 (24.9) |
| Highly Competitive | Median freshman test scores between 620 and 654 on the SAT and between 27 and 28 on ACT; average high school GPAs no less than B; accept between 33% and 50% of applicants | 107 (7.7) | 1,050,497 (12.9) |
| Most Competitive | Median freshman test scores between 655 and 800 on the SAT and 29 and above on ACT; high school rank in top 10% to 20% and average high school GPAs no less than B+; accept fewer than 33% of applicants | 81 (5.8) | 641,852 (7.9) |
| Total | | 1,385 | 8,129,559 |

* Hess, F. M., Schneider, M., Carey, K., & Kelly, A. P. (2009). *Diplomas and dropouts: Which colleges actually graduate their students (and which don't)* (Table A1). Washington, DC: American Enterprise Institute. Retrieved April 13, 2011, from <http://www.aei.org/docLib/Diplomas%20and%20Dropouts%20final.pdf>.

Appendix Table 2: Examples of Institutions in Each Category

| | State | Name of Institution |
|-----------------------------|----------------------|---|
| Non/Less Competitive | | |
| For-Profit | | |
| 108232 | California | Academy of Art University |
| 113607 | California | DeVry University-California |
| 126827 | Colorado | Colorado Technical University |
| Public | | |
| 100654 | Alabama | Alabama A & M University |
| 110547 | California | California State University-Dominguez Hills |
| 127565 | Colorado | Metropolitan State College of Denver |
| Not-for-Profit | | |
| 128744 | Connecticut | University of Bridgeport |
| 152992 | Iowa | Briar Cliff University |
| 190770 | New York | Dowling College |
| Competitive | | |
| Public | | |
| 100751 | Alabama | The University of Alabama |
| 110671 | California | University of California-Riverside |
| 133669 | Florida | Florida Atlantic University |
| 154095 | Iowa | University of Northern Iowa |
| Not-for-Profit | | |
| 131520 | D.C. | Howard University |
| 185572 | New Jersey | Monmouth University |
| 188429 | New York | Adelphi University |
| Very Competitive | | |
| Public | | |
| 110644 | California | University of California-Davis |
| 126614 | Colorado | University of Colorado-Boulder |
| 151351 | Indiana | Indiana University-Bloomington |
| 236948 | Washington | University of Washington |
| Not-for-Profit | | |
| 186584 | New Jersey | Seton Hall University |
| 191649 | New York | Hofstra University |
| 230038 | Utah | Brigham Young University |
| Highly Competitive | | |
| Public | | |
| 139755 | Georgia | Georgia Institute of Technology |
| 145637 | Illinois | University of Illinois at Urbana-Champaign |
| 170976 | Michigan | University of Michigan |
| 174066 | Minnesota | University of Minnesota |
| Not-for-Profit | | |
| 153384 | Iowa | Grinnell College |
| 164988 | Massachusetts | Boston University |
| 228875 | Texas | Texas Christian University |
| Most Competitive | | |
| Public | | |
| 110662 | California | University of California-Los Angeles |
| 199120 | North Carolina | University of North Carolina-Chapel Hill |
| 234076 | Virginia | University of Virginia |
| Not-for-Profit | | |
| 130794 | Connecticut | Yale University |
| 131496 | District of Columbia | Georgetown University |
| 164465 | Massachusetts | Amherst College |
| 166027 | Massachusetts | Harvard University |

Appendix Table 3: Selected Student Characteristics from NPSAS Full Sample and the Restricted Sample Used in the Report

| | Full NPSAS Sample | Restricted Sample Used for Analysis | Difference |
|---|----------------------|-------------------------------------|---------------------|
| | Mean (SD) | Mean (SD) | (SE) |
| Expected Family Contribution (EFC) | \$11,052 (15,441) | \$11,838 (15,984) | \$786* (94.17) |
| Cumulative Amount of Pell Grant Funds Ever Received | \$3,806 (5,701) | \$3,558 (5,563) | -\$247* (33.90) |
| Total Amount of Federal Pell Grants Received During the 2007-2008 Academic Year | \$1,095 (1,627) | \$1,027 (1,599) | -\$67* (9.70) |
| Dependent Student's Parents' Total Income | \$80,095 (64,269) | \$83,011 (65,521) | \$2915* (478.14) |
| Demographic | | | |
| Age (Years) | 24.08 (7.23) | 23.71 (6.86) | -0.37* (0.042) |
| Gender (Male) | 43.80% (49%) | 44.72% (49%) | 0.92%* (0.002) |
| GPA (4.0 Scale) | 3.10 (0.66) | 3.11 (0.64) | 0.01 (0.39) |
| Race/Ethnicity | | | |
| Percent White | 74% (43.74%) | 76% (42.74%) | 1.72% (0.2)* |
| Percent Black | 15% (35.82%) | 13% (34%) | -2% (0.2)* |
| Percent Hispanic | 11% (31.75%) | 9% (29.06%) | -2% (0.2)* |
| Number of Observations | 64,951 | 39,139 | |

Note: Significance level: *p<0.01
Standard deviations are in parentheses below means.
Standard errors are in parentheses below differences.

Appendix Table 4: Comparing Results Using Full Sample and Sample Where Salary Data Are Available⁶⁶

| Average Cost of Four-Year Bachelor's Degree for Student | Barron's Competitive | | | |
|---|--|----------------------------------|--|----------------------------------|
| | Only If Salary Data Are Available (Current Sample) | All Students Pursuing BA Degrees | Only If Salary Data Are Available (Current Sample) | All Students Pursuing BA Degrees |
| | Public | Public | Not-for-Profit | Not-for-Profit |
| Annual Tuition, Fees, and Books | 6,125 | 6,165 | 17,147 | 17,343 |
| Total Tuition, Fees, and Books | 30,876 | 31,045 | 76,858 | 78,288 |
| Annual Foregone Wages | 11,027 | 11,052 | 11,719 | 11,834 |
| Total Foregone Wages | 56,103 | 56,159 | 52,763 | 53,645 |
| Annual Cost of the Bachelor's Degree | 17,152 | 17,218 | 28,866 | 29,177 |
| Total Cost of the Bachelor's Degree | 86,979 | 87,205 | 129,621 | 131,933 |

66 We report data only for schools in the competitive category. No differences were found among schools in other categories. Full results are available upon request.

Appendix Table 5: Tax Rates Used in Calculating Returns to Taxpayers

| | | 2008 |
|---------------|--------------|--------------------------|
| Salary | Under | Tax as Percentage of AGI |
| \$1 | \$5,000 | 5.83% |
| \$5,000 | \$10,000 | 2.67% |
| \$10,000 | \$15,000 | 2.94% |
| \$15,000 | \$20,000 | 3.81% |
| \$20,000 | \$25,000 | 5.19% |
| \$25,000 | \$30,000 | 6.23% |
| \$30,000 | \$40,000 | 6.83% |
| \$40,000 | \$50,000 | 7.53% |
| \$50,000 | \$75,000 | 8.53% |
| \$75,000 | \$100,000 | 9.30% |
| \$100,000 | \$200,000 | 12.69% |
| \$200,000 | \$500,000 | 19.59% |
| \$500,000 | \$1,000,000 | 24.06% |
| \$1,000,000 | \$1,500,000 | 24.80% |
| \$1,500,000 | \$2,000,000 | 24.96% |
| \$2,000,000 | \$5,000,000 | 24.79% |
| \$5,000,000 | \$10,000,000 | 23.96% |
| >\$10,000,000 | | 21.06% |

Appendix Table 6: First Decade and Lifetime Returns of High School Graduates

| | |
|---|-----------|
| Net Present Value of Future Income Stream for Students Earning Only a High School Diploma/GED | |
| First Decade Income NPV | \$269,198 |
| Lifetime Income NPV | \$658,448 |
| Net Present Value of Future Income Tax Paid by Students Earning Only a High School Diploma/GED | |
| First Decade Income Tax NPV | \$22,007 |
| Lifetime Income Tax NPV | \$57,722 |

Appendix Table 7: Financial Returns to Students and Taxpayers

| | Barron's Noncompetitive and Less Competitive | | | Barron's Competitive | | Barron's Very Competitive | | Barron's Highly Competitive | | Barron's Most Competitive | |
|--|--|-------------|----------------|----------------------|----------------|---------------------------|----------------|-----------------------------|----------------|---------------------------|----------------|
| | For-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit |
| Starting Salary | \$43,215 | \$41,108 | \$39,402 | \$41,123 | \$40,551 | \$43,452 | \$44,072 | \$47,436 | \$45,551 | \$47,246 | \$51,535 |
| Mid-Career Salary | \$66,548 | \$68,962 | \$65,567 | \$72,181 | \$68,314 | \$77,739 | \$78,100 | \$87,289 | \$86,334 | \$87,628 | \$99,160 |
| Number of Observations | 1,007 | 3,479 | 778 | 12,076 | 4,871 | 7,111 | 3,516 | 2,489 | 1,816 | 310 | 1,686 |
| Average Cost of Bachelor's Degree for Student | | | | | | | | | | | |
| Annual Budget Minus Annual Aid | \$8,752 | \$8,077 | \$10,510 | \$9,075 | \$11,897 | \$10,926 | \$15,004 | \$13,270 | \$22,196 | \$14,222 | \$29,565 |
| Total Budget Minus Total Aid | \$39,282 | \$42,801 | \$50,296 | \$46,066 | \$53,461 | \$52,923 | \$67,259 | \$61,805 | \$96,756 | \$62,003 | \$125,770 |
| Annual Forgone Wages | \$9,791 | \$10,974 | \$11,025 | \$11,027 | \$11,719 | \$11,521 | \$12,457 | \$11,684 | \$12,567 | \$12,602 | \$12,526 |
| Total Forgone Wages | \$42,992 | \$57,893 | \$53,096 | \$56,103 | \$52,763 | \$56,064 | \$55,832 | \$54,718 | \$54,540 | \$55,380 | \$53,468 |
| Annual Cost of the Bachelor's Degree | \$18,543 | \$16,851 | \$24,281 | \$17,792 | \$30,659 | \$19,855 | \$35,863 | \$22,234 | \$43,364 | \$23,601 | \$46,405 |
| Total Cost of the Bachelor's Degree | \$82,274 | \$88,875 | \$115,788 | \$90,208 | \$137,659 | \$96,307 | \$159,146 | \$103,859 | \$188,428 | \$103,483 | \$197,962 |
| Average Financial Return to Student by a Bachelor's Degree | | | | | | | | | | | |
| First Decade | \$349,692 | \$334,009 | \$288,607 | \$338,358 | \$280,000 | \$359,031 | \$301,422 | \$397,281 | \$296,941 | \$396,793 | \$353,582 |
| Lifetime | \$996,997 | \$1,025,012 | \$945,179 | \$1,064,181 | \$964,735 | \$1,141,893 | \$1,087,340 | \$1,278,190 | \$1,170,147 | \$1,281,649 | \$1,357,642 |
| Average Financial Return to the Taxpayers by a Bachelor's Degree vs. a High School Diploma | | | | | | | | | | | |
| First Decade | \$20,958 | \$19,623 | \$17,350 | \$20,686 | \$19,110 | \$23,883 | \$23,889 | \$30,263 | \$28,060 | \$30,175 | \$37,297 |
| Lifetime | \$54,842 | \$60,160 | \$52,173 | \$66,772 | \$58,262 | \$78,183 | \$78,669 | \$97,177 | \$93,653 | \$98,728 | \$147,134 |
| Net Financial Return to Student for a Bachelor's Degree vs. a High School Diploma | | | | | | | | | | | |
| First Decade | \$59,536 | \$40,786 | (\$2,343) | \$44,072 | (\$12,710) | \$61,549 | \$3,933 | \$93,418 | (\$4,719) | \$93,018 | \$42,685 |
| Lifetime | \$283,707 | \$306,404 | \$234,557 | \$338,961 | \$248,025 | \$405,261 | \$350,222 | \$522,565 | \$418,046 | \$524,473 | \$552,060 |

Appendix Table 8: Net Cost or Benefit to Taxpayers per Degree

| | Barron's Noncompetitive and Less Competitive | | | Barron's Competitive | | | Barron's Very Competitive | | | Barron's Highly Competitive | | | Barron's Most Competitive | | |
|---|--|-------------------|----------------|----------------------|-----------------|--------------------|---------------------------|-------------------|-----------------|-----------------------------|-------------------|--------|---------------------------|--|--|
| | For-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | | |
| Number of Students | 106,755 | 582,785 | 67,997 | 1,889,168 | 503,017 | 1,251,948 | 416,400 | 593,319 | 253,750 | 96,018 | 433,570 | | | | |
| Percentage of Undergraduate Students | 78% | 88% | 76% | 86% | 81% | 85% | 82% | 78% | 86% | 76% | 73% | | | | |
| Amount Received from Government | | | | | | | | | | | | | | | |
| Student Grants for Tuition | \$163,670,279 | \$841,616,851 | \$43,670,278 | \$3,757,499,727 | \$571,984,411 | \$5,483,561,436 | \$462,946,171 | \$4,451,675,913 | \$519,692,749 | \$1,273,763,086 | \$8,817,359,712 | | | | |
| State and Local Subsidies | \$34,217,035 | \$4,300,786,526 | \$18,267,346 | \$15,752,954,377 | \$145,503,201 | \$13,133,082,423 | \$169,459,595 | \$9,003,602,567 | \$116,754,613 | \$1,921,824,612 | \$862,473,154 | | | | |
| Federal Government Subsidies (excluding student grants) | \$45,961,686 | \$36,495,991 | \$6,038,212 | \$108,481,276 | \$45,662,237 | \$65,041,734 | \$32,562,358 | \$28,403,024 | \$17,591,414 | \$4,395,634 | \$24,109,769 | | | | |
| Sum Amount Received from Government | \$243,849,000 | \$5,178,899,368 | \$67,975,836 | \$19,618,935,380 | \$763,149,849 | \$18,681,685,593 | \$664,968,124 | \$13,483,681,504 | \$654,038,776 | \$3,199,983,332 | \$9,703,942,635 | | | | |
| Total Amount Received from Government In 2010 Dollars | \$246,987,677 | \$5,245,559,029 | \$68,850,780 | \$19,871,458,451 | \$772,972,653 | \$18,922,144,951 | \$673,527,191 | \$13,657,235,297 | \$662,457,167 | \$3,241,171,582 | \$9,828,845,915 | | | | |
| Less Amount Spent on Research | \$0 | \$741,492,420 | \$4,641,282 | \$3,720,800,883 | \$136,638,333 | \$6,352,917,784 | \$383,874,192 | \$5,789,026,544 | \$476,839,179 | \$1,295,571,082 | \$9,021,680,560 | | | | |
| Net Amount Received from Government | \$246,987,677 | \$4,504,066,609 | \$64,209,498 | \$16,150,657,568 | \$636,334,320 | \$12,569,227,167 | \$289,652,999 | \$7,868,208,753 | \$185,617,988 | \$1,945,600,500 | \$807,165,355 | | | | |
| Amount Paid to Government | | | | | | | | | | | | | | | |
| Accruing Principal | \$126,013,021 | \$86,839,889 | \$17,740,540 | \$306,617,785 | \$172,412,592 | \$225,358,728 | \$142,614,720 | \$104,667,999 | \$84,756,080 | \$19,793,818 | \$144,837,861 | | | | |
| Taxes Paid/Foregone | \$200,889,171 | (\$182,727,605) | (\$23,693,260) | (\$641,684,607) | (\$241,789,090) | (\$836,045,485) | (\$488,113,457) | (\$754,097,086) | (\$369,619,929) | (\$337,804,506) | (\$5,005,062,381) | | | | |
| Amount Paid to Government | \$326,902,192 | (\$95,887,716) | (\$5,952,720) | (\$335,066,822) | (\$69,376,499) | (\$610,686,757) | (\$345,498,737) | (\$649,429,086) | (\$284,863,850) | (\$318,010,688) | (\$4,860,224,519) | | | | |
| Total Amount Paid to Government In 2010 Dollars | \$331,109,879 | (\$97,121,925) | (\$6,029,340) | (\$339,379,599) | (\$70,269,471) | (\$618,547,148) | (\$349,945,788) | (\$657,788,145) | (\$288,530,445) | (\$322,103,929) | (\$4,922,782,390) | | | | |
| Total Annual Benefit (Cost) to Taxpayers | \$84,122,203 | (\$4,601,188,534) | (\$70,238,838) | (\$16,490,037,167) | (\$706,603,790) | (\$13,187,774,314) | (\$639,598,787) | (\$8,525,996,898) | (\$474,148,433) | (\$2,267,704,429) | (\$5,729,947,745) | | | | |
| Annual Benefit (Cost) to Taxpayers per Student | \$788 | (\$7,895) | (\$1,033) | (\$8,729) | (\$1,405) | (\$10,534) | (\$1,536) | (\$14,370) | (\$1,869) | (\$23,617) | (\$13,216) | | | | |
| Weighted Total Benefit (Cost) to Taxpayers per Degree | \$6,107 | (\$67,618) | (\$8,031) | (\$62,658) | (\$8,724) | (\$61,240) | (\$8,681) | (\$74,360) | (\$8,894) | (\$108,007) | (\$58,732) | | | | |

Appendix Table 9: How Reducing Dropout Rates Could Reduce Taxpayer Costs of Degrees

| | Barron's Noncompetitive and Less Competitive | | | Barron's Competitive | | Barron's Very Competitive | | Barron's Highly Competitive | | Barron's Most Competitive | |
|---|--|------------|----------------|----------------------|----------------|---------------------------|----------------|-----------------------------|----------------|---------------------------|----------------|
| | For-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit | Public | Not-for-Profit |
| Total Taxpayer Cost per Bachelor's Degree | \$6,107 | (\$67,618) | (\$8,031) | (\$62,658) | (\$8,724) | (\$61,240) | (\$8,681) | (\$74,360) | (\$8,894) | (\$108,007) | (\$58,732) |
| With Dropouts Reduced by 50% | \$4,707 | (\$53,091) | (\$6,287) | (\$51,664) | (\$6,739) | (\$54,384) | (\$7,660) | (\$68,808) | (\$8,382) | (\$103,548) | (\$56,591) |
| Percentage of Higher Cost Attributable to Higher Dropout Rate | 30% | 27% | 28% | 21% | 29% | 13% | 13% | 8% | 6% | 4% | 4% |

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