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Education Outlook

# How Much Is That Bachelor's Degree Really Worth? The Million Dollar Misunderstanding

## By Mark Schneider

*Many claim that a college degree is worth a million dollars, but like so many other "facts" about higher education in the United States, it is not quite right. Indeed, using a set of reasonable assumptions that factors in school selectivity, the cost of a college education, and foregone wages, I show that the million dollar figure is grossly inflated, and may be three times too high.*

Imagine that your daughter is a junior in high school and continually complains, "I don't want to go to college. I'm sick of school. Why do I have to go?" You refrain from blurting out, "Because I want you out of the house so I can turn your bedroom into a media room." Instead, you say, "So you can get a good job and make more money." If your child were an economist-in-waiting, she might demand to know, "How much more?" And you would probably repeat the figure you read everywhere: "A million dollars!"

The figure has become a commonplace, used by parents, colleges and universities, and, yes, even insurance companies. Arizona State University used it in 2007 to justify a tuition increase:

> The portion of the cost of a college education paid through tuition is the best investment that a student can make in his or her future. Unlike disposable items such as food, fuel, or even a car—items that are consumed or depreciate in value over time—college education lasts a lifetime. Average annual earnings of individuals with a bachelor's degree are more than 75 percent higher than the earnings of high school graduates. These additional earnings sum to more than $1 million over a lifetime.[1]

State Farm used the number to argue that a college education is an "investment for a lifetime" and that parents should therefore buy into one of its 529 funds:

> A college education has the potential to earn a student much more than just a diploma—it

**Key points in this *Outlook*:**

- Many claim that college graduates earn a million dollars more in a lifetime than high school graduates.
- In fact, there is great variation in the lifetime earnings of students graduating from different types of colleges or universities.
- Once we account for tuition payments and discount earnings streams, the payoff of a college degree falls dramatically, but the return is still substantial.

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> could be the single most important tool to compete in the global marketplace of the future. According to the College Board, college graduates earn 80 percent more on average than high school graduates. Over the course of your child's life, the difference in earning potential between a high school graduate and a college graduate is more than $1 million. A child's education could be one of the largest investments you'll make in your lifetime. But it may also provide you with the highest return: a child's successful future. The State Farm® College Savings Plan sponsored by the State of Nebraska helps make college investing simple, affordable, and convenient.[2]

The million dollar number is also used by politicians and others interested in postsecondary education. Doug Lederman of Inside Higher Ed described the commonplace use of this number: "Go ahead—just try to find an instance in the last few years in which someone trying to make the case that going to college matters *hasn't* trotted out the statistic that the average college graduate earns $1 million more over the course of a lifetime than a high school graduate does."[3]

As in the State Farm citation, the College Board is the source most often cited by those promulgating the million dollar number, but the number actually traces back to U.S. Census Bureau calculations developed by Jennifer Cheeseman Day and Eric C. Newburger in 2002.[4] They wrote, "Over a work-life, individuals who have a bachelor's degree would earn on average $2.1 million—about one third more than workers who did not finish college, and nearly twice as much as workers with only a high school diploma."[5] These data have been updated by Mark Kantrowitz, who shows that, since the Census report, the added value of a bachelor's degree over a high school diploma or GED had increased to $1.2 million in 2005 from $910,000 in 1997–99.[6]

There have been arguments over this million dollar number. Perhaps the most pointed came from Charles Miller, who headed former U.S. secretary of education Margaret Spellings's Commission on the Future of Higher Education. In April 2008, Miller released a public letter to College Board president Gaston Caperton accusing him of misleading the public by repeating the million dollar number in the College Board's *Education Pays* reports. In his letter, Miller argues that by replacing some assumptions used by the College Board with other, perhaps more reasonable, ones (for example, including those who took six years to graduate instead of four and deducting tuition costs from lifetime earnings), the present value of the lifetime earnings differential is only $279,893 for a bachelor's degree versus a high school degree. Miller wrote, "It is reasonable to conclude that a college degree is not as valuable as has been claimed."

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Miller's letter touched off a testy exchange about how prominently the million dollar number is actually displayed in the College Board reports. (In the latest, the number appears in footnotes with many caveats.) The argument over the size of the payoff for attending college is far from over. A recent report by the National Association of State Universities and Land Grant Colleges (NASULGC) presents an estimate of the payoff for a college degree that is much closer to Miller's than to a million dollars.[7] The report estimates the net present value of the difference between a college education and a high school degree at only $121,539.[8] Even though this is far below the million dollar payoff—and less than half of what Miller estimated—the authors still claim that "earning the bachelor's degree pays handsomely."

Indeed, careful economic analysis consistently shows positive rates of return to college education—and even the low numbers presented by Miller or NASULGC are still "handsome" rates of return. According to Pedro Carneiro, in the United States, the increase in earnings is, on average, around 10 percent per year of higher educational schooling. There is also a "sheepskin effect"—meaning that the returns are likely to be even higher if you earn a bachelor's degree rather than simply taking the return to a year of education multiplied by four. Carneiro concludes that education is a "very productive investment" that may, in fact, outperform most other investments.[9]

Clearly, there is a serious debate about assumptions, discount rates, how to handle the cost of tuition, lost earnings, and the like. The debate will continue, but in

this *Outlook*, I look at the return to postsecondary education from a different angle.

Current debates over the million dollar payoff have focused on an *average* return for all college graduates, ranging from Harvard-educated hedge fund managers who (used to) make hundreds of millions per year to a graduate from Bob's College, who, as a result of his degree, was promoted from assistant manager to manager of a retail store at the mall. But the rates of return to attending different calibers or types of colleges or universities may vary dramatically. The NASULGC report did note, "While data demonstrate significantly higher annual and lifetime earnings for those who earn a bachelor's degree, there is no data that reliably shows that earnings bear a predictable relationship to the institution from which an individual earns the bachelor's degree."[10] But this point is rarely addressed in any systematic way.

The goal of this *Outlook* is a modest step in that direction. Adding a finer grain to the ongoing debate about the returns to college education, I show that there is variation in the lifetime earnings of students graduating from different types of schools—variation that is hidden by focusing on the average increase in earnings reported in most analyses.

The ideal analysis would pinpoint variations in the rate of return at the campus level, which would help students figure out in which college to enroll. Even more so, we would want a "value added" model to account for the highly stratified nature of schools. (There is a sorting process in which highly qualified students go to the most selective schools, and their higher lifetime earnings may have less to do with the quality of their education than with their innate intellectual capacities.) While we await such models and analyses, the purpose here is to illustrate the range in the variance in the payoff to higher education and to see if graduates from particular types of colleges or universities are more or less likely to reach the million dollar payoff.

To do this, I have adopted the Census approach to developing synthetic estimates of work-life earnings as updated by Kantrowitz, who kindly shared the spreadsheets he developed. In this analysis, rather than treating all bachelor's degrees as equal and measuring the average gain in earnings, I seed the estimates with actual salary data observed for graduates from different types of colleges and universities ten years after graduation.

Specifically, I use data from the U.S. Department of Education's 2003 follow-up to the 1993 *Baccalaureate and Beyond Longitudinal Study* (B&B)[11] to generate the starting salaries for the synthetic estimates of work-life earnings. In the 2003 B&B follow-up, over eleven thousand college graduates were interviewed and supplied data about their work experiences since graduation, including current income. Instead of simply using the overall average salary for this sample of graduates, I take information about the institution from which the respondent graduated in 1993 and classify that school by sector (private nonprofit or public) and by five levels of selectivity, ranging from the most selective (the Ivy Leagues) to open admissions schools.[12]

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Even among the graduates of the most selective nonprofit institutions, their superior earning power still falls far short of the magic million.

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Cross-classifying sector and selectivity creates ten categories of postsecondary institutions, and I compute the average salary for respondents in each category. Nearly all the students in this study were in their midthirties.[13] With the average salary for each of these ten types of schools, and knowing student age, I have the information to feed into the Census models, as further refined by Kantrowitz, to generate synthetic estimates of lifetime earnings for students in each category of school.

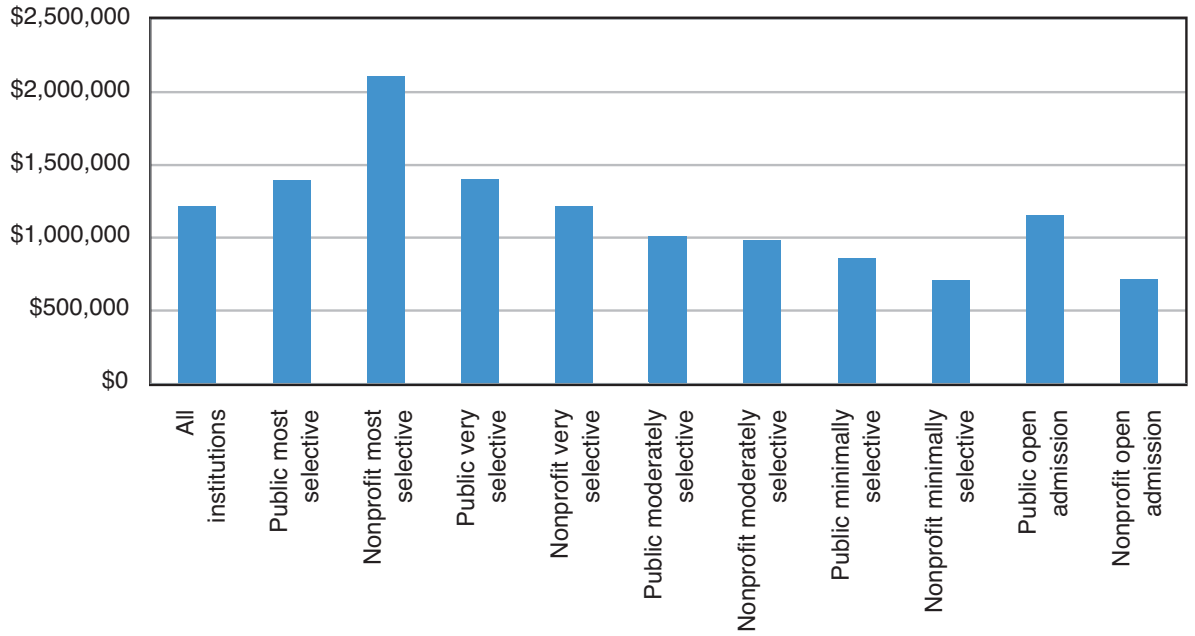
## Variation in Rates of Return

Figure 1 presents the estimates of work-life earnings of the 1993 class of college graduates in each of the ten categories of colleges and universities. These initial estimates do not take into account tuition costs or lost years of earnings while a student pursued a college degree.

These data show a substantial return on the bachelor's degree regardless of the type of institution from which a person graduated: the million dollar payoff is evident across all students taken together and for graduates from colleges in six of the ten categories. A seventh comes in just under the million dollar payoff. The lowest payoff is still over $700,000.[14]

Let's return to your conversation with your daughter. You show her figure 1 and say, "I told you so. Go to college, and you're more than likely to earn an extra million dollars!" Remember, your daughter is an

FIGURE 1
INITIAL ESTIMATES OF LIFETIME DIFFERENCE IN EARNINGS,
BACHELOR'S DEGREE VERSUS HIGH SCHOOL GRADUATE, BY INSTITUTION TYPE




SOURCE: Author's calculations.

## Sources and Assumptions for the Estimates in Figure 1

In Kantrowitz's model, there is an observed mean income from the Census Bureau for individuals in ten-year age groups: twenty-five to thirty-four, thirty-five to forty-four, forty-five to fifty-four, and fifty-five to sixty-four (all the numbers in this analysis are based on 2003 data, the year in which the B&B follow-up was conducted).

A growth rate in annual income is estimated for individuals in each of these cohorts based on their level of education. For high school graduates in the thirty-five to forty-four cohort, the rate of growth is 2.64 percent; for bachelor's degree holders, the rate is 3.02 percent. Note that the growth rate for high school graduates is about the same as the average growth in GDP, while the bachelor's degree holder exceeds this by about a third of a percent.

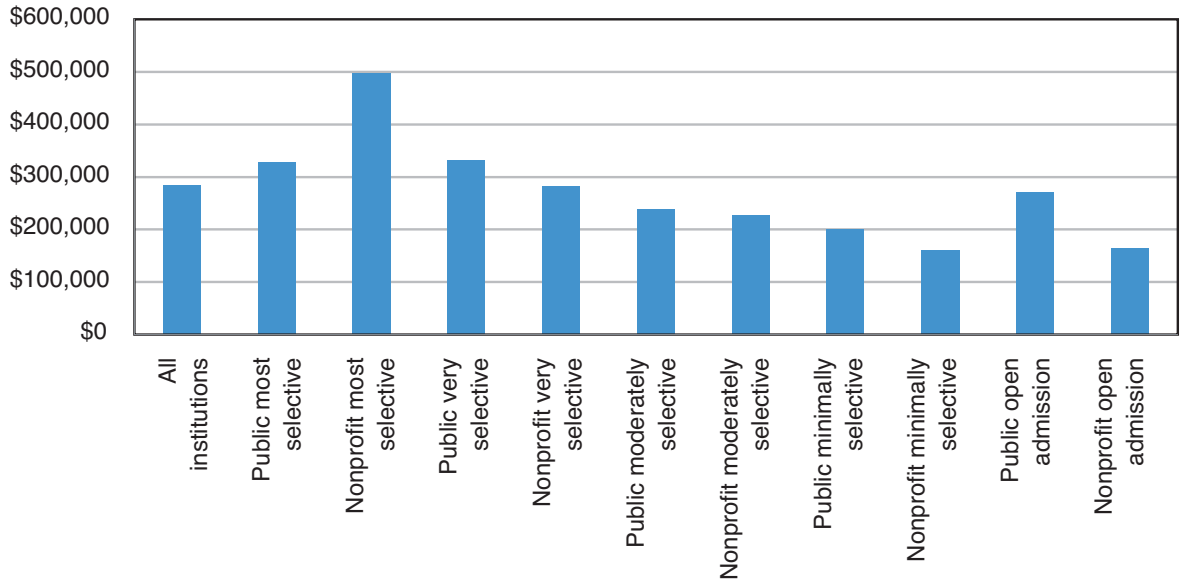
Kantrowitz uses these growth rates and the values observed by the Census to compute the added value of a bachelor's degree. His "raw" estimate is around $1.2 million, which is almost the exact same number reported as the average for all students in figure 1.

However, since I wanted to disaggregate the results by the ten categories of higher education institutions, and since the B&B study reports respondent incomes at one point in time, I had to modify Kantrowitz's method. Specifically, Kantrowitz has the observed values for the mean income of every age group, while I have the mean only for thirty-five-year-olds. I have taken the ratio of the income of each of the other age cohorts observed in the Census data and applied those ratios to estimate the mean income for the other age cohorts based on the values observed in the B&B. For example, in the 2003 Census data, the average income of workers age twenty-five to thirty-four was 76 percent of the mean income of workers age thirty-five to forty-four. In the B&B follow-up, the 2003 income of graduates from the most selective nonprofit institutions is just over $70,000. Using a 3.02 percent growth rate for the next nine years, the average income of these graduates age thirty-five to forty-four is about $80,000, and the computed average for workers age twenty-five to thirty-four with these degrees is 76 percent of this, or $61,000.

To estimate the income of eighteen- to twenty-four-year-olds, I take the growth rates calculated by Kantrowitz and work backwards from the observed incomes of B&B. In the first set of estimates presented in figure 1, income for college graduates between the ages of eighteen and twenty-two is set to zero.

FIGURE 2

THE DIFFERENCE BETWEEN WORK-LIFE EARNINGS, BACHELOR'S DEGREE VERSUS HIGH SCHOOL GRADUATE, 2003 DOLLARS, ADJUSTING FOR TUITION, BY INSTITUTION TYPE




SOURCE: Author's calculations.

## Sources and Assumptions for the Estimates in Figure 2

Figure 2 takes tuition into account. To estimate tuition costs, I used the 1989 and 1993 Integrated Postsecondary Education Data System data sets to calculate the average tuition cost that students in each of these categories of institutions paid. This ranged from around $15,000 for students in the most selective nonprofits to around $2,000 for students attending less selective public institutions. For the earnings stream from ages eighteen to twenty-two, tuition is counted against lifetime earnings. Note the tuition is "sticker price" and not net price. We know that many students do not pay full price, so there may be an upward bias in this number. But the tuition number we use does not include the full costs of attendance either—fees, books, room and board, etc. Finally, since this is based on in-state tuition, it understates the costs that out-of-state students paid in public institutions. Clearly, refinements of these estimates are needed in the future. The earnings stream is discounted to 2003 dollars, using a 4.8 percent discount rate, which is roughly the average rate of long-term Treasury bills. The calculation takes into account federal income taxes as computed by Kantrowitz and applied to the income estimates for graduates in each of the ten categories of schools, as well as all students taken together.

economist-in-waiting, and she replies, "You forgot to account for opportunity costs associated with getting that degree. And what about discounting these future earnings into a present value?" You admit that she is right and go back to your spreadsheets.

## Estimating Discounted Returns to College Education

Figure 2 shows a radically different picture than the estimates of figure 1. Once we account for tuition payments and discount earnings streams, the payoff falls dramatically. Except for the exceptionally high payoff for attending the most selective nonprofit institutions and the low payoff for attending less selective ones, statistically, the results are roughly the same. Furthermore, even among the graduates of the most selective nonprofit institutions (the graduates who do the best by far in any of the ten categories), their superior earning power still falls far short of the magic million.[15]

You remind your daughter that it is not for nothing that economics is called the dismal science. In return she asks, "Okay, but these are still averages, and we all know that averages can hide lots of variation. Clearly, I should go to an Ivy League school if I can get in. But if I can't, where should I go?"

Here you have a serious parent-child discussion about the paucity of good data and your inability to answer this perfectly reasonable question. You note that other people have been struggling with this question. You show her a copy of a recent edition of *SmartMoney* magazine, which undertook an analysis of salary returns for fifty institutions in a piece entitled "The Best Colleges for Making Money." Examining the salaries that graduates from fifty of the most expensive four-year colleges earn in early and midcareer, and factoring in the cost of tuition and fees, *SmartMoney* calculated a "payback" ratio for each school. To use their word, the results are "jarring."[16]

*SmartMoney*'s analysis shows that public colleges are often giving students a much better return than their better-known private counterparts. For example, the University of Georgia delivers a "payback" nearly three times that of Harvard, and both the Universities of Delaware and Rhode Island outperform every Ivy League institution in the ranking. *SmartMoney*'s institution-level analysis is a step in the right direction.

*SmartMoney*'s analysis shows that public colleges are often giving students a much better return than their better-known private counterparts.

Students not only choose a college; they also choose a field of study. There is wide variation in the salaries that students earn as a function of their career choices. Among B&B respondents, ten years after graduation, those who were in the field of education earned slightly more than $30,000, while respondents who were in business or engineering earned twice as much.

To measure the returns to attending one college versus another more precisely and to help students and their families judge how well different programs are doing, the nation needs more comprehensive student unit record systems, especially ones that link student higher education records to earnings after college. Approximately forty states currently have student-based data systems, but they are of varying quality and coverage. Further, these databases are designed and maintained by state higher education agencies without much concern for interoperability with other state systems. Most important, very few of these systems link to postgraduation databases (such as state unemployment insurance systems), making computation of the variation in employment outcomes and income by school and by program virtually impossible.

Even with such systems, debates will continue about the appropriate methods for calculating returns to a bachelor's degree, but without them, studies such as this, the recent NASULGC study, and *SmartMoney*'s report are at best dim flashlights shining light into a fundamentally important but dark corner of America's system of postsecondary education.

As you develop these points, your daughter is now rolling her eyes and wanting to return to her Facebook-YouTube-Twitter world. You are beginning to fear she will decide not to go to college, and your dreams of turning her bedroom into a media room for your brand-new sixty-five-inch HDTV with five-channel surround sound are fading. But you have the responsibility to be honest with your daughter, so your final words should be something like, "Honey, you'll still get a better job and make more money if you go to college, but that million dollar payoff you keep hearing about? Forget about it."

*Mr. Schneider thanks Stuart Elliott for his help in calculating these returns and Mark Kantrowitz, who provided comments and generously shared his spreadsheets, which were modified to produce these results.*

## Notes

1. Arizona State University, "ASU Proposes Tuition Increase," news release, November 14, 2007, available at http://asunews.asu.edu/20071108_Tuition (accessed April 23, 2009).

2. State Farm Insurance, "College Education: An Investment of a Lifetime," available at www.statefarm.com/mutual/sc/invest_know/investforlife.asp (accessed April 23, 2009).

3. Doug Lederman, "College Isn't Worth a Million Dollars," Inside Higher Ed, April 7, 2008, available at www.insidehighered.com/news/2008/04/07/miller (accessed April 23, 2009).

4. Jennifer Cheeseman Day and Eric C. Newburger, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings* (Washington, DC: U.S. Census Bureau, July 2002), available at www.census.gov/prod/2002pubs/p23-210.pdf (accessed April 23, 2009).

5. Ibid., 4.

6. Mark Kantrowitz, "The Financial Value of a Higher Education," *NASFAA Journal of Student Financial Aid* 37, no. 1 (2007): 19–27.

7. National Association of State Universities and Land Grant Colleges (NASULGC), *University Tuition, Consumer Choice and College Affordability: Strategies for Addressing a Higher*

*Education Affordability Challenge* (Washington, DC: NASULGC, November 2008).

8. There are some errors and questionable assumptions in this analysis. For example, the $37,100 figure cited in appendix A for a high school diploma is actually the figure for "some college, no degree" rather than for "high school graduate," which is $31,500. See College Board, *Education Pays 2007*, figure 1.1, available at www.collegeboard.com/prod_downloads/about/news_info/trends/ed_pays_2007.pdf (accessed April 23, 2009). The report uses a thirty-five-year work life, not forty, and uses medians, not means. That said, I show that using some of the same needed adjustments to income flows as used in this report (most notably discounting and tuition), estimates of work-life earnings are closer to this estimate than to the magic million dollar number.

9. Pedro Carneiro, "If the BA Is the Work of the Devil, It's Not His Best Work," Cato Unbound, October 8, 2008, available at www.cato-unbound.org/2008/10/08/pedro-carneiro/if-the-ba-is-the-work-of-the-devil-its-not-his-best-work (accessed April 23, 2009).

10. NASULGC, *University Tuition, Consumer Choice and College Affordability: Strategies for Addressing a Higher Education Affordability Challenge*, 10.

11. U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study* (B&B) (Washington, DC: Department of Education, 2003), available at http://nces.ed.gov/surveys/b&b/ (accessed April 29, 2009).

12. The selectivity of postsecondary institutions was calculated using the methods published in the National Postsecondary Student Aid Survey of 2000. My thanks to Ted Socha of the National Center for Education Statistics for calculating this selectivity measure for the 2003 data.

13. The average age of the respondents in this ten-year follow-up survey of the 1993 B&B study was thirty-five. While the Kantrowitz and Cheeseman Day and Newburger papers are based on work-life estimates from age twenty-five through sixty-four, the estimates in this *Outlook* begin at age eighteen to account for the costs of attaining a college degree. These costs are in terms of lost income (a high school graduate has had an income during the four years that the college graduate was in school). In addition, the college graduate had to spend money on tuition to obtain the degree.

14. Note that this approach does not take into account student quality—the high payoff for students graduating from the most selective nonprofits may reflect students' innate skills as much as or more than the quality of the education they received while attending Harvard or Yale. But that is a far more complicated argument than the one addressed by the synthetic cohort approach.

15. There are some computational issues in this analysis to keep in mind. It sidesteps the issue of the nonmonetary rewards to higher education that accrue to both the individual and to society. It also neglects any financial aid that the student may have received and may overestimate lost wages, since many students may work while in college. It uses a 4.8 percent discount rate, which is roughly equivalent to the historical rate for long-term Treasury bills, but that is a choice that can change the outcomes of the analysis (the lower the discount rate, the higher the returns). The income data are based on a sample; therefore, there is error associated with the starting estimates of income.

16. Neil Parmar, "The Best Colleges for Making Money," *SmartMoney*, December 16, 2008, available at www.smartmoney.com/Personal-Finance/College-Planning/The-Best-Colleges-For-Making-Money (accessed April 23, 2009).