

## THE VALUE OF A COLLEGE DEGREE

BY STEPHEN ROSE

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Abstract:

Over the past several years, many commentators have encouraged students to reevaluate their postsecondary plans. In particular, they have said that getting a four-year degree is a bad choice for many students. These critics make substantive claims about low graduation rates, high debt levels, lost time working, inadequate learning gains, and poor job prospects.

These claims need to be taken seriously; this paper is a data-driven analysis of some of the key issues involved. In particular, the low graduation rates that are commonly cited are misleading: Of those 18-19 year olds who enrolled full-time for the first year in a four-year school in 2003 and who had at least a 3.0 GPA in high school, 77 percent ended up with a postsecondary award by 2009. Of them, 74 percent earned a bachelor's degree, 2 percent an associate's degree, and 1 percent a certificate (with 9 percent still attending college).

In terms of jobs and earnings, some commentators have argued that nearly half of those with a baccalaureate degree are in jobs that do not require it. However, these workers have a nearly 80 percent general earnings advantage over those with just a high school diploma. Further, even within occupations, employees with college degrees tend to earn significantly more than those with less education.

The debt and learning claims are also addressed in the article. The debt loads that students must assume are considerably overstated, and the research on learning gains has significant flaws.

Given the advantages conferred by a postsecondary education, the paper argues for an increase in the numbers of college degrees awarded.

Since the end of the Civil War, America has been a leader in providing public education. Ours was the first country to provide free and universal elementary schooling; at the start of the 20<sup>th</sup> century, this access was expanded to include high school. As a result, the share of the population completing high school rose from under 4 percent in 1890 to 17 percent in 1920, 29 percent in 1930, and 51 percent in 1940.

However, by the mid-century, college enrollment was still limited, with only about 15 percent of young people obtaining bachelor's degrees by the 1950s. This changed dramatically in the next decade:

By the end of the 1960s, nearly 30 percent had obtained a four-year college degree. Also, enrollment in two-year colleges skyrocketed from just over 200,000 in 1960 to one million in 1971.

This expansion of access to college was a bold move for a country that already had the most educated work force in the world. At first, it seemed that it was the wrong choice: In the 1970s, a wave of college graduates flooded the market, causing college earnings to stagnate. In 1976, Richard Freeman published *The Overeducated America*, and the 1979 and 1981 recessions were a particularly bad environment for new graduates.

But with the recovery of the 1980s came a growth in the earnings of college graduates that was greater than that of any other group: In 1980, they were 40 percent higher than those of high school graduates, and by 2000, that advantage had soared to almost 80 percent. As the payoff to college became evident, other high-income countries followed this path. By the mid-2000s, college graduates (including those with short-term degrees) in many countries comprised a greater proportion of their young adult population than was the case in the US.

Although parents, high school students, and most civic leaders in this country and around the world still see a college degree as important, this perspective has been attacked over the last five years. Once the Great Recession began in December 2007, there were far fewer good jobs available for new college graduates. The soaring price of college had forced many students to take on what seemed like very high levels of debt, an especially heavy burden for those who had dropped out and thus had debt without the skills and credentials that would enable them to repay it.

And there was some question about the skills even of the students who managed to graduate. Readers are probably familiar with Richard Arum and Josipa Roksa's (2011) research about the low levels of learning occurring on campuses. If college does not lead to skill gains, it is difficult to argue that attending college will lead to positive economic effects after graduation.

Finally, some critics wondered whether the higher wages of college graduates are secure. Richard Vedder, Christopher Denhart, and Jonathan Robe (2013) have reported that 48 percent of employed individuals with bachelor's degrees are in jobs requiring less schooling—presumably at low wages. Others say that parents would do better to put their college savings into a retirement account for their children.

All these arguments appear in a new book by former Department of Education Secretary William Bennett and co-author David Wilczol (2013). They argue that most high school graduates should enroll in occupationally oriented vocational and technical programs and that the number of students attending four-year colleges should shrink by 50 percent.

The main arguments in favor of earning a college degree are based on college graduates' larger earnings over a lifetime, lower unemployment rates, better health, higher marriage rates, and greater civic involvement. While these advantages for those with four-year degrees are substantial, two-year college graduates also have earnings and other outcomes that are better than high school graduates'

are. This is why President Obama has called for new initiatives to restore America’s position as the country with the highest share of young people earning postsecondary credentials.

In this piece, I will address the flaws in the arguments of those who dispute the value of a baccalaureate degree, focusing on four areas—graduation rates, employment and earnings, debt/financial issues, and learning gains.

## GRADUATION RATES

Graduation rates matter: If the share of dropouts is high, then their costs and time need to be subtracted from the reduced benefits that accrue to those with “some college,” thus making the whole endeavor more questionable.

But the calculation of graduation rates is not straightforward. Some analysts say that the rate is below 50 percent, while others claim that it is 57 percent. Both of these numbers are flawed. The 50 percent number is based on the share of bachelor’s degrees among all people who enroll in either a two- or a four-year school. Including the nearly 50 percent of students who start at community colleges in calculating baccalaureate completion rates skews the results, since only about 40 percent of community college students have the academic background and coursework to transfer, and only 28 percent actually do transfer.

The six-year graduation rate of 57 percent does not include community college students—it is instead the proportion of individuals who obtain degrees from the four-year schools in which they initially enrolled (as reported in the government’s Integrated Postsecondary Education Data System, or IPEDS). However, this figure includes neither those who transfer and graduate from other institutions nor those who earn two-year associates degrees or certificates.

The broadest graduation-rate measure includes all students who initially enroll in a public or not-for-profit four-year postsecondary institutions. Of those who enrolled in 2003, by 2009 67 percent had earned a postsecondary award: 61 percent got bachelors’ degrees, 4 percent earned associate’s degrees, and 2 percent were granted certificates (*Beginning Postsecondary Survey*, or *BPS*). Another 15 percent were still attending college.

Many students are over 20 years old, have families and work responsibilities, and only attend part-time (a significant predictor of failure to complete). If we exclude those students and focus on the ones who are 18-19 years old and who enrolled full-time the first year, we get even higher postsecondary-credential rates of 73 percent: 68 percent got a bachelor’s degree, 3 percent an associate’s degree, and 2 percent a certificate (with another 10 percent still enrolled).

If we include only students with at least a 3.0 GPA in high school, then 77 percent end up with a postsecondary award: 74 percent with a bachelor’s degree, 2 percent with an associate’s degree, and 1 percent with a certificate (9 percent are still enrolled). Limiting the analysis to those with a high school GPA of 3.5 and above results in the following: 81 percent earn bachelors’ degrees, 2 percent associate’s

degrees, and 1 percent certificates. Finally, at the most selective colleges (with the best-prepared students and most supportive environments), the baccalaureate graduation rate is 86 percent within six years.

These different graduation rates show how much preparation, attendance intensity, and external responsibilities affect the outcomes. While there is room for improvement, those who cite graduation rates of 50 and 57 percent create the false impression of a system in deep crisis.

The bottom line is that enrollments at four-year schools have increased as many more students who are older and from the middle ranks of their high school classes have been added. Many of these students will not succeed. Thus, the issue is whether to raise entrance standards and ensure higher graduation rates or to serve many students who have only moderate rates of success.

Community colleges come under particularly heavy fire for their graduation rates. Some bemoan the fact that only about one in eight initial enrollees in community colleges earns an associate's degree at the school in which they initially enrolled (IPEDS). Once again, this number is based on getting a degree from the institution in which one started.

But many students transfer—some to a four-year institution, where they may earn baccalaureate degrees. Oddly, this very positive outcome is not counted as a success for the community college if the students did not get a two-year degree there along the way. But 35 percent of them end up earning a postsecondary credential—12 percent a bachelor's degree, 14 percent an associate's degree, and 9 percent a certificate—while another 20 percent are still enrolled (*BPS*).

The 35 percent may seem low, but a large share of incoming students at two-year schools are older, have family and work responsibilities, only attend part-time, and/or have low high school grades—all factors that make success harder. Even in four-year institutions, of those over 25 who first enrolled in 2003, by 2009 just 28 percent had earned an award of any type: 3 percent got bachelor's degrees, 12 percent associate's degrees, and 13 percent certificates.

Meanwhile, the more “typical” college students who start before they are 20, have at least a B average in high school, and attend full-time during their first year have a success rate of 54 percent: 29 percent earn a bachelor's degree, 22 percent an associate's degree, and 3 percent certificates (with 17 percent still attending). Thus, the choice is between accepting relatively low overall success rates or removing the college option for the approximately 30 percent of older and less-prepared students who do succeed.

## **EMPLOYMENT AND EARNINGS**

Most people want to obtain a baccalaureate degree because of the added earnings associated with the degree. A commonly cited figure is that they earn \$1 million more than those with just a high school diploma during their careers (Carnevale and Rose, 2011). This premium is based on two factors:

1) Those with bachelor's degrees are more likely to be in high-paying managerial and professional jobs, and 2) within in each occupation, those with four-year degrees earn more than those without them.

As shown below, there is a big variation by major. But even in low-paying fields, the earnings of those with a baccalaureate are higher than those of most people who have two-year degrees or certificates. There is a fair amount of "overlap": The highest earners of those with associate's degrees or certificates —those who work in computer science, the sciences, or business—earn as much as a typical four-year college graduate. But bachelor-degree recipients in these fields earn considerably more than their less-educated peers (for data on certificates see Carnevale and Rose, 2012, and for data on associate's degrees, see Carnevale and Rose, 2013).

Most economists believe that pay is related to productivity, which in turn is based on workers' skill levels—thus that the rising baccalaureate premium reflects the importance of skills learned in college. However, some question those links. First, they say that the type of student and not the skill level represented by the bachelor's degree determines a person's employability. Called "signaling" because employers are thought to use the degree as the signal for making hiring decisions, this argument was first made by Michael Spence in 1973.

It is very difficult with available data to determine whether it is signaling or learned skills that determine long-term career earnings. Many researchers have used a variety of complex mathematical approaches to indirectly test for the importance of learned skills. While they have generally found that most of the earnings premium is due to attending school and not to the original skills of college enrollees, those who support the signaling approach are unconvinced.

I think the evidence suggests that even if signals are used to hire, promotions are based primarily on performance. The baccalaureate premium increases with age, which suggests that skill is eventually the key attribute that is rewarded. Further because college-educated workers in the same occupation tend to earn significantly more than those with less formal education, it is reasonable to think that their higher pay is based on their greater competencies.

Critics also claim there is a paucity of high-paying jobs that use the presumed skills of college graduates. Because of automation and the export of even mid-level jobs to lower-wage countries, they argue, there are not enough good jobs for the number of college graduates and that too many graduates are now being produced.

For example, Richard Vedder et al. (2013) find that 48 percent of baccalaureate-degree holders are not employed in jobs that require the degree. But if the bachelor's degree premium is still very high and presumably pay in jobs not requiring the degree is relatively low, how can we have a high median level of earnings for college graduates?

The answer is that this argument is based on a backward-looking view of the skills needed to perform various jobs. Vedder lists occupations in which the degree is not required but that employ many college graduates—for example, representatives in manufacturing and wholesale. But 60 percent (nearly 700,000) of these employees have either undergraduate or graduate degrees, and their earnings

are 60 percent higher than the overall median level for college graduates. Only 19 percent of these workers have at most a high school diploma, and they earn half the salary of their college-educated colleagues.

This highlights the difficulty of determining what *overqualified* means, which changes over time. In the 1950s, sales representatives may not even have had a high school diploma (e.g., my father). By 1980, about 40 percent of workers in these jobs had only that diploma, and they earned close to the wages of those with bachelors' degrees. But as we have seen, today most workers in these fields have baccalaureate degrees and high earnings, while the salaries of those with only high school diplomas trail badly.

I have developed a way to estimate the amount of *mismatch of education and occupations* that exists for workers with different levels of education in different years. I have found that three characteristics determine whether workers are in job commensurate with their educational backgrounds: clustering (a high share of workers with either undergraduate or graduate degrees), earnings relative to all college-graduate workers, and high premiums over less-educated workers in the same jobs.

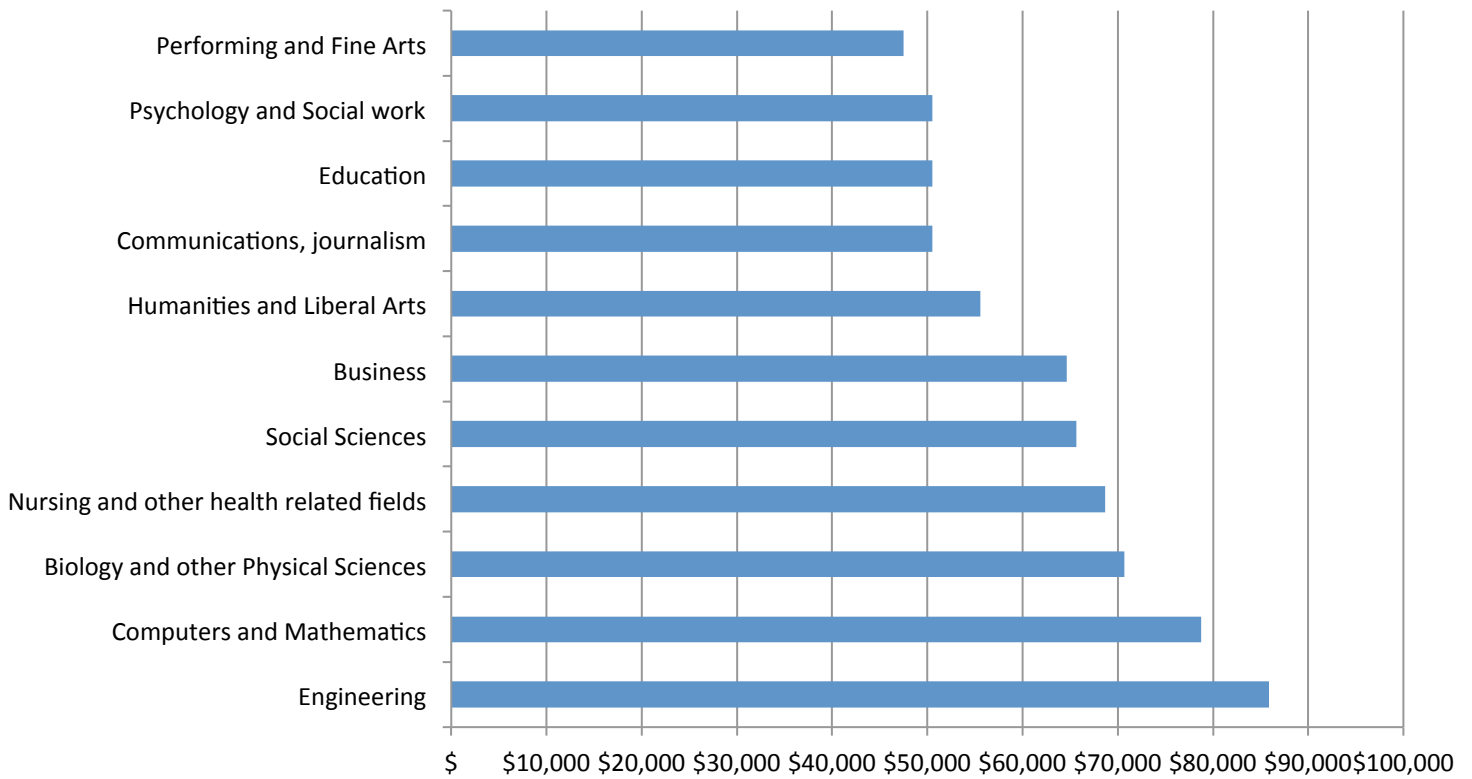
If we believe that companies have rational pay scales, then college-educated workers in these jobs are employed in jobs that are *appropriate* for their skills. That is not surprising: No Willie Lowmans, such employees typically have a technical and financial expertise that was unheard of in the past.

Vedder claims that his approach is based on BLS research. But when I met with researchers in the division that produces the numbers, they argued that their work should not be used in this manner. They also do not think that the concept of *over-qualification* is well enough defined to be rigorously evaluated. But using the clustering-earnings-premiums concept described above, I calculate that in 2011, 23 percent of college graduates were in jobs for which they were overqualified, and they earned 40 percent less than typical salaries for workers with bachelor's degrees (Carnevale and Rose, forthcoming in 2014).

A share of those with college degrees will always be in jobs that are not commensurate with their skills, and that share increases as unemployment rises. But on average, those with baccalaureates have lower unemployment rates, are much more apt to be in managerial and professional jobs, and earn significantly more than those with less education.

All of that said, what one studies in college matters—a lot. As the accompanying chart and table show, the choice of occupation varies by major, and the median earnings of college graduates ranges from \$47,500 for those with degrees in the performing and fine arts to \$85,900 for those who majored in engineering. These data reflect mid-career earnings of those working full-time, full year and include people who earn graduate degree, categorized according to their undergraduate majors. People may choose to do what they love, but they should be informed of the likely consequences of their choices.

## Earnings by BA Major, 2011



Source: American Community Survey. These data are based on 25- to 65-year-old workers working full-time/full-year and includes those who went to graduate/professional school (potentially in another field).

These variations in earnings are determined in large part by the types of jobs that different majors get once they leave school. The first four columns on the table below represent the high-end professional jobs that undergraduates prepare for.

The pay differences across these occupations mean that the majors with the highest concentrations in education and the arts or in the middle- or low-skill jobs are those with the lowest earnings: performing and fine arts, psychology and social work, humanities and liberal arts, and communication and journalism.

## Occupations by Majors

	Managers and professionals in business and public administration	Doctors and other medical professionals	Education, arts, and letters	STEM	Middle Skill Jobs	Low-Skill Jobs
Performing and Fine Arts	21.5%	1.9%	38.5%	7.2%	21.0%	9.8%
Business	57.9%	1.1%	5.3%	6.9%	22.3%	6.4%
Computers/Mathematics	22.9%	1.3%	9.0%	48.3%	14.6%	3.9%
Communications/Journalism	37.6%	2.5%	24.9%	6.4%	21.4%	7.2%
Education	18.1%	2.0%	61.4%	2.5%	11.3%	4.8%
Engineering	31.5%	1.4%	5.6%	44.0%	13.1%	4.4%
Health	13.4%	62.4%	6.5%	7.5%	5.7%	4.5%
Humanities/Liberal Arts	35.9%	3.6%	29.6%	6.5%	18.0%	6.4%
Psychology and Social work	27.6%	10.9%	36.7%	5.3%	14.5%	5.1%
Biology and other Sciences	23.2%	27.0%	12.2%	22.4%	10.2%	5.1%
Social Sciences	49.6%	2.2%	16.5%	7.5%	18.3%	5.9%

Source: American Community Survey, 2011

## FINANCIAL ISSUES

Countless news stories these days say that education costs are out of control and debts are extremely burdensome, which stops many from attending college. Yet total college attendance is higher than ever. How can this be?

First, the price to students of a college education is often misrepresented. Newspapers report on \$60,000 annual costs for tuition, fees, and room and board but fail to mention how few schools charge this amount and how few students actually pay such sums.

If the costs that would remain even if an individual were not in school were excluded from the calculation (e.g., the approximately \$9,000 in room and board), the average net price of tuition and fees (published price minus grant aid and tax benefits) is actually quite low. Less than 10 percent of four-year college students face total out-of-pocket expenses (including room and board) of over \$40,000.

At community colleges, the price was negative in the past academic year, since grants were greater than costs. At public four-year institutions, the net price was \$2,910; at private four-year schools, it was \$13,380 (College Board, 2012).

The really high prices are found in the most selective private schools, where tuition and fees average \$30,000 (room and board averages \$13,000, and transportation and books are another \$2,500).



But there is a lot of aid available: The average *net* price at these schools is just over \$11,000. If we exclude the third of students who are playing full freight, then the average net annual tuition and fees for those receiving aid (predominately provided by the institution) is a little more than \$12,000.

Debt is another thing that has received a lot of media attention. About 35 percent of students owe nothing when they graduate, which is rarely mentioned. The often-cited average debt of about \$26,000 is based on the 65 percent who incur it. Only one in 250 (.004 percent) college graduates owes over \$100,000 (*Baccalaureate and Beyond Survey*, 2008).

Most of the students with high debt have attended law and medical school. They have been willing to incur it because of the salaries associated with those degrees. As evidence of the importance of high pay, the number of law-school applications plummeted when recent graduates had difficulty finding work.

Many commentators have pointed out that total student debt now is over \$1 trillion, surpassing total credit-card debt. A worrisome figure to be sure, but the claim that it will lead to a crisis to rival the bursting of the housing bubble is unwarranted. Taking a loan for advanced education is an investment that usually leads to significantly higher income in the future, while housing is a consumption good.

Critics also point to high student default rates. But the most dramatic figure cited (35 percent of debtors under 30 were delinquent, according to the July 25, 2013 data byte of the day on Demos.org) is calculated shortly after graduation, when many students have yet to start their professional careers. By contrast, the Department of Education estimates that the 20-year default rate on loans initiated in the 2009 academic year will be 9 percent of borrowers (<http://ifap.ed.gov/eannouncements/attachments/CDRlifetimerate2011attach2.pdf>). A sizable number of people are certainly inconvenienced for their first 10 years after graduation and face a long period of repayments, but a relatively small percentage confront default.

Nonetheless, for many borrowers even modest student debt crowds out other spending. But our postsecondary system is huge and provides many options. Students can minimize debt by going to a less-expensive public four-year college or by starting at a community college and then transferring to a state four-year school. In fact, people seem to be taking advantage of this and other lower-cost options: Average yearly expenditures by students and their families have declined from \$24,000 in 2010 to \$22,000 in 2013 (Sallie Mae, 2013).

Since debt is related to costs, some argue that public higher education institutions should abolish tuition and fees (as many European countries have historically done, although that is changing with massification). But most students who get bachelor's degrees come from families in the top half of the income distribution and are able to handle the loans.

Moreover, as tuition and fees cover less than 20 percent of the costs at public institutions and under 30 percent at private ones, all levels of government spend about \$450 billion a year on postsecondary education. If subsidies were higher and higher education nearly free, many students from

upper-income families would attend the best schools, prepare for high-earning jobs, and pay very little for the privilege.

Currently, the US system has high sticker prices but many sources of student support—e.g., loans, grants, and scholarships. Some of the last are provided by institutions, in part from their tuition and fee revenues. This way, wealthy families subsidize the costs of students from middle and low-income families. Ultimately, it is not unreasonable to ask these students to cover the remaining costs—even if they assume modest amounts of debt.

Finally, critics have developed two arguments about costs, dropout rates, and future earnings in the debate about the value of attending college. Schneider (2009) evaluated individual colleges in terms of the “return on investments” that students can expect. This is a difficult task that relies on adjusting for lost wages while in school, sticker prices, average grants, graduation rates, and the earnings of the graduates of each school.

While some of Schneider’s methodological choices produced lower estimates of benefits than my calculations have, a more important flaw was not including the 35 percent of undergraduates who go on to earn graduate degrees. Presumably, these are the more academically advanced students, and not including them leads to a significantly understatement of institutional performance. [

Meanwhile, James Altucher (2013) and others claim that higher education’s increasingly high costs change the equation so much that attending college is no longer worthwhile. Instead, they propose that parents put the \$200,000-\$250,000 they would pay to send their children to a four-year school into a retirement account, which, with compounded interest, would presumably be worth millions when the children are ready to retire.

This argument contains several errors. First, as was shown above, only a small share of private colleges cost \$200,000-\$250,000, and no public institution comes even close to this amount. And the relatively few who pay this much (perhaps 5 percent of four-year college completers) come from upper-income families and go to the most selective private schools.

As a result, they can expect above-average earnings because they are more academically privileged, on average, from cradle through graduate/professional school and because a high proportion of them will obtain graduate/professional degrees. So for them, the premium is considerably more than the typical \$1 million over a lifetime.

Finally, putting the money in a retirement account is simply not a viable strategy for the great majority of students, even if the out-of-pocket costs were \$50,000-\$100,000. The presumed multi-million-dollar payoff of retirement accounts is very unlikely to materialize because it requires that those with a high school education and low-to-modest earnings leave the principal and dividends/interest untouched for 40 years. But high school graduates have one quarter of the savings of those with a college degree when they reach their 50s, because they have used most or all of their income to support their standard of living, buy homes, and send their children to college.

## LEARNING GAINS

Arum and Roksa (2011) shocked many people when they reported that only 55 percent of students had learning gains in their first two years of college. If only slightly more than half of students are getting something from their education, then the system really is in crisis.

There are two problems with their arguments. First, although Arum and Roksa say relatively few students achieve learning gains, they have not proved that most people did not have any such gains. This is not a linguistic trick: The issue is one of statistical significance.

It is difficult to quantify ability/learning, since the same person taking a similar test more than once will get varying scores. Because of this scoring variance, large “learning gains” are needed to get “statistically significant” results. In other words, many people who took their tests had small gains but were not included in Arum and Roksa’s group of learning gainers because of a lack of statistically significant difference, as the researchers have set the parameters.

Second, the Collegiate Learning Assessment—the test Arum and Roksa used to determine the learning that occurs in college—attempts to measure real-world skills, but it does not seem to have succeeded. Many studies find that baccalaureate earnings vary up to 100 percent according to the field of study: Those in science, technology, engineering, and math (STEM) earn the most, followed by business majors. Those with the lowest earnings are in the arts, humanities, and social sciences. However, on the test, those in the liberal arts and humanities had the highest scores and the largest learning gains, while those who were STEM and business majors had the lowest scores and represented the smallest share of people with gains.

But while Arum and Roksa’s approach may not be optimal, they raise the issue of what types of skills are gained over four or more years of college. On the one hand, many students major in areas that teach specific skills that can be used in certain occupations—such as business, engineering, and education. The STEM majors are also closely aligned with certain occupations, but the analytic thinking required in these areas is easily transferred to sales and management occupations.

On the other hand, a four-year series of courses can be seen as an apprenticeship in task completion, analytical thinking, and learning to work with others. For 35 percent of college graduates, the BA is a stepping-stone to a graduate degree and even higher earnings. But even for those who don’t go to graduate school, the 40 or so courses that they have completed mean they have satisfied instructors in different subjects with progressive difficulty. Without necessarily knowing which courses led to which skills, they have many more capabilities than they would have had without the higher education experience and are rewarded accordingly.

## CONCLUSION

While these data present a convincing case, it is important to hear from the students themselves. Fortunately, the 2009 BPS survey asked students “whether the education they got was

worth the cost.” Although they faced a very weak labor market, 79 percent said yes; even two thirds of those who dropped out without earning any credential said yes.

To get a job with middle-income wages in today’s economy requires at least some postsecondary education. For many, a two-year degree or occupational certificate will be the best fit, but earning a bachelor’s or—better—a professional or graduate degree remains a great choice for those who can manage it.

The bottom line is that the high baccalaureate wage premium demonstrates that employers value the skills acquired in college. In fact, in *The Undereducated American*, Anthony Carnevale and I argue that increasing the number of people with some postsecondary school by 20 million will increase the nation’s yearly GDP by \$500 billion and reduce the level of wage inequality by 40 percent.

As long as a college education challenges students, there always will be a significant number who do not earn a degree. This is especially true for students who had modest to low grades in high school, who are older and have many outside commitments, and who cannot commit the time necessary to go to class and do their assignments.

Many people rise to this challenge, but we do not know ahead of time who will succeed and who will fail. We cannot avoid the trade-off of encouraging more to try, even if a substantial proportion will not succeed. The two most important things we can do to move national social and economic prosperity forward is to produce high school graduates with stronger academic skills and to identify and support students who are starting to fall behind.

## Resources

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