

THE ECONOMIC BENEFITS AND COSTS OF A LIBERAL ARTS EDUCATION

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Introduction

Since at least the 1960s, economists have explored the economic returns to private and public investments in education from pre-kindergarten to graduate school. Over the past two decades, increasing costs of higher education, changes in the labor market due to rapid technological change and globalization, and dramatic fluctuations in the state of the economy have underscored the need to understand the returns to higher education so that we can orient our education system to ensure individual and collective opportunity.

Recent research has shown that, on average, returns to higher education are positive, even as costs to pursue higher education increase. But we have less evidence about the differential impact of courses, programs, and types of institutions on future earnings, including the differential impact of a liberal arts education. To determine the best investments for individuals and society from an economic point of view, we need to understand how the costs and returns to higher education vary across educational alternatives given current and anticipated future labor markets, including identifying those alternatives that best prepare students for future labor market success given uncertainty.

Liberal arts colleges and liberal education have been the subject of study for decades.

Distinctively American: The Residential Liberal Arts Colleges (Kobik and Graubard, 2000), a collection of essays from 1999, explored the advantages of such an education, while also anticipating the many challenges currently receiving greater attention. More recent examples of authors making the case for liberal education include Zakaria 2016, Roth 2014, and Hutner and Mohamed 2016. All of these explore the advantages of a liberal education in terms of learning

to think critically, to solve problems, to communicate effectively, and to understand the world in which we live and contribute to making it a better place.

Recently, liberal arts higher education has been under increasing attack for being of questionable value, although criticism and concerns are not new.¹ Much, but not all, of the concern relates to economic returns, measured by earnings, and costs, especially the significant investment of time and resources given future uncertainty in the labor market. Kleinman 2016 discusses four states, for example, where politicians have gone as far as to propose tying public financial support to higher education opportunities geared toward particular jobs, while reducing public support for liberal arts and humanities programs, which are assumed to poorly prepare students for employment.

Many of the defenders of liberal education, including those mentioned above, of course contest the conclusion that a liberal education poorly prepares students for employment. In doing so, they often stress the non-pecuniary benefits of such an education, in some cases taking the economic returns as given or assuming they are less important (Nussbaum 2010). Non-pecuniary benefits are relevant and valuable to both individuals and society more broadly, and should be taken into account along with the pecuniary benefits in considering the future value of a liberal education. But, to counter current criticisms, evidence on the financial or economic returns to the investment in liberal education would be helpful. Clearly, students, their families, and public policy makers care about employment options after graduation (HERI Freshman

¹ Earlier discussions of the concerns around the liberal arts can be found in Hitchcock (1973) and Eckley (1987). Their respective titles of “The New Vocationalism” and “Liberal Arts Colleges: Can They Compete?” demonstrate this point. Other earlier examples include van Aalst (1975) and Gilbert (1995).

Survey 2017). It therefore behooves liberal arts defenders to recognize and validate these concerns and provide evidence of the pecuniary benefits to a liberal education so that students and families can take them into account in their decision-making. Both Beecroft 2013 and Kleinman 2016 assert that preparing students for jobs does not mean that a liberal education cannot also “enrich their souls and make them better citizens.”²

This paper reviews the existing research on the economic benefits and costs of a liberal arts education to individuals and society more broadly, summarizing what we know and what we would like to know as we think about the future.

I. Summary

We begin with a discussion of the challenges of defining what a liberal arts education is, since measuring its impact depends on a clear and shared understanding of its components. We then present the evidence on the economic returns to earning a college degree compared to earning only a high school diploma, and then discuss the available research on the economic returns to earning a liberal arts bachelor’s degree compared to other types of college degrees.

Using newly available data and research on students’ earnings, choice of major, and occupation, we begin to explore the relationship between a liberal arts education and students’ earnings and pose questions for future research. Increased earnings resulting from higher education, on average, can broadly inform individual and public investments in higher education. Earnings

² Beecroft 2013.

impacts, however, vary across individuals and institutions depending on individual student characteristics, including their programmatic and curricular decisions, and institutional characteristics, including programmatic and curricular offerings, resources, and student body characteristics. In this paper, we explore newly available data on students' family incomes and individual earnings at age 34 to understand how earnings for students graduating from liberal arts colleges compare to earnings for students graduating from other private, non-profit and public colleges and universities, controlling for level of selectivity.³ While illuminating on a variety of issues, these data also demonstrate the difficulties of isolating the impact of a liberal education on earnings, controlling for other factors. For example, attending a liberal arts college may or may not be a good proxy for receiving a liberal education. In addition, different occupations are rewarded differently in the labor market and individuals' sorting into occupations may not be causally related to the type of higher education they received or the type of higher education institution they attended. These issues will be explored in greater detail in the following discussion, in service of informing future research on the economic impact of a liberal education.

Finally, to calculate returns to different types of higher education investments, costs are also discussed along with the expected impact on earnings. Both individual and societal costs and benefits are discussed.

³ We have not explored the evidence on the earnings impact of the for-profit sector. For a description of the issues surrounding the for-profit sector, see Brown and Kurzweil 2017.

Critics claim that a liberal arts education is worth less than the alternatives, and perhaps not even worth the investment at all. They argue that increasing costs and low future earnings limit the value of a liberal arts education, especially compared to alternative options such as pre-professional programs that appear to be better rewarded in the current labor market.

Existing evidence does not support these conclusions, when other student and institutional characteristics are controlled for. At the same time, the empirical evidence is limited and further empirical research is needed to better understand the value of a liberal education relative to alternatives types of higher education. In the conclusion, we discuss possible areas for future research.

II. What is a liberal arts education?

There is not complete consensus or clarity around what is meant by a liberal arts education. While it has of course been associated with the education that is offered at liberal arts colleges, attending a liberal arts college is neither necessary nor sufficient for receiving a liberal education, and there is not even consensus about which colleges should be classified as liberal arts colleges (see Ferrall 2011). Many colleges that are currently classified as liberal arts institutions (by the US News and World Report or the Annapolis group, for example)⁴ have increasingly moved toward offering pre-professional and/or more vocational courses of study.⁵ At the same time, other liberal arts colleges which offer what is typically recognized as a broad

⁴ USNWR reports on four categories of liberal arts colleges, based on their selectivity. The Annapolis group is an organization of 130 leading national independent liberal arts colleges.

⁵ See Breneman 1994; Ferrall 2011.

liberal arts curriculum may not require their students to actually take a set of courses during their four years that takes advantage of that curriculum. In addition, many students at universities both with and without pre-professional undergraduate programs and majors may take a set of courses and/or choose majors that are typically recognized as a classic liberal arts education.

As an example of the challenges, Kleinman 2016, recognizing that “the liberal arts means many things to many people,” defines it as “a broad integrated education that includes course work in the humanities, social sciences and sciences.”⁶ While unobjectionable, this doesn’t help much in distinguishing alternative higher education paths, except in the broadest terms. It also leaves unanswered what students are actually learning by studying this broad set of courses. The impact of this type of education on earnings presumably depends in part on its impact on the skills valued by the labor market, not so much on knowledge of particular subject matter.

A liberal education therefore may be characterized not only by what is taught, but how it is taught and the skills that it develops as a result. Pascarella et al. 2005, Seifert et al. 2008, Pascarella et al. 2013, and Kilgo et al. 2015, examine the impacts on learning of a liberal arts education and liberal arts colleges and attempt to characterize a liberal arts education by the environment and teaching practices, rather than institutional type. Pascarella et al. 2005, nonetheless conclude that students at liberal arts colleges are more likely to experience these

⁶ P. 97, footnote 1. The humanities and the liberal arts are often spoken about as if they were the same thing. As Kleinman notes, the liberal arts fairly consistently is considered to be broader than the humanities, including study of the social sciences and sciences as well. Sometimes, to reinforce that study of the sciences is included, the “liberal arts” is expanded to the “liberal arts and sciences.” But, most would include study of the sciences within a liberal arts education, without the expanded nomenclature. It is the case that one of the important characteristics of a liberal education in most places is a robust, and often required, exposure to humanities courses.

characteristics than students at other types of colleges and universities. While these studies examine a variety of learning outcomes rather than the earnings impact of a liberal arts education, they highlight the difficulties of defining a liberal arts education, identifying who has received one, and therefore measuring its impact on student outcomes.⁷

In addition to curricular and instructional practices, however ambiguous, a variety of other experiences come bundled with a liberal arts college education, including a residential experience and a variety of extracurricular or co-curricular activities. Liberal arts colleges, and also many undergraduate programs offered at research universities that are primarily residential, argue that these are core to the educational experience. When trying to determine the costs and benefits of any particular four-year educational experience, it is difficult to disentangle all the various aspects of the program from the results on outcomes as well as the effects on costs. Are students learning important skills for the labor market in their classrooms, or through editing the student newspaper, or learning teamwork on the athletic field? To what extent are high costs driven by the academic experience, or by the accompanying residential experience and extracurricular activities? Determining the various impacts of different aspects of a liberal education will be important particularly in finding ways to cost-effectively extend the benefits to a greater share of students pursuing higher education. It may be that we can only identify students who have received a liberal education by examining transcripts and courses taken in terms of the curriculum, as well as individual engagement in extracurricular activities. How the curriculum is delivered may also play a role, with the degree

⁷ These studies are also of interest because even though they do not measure the impact on earnings, presumably any impact on earnings occurs through the effects on skills which are rewarded by the labor market.

of active learning and greater engagement with faculty defining what we mean by a liberal education. The ability to deal with very large data sets may make such an exercise possible.

Figure I demonstrates how one could graphically characterize a liberal education depending on the extent to which the curriculum exhibits the liberal arts, extracurricular and residential experiences accord with liberal arts values, and pedagogy embodies active learning and close interaction between faculty and students. If these are the attributes that are considered important to a liberal education, they could be combined into an index, although this would require assigning weights to each of the components. In some cases, this might be a useful summary metric to have. In others, it might be better to keep the components separate, so that they could be individually evaluated.

III. The economic returns to higher education, including a liberal arts education

A large literature examines the returns on investments in education from early childhood education through graduate school. Economists model the decision-making around investing in education as a cost-benefit calculation. If the expected net present value suggests a positive return, taking uncertainty into account, going to college is a good financial investment. What is the cost of more schooling and what is the expected future impact on earnings? Is it a good investment and, for whom?

Researchers have examined the returns to receiving various types of post-secondary degrees to try to answer this question for higher education. As part of calculating the economic returns, many have looked at the effects on lifetime earnings of getting more schooling after graduating from high school, including a two-year associate's degree, a four-year bachelor's degree,⁸ or just additional years after high school without receiving a degree.⁹ We start by examining the evidence on the earnings impact of receiving a bachelor's degree compared to just graduating from high school, and then examine the evidence on whether a liberal arts degree results in different earnings outcomes compared to other four year degrees, not explained by other factors such as gender, choice of major or occupation, or ability.¹⁰

a. The earnings impact of a bachelor's degree

Looking at the correlation of post-secondary educational attainment and best estimates of the earnings of those going on to college compared to those with a high school degree show that those who have gone on to college do earn more than high school graduates. The College Board, in *Education Pays*, reports these data every three years.¹¹ The most recent data from the College Board (2016) suggest that the earnings premium for having a bachelor's degree compared to only a high school degree is about 65 to 70 percent.

⁸ Throughout the paper, we refer to four-year postsecondary degrees as bachelors' degrees. BA is sometimes used as a shorthand, but would include other four-year degrees such as the Bachelor of Science (BSc.)

⁹ We will return to costs below, which need to be combined with earnings, to determine return on investment.

¹⁰ If students with a liberal arts education cannot get certain jobs because of their education that other students with similar characteristics at other institutions do get, then any earnings differential between these students would be attributed to the liberal education. But, if these students are choosing some jobs over others, then the relationship between earnings and a liberal education are spurious and not causal. The difficulties of sorting out causation from correlation and treatment from selection will be discussed in greater detail below.

¹¹ Baum, Ma, and Payea 2013; Ma, Pender, and Welch 2016

Other evidence is reported in a Carnevale, Rose and Cheah 2011 report from the Georgetown University Center on Education and the Workforce. They report an 84 percent premium for a bachelor's degree compared to a high school diploma. Oreopoulos and Petronijevic 2013 review the literature on the returns to higher education, both monetary and non-monetary and over time, and report a general consensus on the current magnitude of the earnings premium for receiving a bachelor's degree around the values reported in *Education Pays 2016* and Carnevale et al. 2011. There is also evidence that this premium has increased over time. Autor 2014 reports that this premium has doubled since 1980, for both men and women.

There is a growing consensus that the increased earnings associated with higher education are being driven by technological change that has increased the demand for skilled labor, which has outpaced the increase in supply (Oreopoulos and Petronijevic 2013; Goldin and Katz 2009; Autor 2014). While educational attainment has been increasing, and therefore increasing the supply of skilled workers, it has not grown fast enough to offset the rising demand. As a result, the labor market is rewarding more educated workers through higher wages.

Deming 2015 demonstrates a growing demand for social skills in the labor market since 2000, and not just cognitive skills. Technological change may be biased toward social skills, because technology to date has not been able to substitute for these skills easily. It is not clear whether this will reward one type of higher education over another, but it is possible that it will benefit types with greater emphasis on interaction and teamwork, often associated with a liberal education, but not exclusively so.

Returning to earnings, researchers at “The Equality of Opportunity Project” (EOOP), Chetty et al. 2017, have access to individual tax record data from the U.S. Treasury Department. Using these data, they examine the distribution of students’ family incomes at 2,463 U.S. colleges and universities and explore the relationship between students’ family incomes upon enrolling in college and students’ own earnings at about age 34. These data, which are now publicly available at the institution level, contribute significantly to the research on economic returns to higher education and confirm that higher education is associated with higher earnings. We know that family income is a good predictor of future income, but that education is associated with moving up in the income distribution (Reeves and Rodrigue 2014). Chetty et al. 2017 report that the earnings outcomes of students from different family income backgrounds are fairly similar within institutions, suggesting that the earning outcomes at individual schools do not depend significantly on family income. This finding confirms that, notwithstanding issues related to inequitable access to higher education, higher education plays a determinative role in intergenerational income mobility. When low and middle income students attend more selective schools they are more likely to graduate and experience earnings similar to their higher income peers, reducing the correlation between their families’ incomes and their future earnings.

Two other sources of data on the earnings impact of attending college are the College Scorecard 2017, a resource made available by the Department of Education, and Payscale’s annual College Return on Investment Report.¹² The College Scorecard reports median earnings, for students who received federal financial aid, ten years after entering the college or

¹² Payscale is a for-profit company that supplies cloud-based compensation services to businesses and individuals.

university for each of the institutions included in the database. The Scorecard compares this to the national average (\$33,500 for the most recent year for which data are reported) and also reports the fraction of students earning more than the median wage for workers, ages 25 to 34, with only a high school degree (\$25,000).¹³ Payscale reports the return on investment for different colleges and universities based on self-reported earnings data from individuals who use their commercial services.

As discussed below, we can use each of these data sources (Chetty et al., the College Scorecard, and Payscale) to begin to explore the economic returns or earnings impact of a liberal education compared to other forms of higher education.

One important issue with all the data on the correlation between lifetime earnings and education is that correlation does not prove causation, which is what we are really after. There are selection problems, in that those who go on to college (and those who go to the colleges whose graduates demonstrate the highest earnings) have particular characteristics such that they would earn more in the labor market whether they went to college or not, or regardless of which college they attended.¹⁴

A variety of studies attempt to address this selection problem, and Oreopoulos and Petronijevic 2013 review research that has been done to address this issue. Since it is not possible in this situation to run randomized controlled trials, researchers in many cases rely on

¹³ FullDataDocumation.pdf for the College Scorecard, 2017.

¹⁴ Selection problems exist with regard to choice of occupation as well, as will be discussed below.

natural experiments.¹⁵ As an example, using data for SAT-takers in Georgia, Goodman, Hurwitz and Smith 2015, control for selection problems by examining the outcomes for students who score right around the minimum SAT required to attend a four-year institution. They demonstrate that getting into a four-year institution increases bachelor's degree completion rates. With a bachelor's degree rewarded in the labor market, those just above the cut-off do better in terms of earnings than those just below, demonstrating that the outcomes are not the result of student attributes, since those right above and below the cut-off are essentially indistinguishable, except by the college attended. Those just below the cut-off mostly enroll in 2 year community colleges, with the difference in earnings outcome representing the 2 year college penalty.¹⁶

While it is hard to conclude definitively, the accumulated evidence supports the causal effect of education on earnings. Ma, Pender, and Welch 2016, for example, conclude that “reliable statistical analyses support the significant role of postsecondary education in generating the benefits reported” (p. 3). While we try to be careful about not assuming causation given evidence of correlation, we believe the evidence supports causation, with the higher expected earnings associated with a bachelor's degree not just the result of selection.

Before turning to the evidence on the returns to a liberal arts education as a subset of those going on to post-secondary education, it is important to note that there are concerns that individuals are underinvesting in all types of higher education given the evidence on overall

¹⁵ See Card 1995, Zimmerman 2014, and Hoekstra 2009. Several different strategies are used to address the causality issues.

¹⁶ Some attend private or out-of-state four year institutions, or don't go to college at all (p. 21).

positive and indeed super-normal returns.¹⁷ Oreopoulos and Petronijevic 2013 cite evidence that high income families are 16 percentage points more likely to send their children to college than low income families, even controlling for other attributes that affect college attendance, such as achievement. Possible explanations include the greater likelihood of low income families facing liquidity constraints, having an aversion to debt even if not faced with actual liquidity constraints, and making decisions with imperfect information about the costs and benefits of going on to higher education. Chetty et al. 2017 reports that the earnings outcomes for lower income students are similar to their higher income peers at individual higher education institutions. The correlation between parental income and own income for lower-income students is positively disrupted by going on to higher education. These findings will have implications for the discussion of the costs and benefits of a liberal arts education compared to alternatives, if different types of higher education have a differential impact on lower income students.¹⁸

b. The impact on earnings of a liberal arts degree, compared to alternative forms of higher education

We are interested specifically in the economic benefits of a liberal arts education (however defined) as a subset of this work. Are there differences in lifetime earnings for those who receive a liberal arts education rather than a different type of bachelor's degree, controlling for

¹⁷ The positive returns mean that additional investments in higher education would result in net benefits. This suggests that we are underinvesting in higher education, despite the high costs.

¹⁸ Some institutions may be more effective at graduating students from demographic groups that are underrepresented in higher education. As an example, *The Journal of Blacks in Higher Education* (2005) reports that "Black student graduation rates at the nation's liberal arts colleges are much higher than the nationwide average." Of course, impact depends on both numbers matriculating and graduation success.

other attributes and characteristics that affect earnings? Little work has been done explicitly on this. It is easiest to do for those attending what are classified as liberal arts colleges, but as discussed earlier, this may not adequately identify those receiving a liberal arts education.

The types of skills that the labor market is currently rewarding through increased earnings for those with more education are believed to include abstract problem solving, critical thinking, and effective communication.¹⁹ While liberal arts colleges claim that these are exactly the skills that their graduates attain, higher education has not routinely measured student learning outcomes. In many cases, they are either assumed or measured by *inputs* into the educational process, rather than *outcomes*. Over the last 20 years, this has been an issue for accreditors, and schools have paid increasing attention to the problem, working to measure the value added of their education, rather than just measuring inputs (Middle States Commission on Higher Education 2015). Examining earnings is one manifestation of trying to measure the outcome of investing in higher education. In terms of improving the skills that economists argue are being rewarded by the labor market, Arum and Roksa 2011 find that liberal arts colleges do better than other colleges and universities at instilling these skills. If liberal arts colleges, or liberal education more generally, are doing a better job of improving their graduates' skills in these areas, and these are the skills that are being rewarded in the labor market, we should be able to see this in the earnings data. But to do so requires holding all other variables which affect earnings constant, which is challenging to do.

¹⁹ Deming 2015 discusses the growing demand for and rewards to social skills in the labor market, as well as cognitive skills.

We review what work has been done on this issue. Studying the earnings results by major has been one strategy for examining the impact of pre-professional/professional education compared to a more liberal education (i.e., not directly job-related.) The returns to different occupations have also been studied, looking at the occupational outcomes of those with different types of higher education experiences. Yet, all of this work suffers from the difficulties mentioned above, including the fact that correlation does not prove causation. It is difficult to disentangle treatment from selection, particularly in the choice of major and occupation, which depend on both ability and preferences, and not just educational attainment.

Finally, later in this section, we present findings from the EOOP, which has access to newly available data on individual taxpayer IRS earnings data (Chetty et al. 2017). The project has published institutional-level data on earnings outcomes at about age 34 by parental income of the students. These data allow for the comparison of earnings outcomes for different types of colleges and universities and for students from different income backgrounds. We used these data to compare the earnings outcomes of students who attended liberal arts colleges with other institutions. Combining with data on selectivity and share of different majors at different colleges and universities, these comparisons shed some light on the earnings outcomes for students attending liberal arts colleges compared to other colleges and universities. As with other research, the difficulties of identifying students who have received a liberal education and the problems of causation and self-selection remain. If students at liberal arts colleges are more likely, on average, to receive a liberal arts education, these comparisons may nonetheless yield valuable insights into the returns to a liberal arts education, and suggest directions for future research.

i. Choice of major

Researchers have examined the economic returns to various majors of study as a way of exploring the value of a liberal education. These studies compare the earning outcomes for students who major in areas typically characterized as liberal arts to the earnings outcomes for students with pre-professional and other non-liberal arts undergraduate majors. Even though a liberal arts education is not defined explicitly by choice of major, the insights from this line of inquiry nonetheless contribute to understanding the costs and benefits of a liberal arts education.

A major criticism of liberal education is that it doesn't prepare one explicitly for the job market, while pre-professional programs offer training in specific skills that are directly relevant to specific jobs. Critics of liberal arts education argue that higher education focused on job skills will lead to better earnings outcomes for students and their families, and stronger economic growth for the economy. So, evidence about the lifetime earnings of those who follow pre-professional and other non-liberal arts paths is relevant to this line of criticism.

A variety of studies look at the returns to different college majors. Ma, Pender, and Welch 2016 report on median earnings by major for 2013-14. Earnings are reported for early career (age 22-27) and mid-career (age 35-45) full-time workers with a bachelor's degree but no advanced degree. The overall median for early career workers is \$38,000 and \$62,000 for mid-career workers. A variety of the majors with earnings above the median, both early career and

mid-career, are pre-professional (business analytics, nursing, accounting, general business), but many would be a part of a liberal education (computer science, physics, economics, finance, mathematics, chemistry). Those with earnings below the median also include both pre-professional majors and majors traditionally considered part of the liberal arts and sciences. Importantly, humanities majors (e.g., philosophy, history, English, art history) all have median earnings below the overall median for both early and mid-career workers.

The Association of American Colleges & Universities (AACU) also examined lifetime earnings by undergraduate major for those students who have attained a bachelor's degree only and those who have attained a graduate degree (Humphreys and Kelly 2014). The AACU report compares bachelor's degree recipients in the humanities and social sciences to bachelor's degree recipients in professional and pre-professional, science and math, and engineering fields. The first and penultimate categories of degrees are associated with a liberal arts education, whether offered at a liberal arts college or elsewhere, while professional, pre-professional, and engineering degrees are generally not.²⁰ Their findings for all graduates, including those who go on to graduate school, include the following:²¹

- On average, engineering graduates earn more over their lifetimes compared to other degree holders.
- Bachelor's degree recipients in the humanities and social sciences and bachelor's degree recipients in professional and pre-professional fields have similar median earnings over

²⁰ Several liberal arts colleges do offer engineering majors, including Smith College and Swarthmore, for example.

²¹ See Figure 4.

their lifetimes, with a slightly higher starting salary for pre-professional and professional degree holders.

- Bachelor's degree recipients in the sciences and math have similar starting salaries to those with humanities, social science, professional, and pre-professional degrees, but over time, their earnings increase at a faster rate.

On average, obtaining a graduate degree further increases one's lifetime earnings. The earnings differences between graduate degree holders and bachelor's degree holders differ by undergraduate major. Compared to all other majors, bachelor's degree recipients in science and math experience the largest earnings increase from obtaining a graduate degree; bachelor's degree recipients in professional and pre-professional majors experience the smallest increase from obtaining a graduate degree.²² Importantly, compared to engineering and pre-professional and professional majors, a larger proportion of humanities and social science majors and science and math majors go on to advanced degrees. This suggests a channel through which a liberal education contributes to higher earnings.

Other papers that address the role of major in student outcomes include Berger 1988 and Goyette and Mullen 2006. The Hamilton Project, an economic policy institute at the Brookings Institution focused on promoting broad economic growth, has examined the variation in earnings across and within college majors (Schansback, Nunn and Nantz 2017; Hershbein and Kearney 2014). They find that students with the same majors can follow very different career paths with very different earnings outcomes.

²² See Figure 8.

A recent American Academy of Arts & Sciences report (2018) finds similar results. While engineering majors, other STEM majors, and business graduates have higher median earnings than humanities majors, humanities majors with a BA earn significantly more than those with only some college or only a high school diploma. Humanities BA degree holders were more likely to get an advanced degree than graduates in all fields combined, further increasing their earnings.²³

Abel, Deitz and Su 2014 examine the unemployment and underemployment impact of different majors and demonstrate that these rates differ by major. They conclude that students who major in technical fields (e.g., engineering, math, computer science) or in high-growth sectors of the economy (e.g., education and health) have experienced better unemployment and underemployment outcomes, than students majoring in other liberal arts fields, social sciences and business. They acknowledge that variation in students' inherent skills may explain observed differences in unemployment and underemployment outcomes in the labor markets. One way to account for skill variation may be to control for the selectivity of the school that students attend.

ii. Choice of occupation

Carnevale, Rose and Cheah 2011 report earnings by education and occupation. There is significant earnings variation within educational attainment levels, depending on occupation.

²³ AAA&S, 2018, pp. 5-6.

Those working in the managerial and professional, health professional, and STEM fields²⁴ have higher median lifetime earnings than those in education, community service, the arts, sales and office, health support, blue collar, or personal services occupations. This tends to hold true across levels of educational attainment (from less than high school to doctoral and professional degrees). Within these occupations, lifetime earnings are positively correlated with additional education.²⁵

There are several ways in which different returns to different occupations could affect the earnings of students who have received a liberal arts education. If liberal arts education prepares students for some occupations better than others, this would affect expected lifetime earnings. Also, if such an education prepared one more effectively for further schooling (masters, professional school, Ph.D.), then a liberal education would have an indirect effect on lifetime earnings through access to graduate education.

The evidence of the returns to different majors is not unrelated to the fact that the labor market rewards different occupations differently, for a variety of reasons. The relative supply and demand for particular types of labor plays a large role. The sorting of individuals into occupations (and the majors or types of education that support access to particular occupations) will depend on preference and ability, as well as access to education.

²⁴ Science, Technology, Engineering, and Math

²⁵ Within occupations, doctoral degrees in many, but not all cases, command higher salaries than professional degrees.

While lower earnings in a particular occupation may suggest a lower economic return to any given investment in higher education, it may not mean that the individual is making an irrational decision. Non-pecuniary benefits (e.g., job satisfaction) or a lack of interest or aptitude in a higher-earning occupation suggest that an alternative occupational choice or higher education investment might not improve earnings or well-being for all individuals. A relevant question for some students, with strong preferences for a particular occupation, is whether there are economic returns within that occupation for investments in higher levels of education. Evidence presented by the Ma, Pender, and Welch 2016 suggests that, while occupation explains some of the dispersion in earnings within a given educational attainment level, more education translates to higher earnings within occupations (p. 4, 25).

It is also important to note that college major is only loosely related to occupation. Carnevale and Cheah 2013 report that 40 percent of bachelor's degree holders in the labor force are working in a profession unrelated to their major field of study. Similarly, employers report that a candidate's demonstrated skills matter more in hiring decisions than their undergraduate major (Hart Research Associates 2013, p. 4).

iii. Newly available data applied to liberal arts colleges

Another way to examine the economic returns to a liberal arts education is to look at the same correlations that are discussed for all of higher education and see whether the liberal arts colleges differ from the aggregate data, recognizing the limitations already discussed of using

liberal arts colleges as a proxy for a liberal education. But if liberal arts colleges on average offer a more liberal education, these comparisons may yield useful information.

To start, we identify liberal arts colleges using classifications from U.S. News and World Report (USNWR 2009).²⁶ USNWR groups liberal arts colleges into four “tiers” based on their degree of selectivity, where tier 1 includes the most selective liberal arts colleges and tier 4 includes the least selective liberal arts colleges. While these selectivity tiers are useful for understanding the liberal arts college landscape, we cannot easily apply them to non-liberal arts colleges and universities; therefore, we utilize the selectivity classifications in the EOOP data to classify all colleges and universities.²⁷ These classifications allow us to construct comparison groups for liberal arts colleges by taking into account institution type (private and public) and degree of selectivity (elite, highly selective, and selective). Since we know that ability also affects earnings, and selectivity is in part correlated with ability, grouping schools by selectivity controls to some extent for the effect of ability on earnings outcomes.

Table 1 juxtaposes the USNWR liberal arts classifications and the EOOP selectivity classifications. Throughout this section, we explore average student earnings for three comparison groups:²⁸

²⁶ USNWR classifications are a widely used classification for liberal arts colleges by selectivity but are not exempt from the issues previously discussed by Ferrall (2011).

²⁷ The EOOP selectivity classification is based on Baron’s Educational Series, College Division (2008) as reported in Chetty et. al. 2017, p. 56.

²⁸ We have restricted the comparison to the private, non-profit liberal arts colleges, since all but one of the liberal arts colleges are in this sector. The elite category for non-liberal arts colleges and universities includes 5 public institutions, along with the elite private, non-profit institutions. The Ivies are in a category of their own, so we have excluded them from the comparisons. For the highly selective and selective comparisons here, we exclude the publics because the numbers are large. We compare the results for these publics later in the paper when we discuss costs. (See Table 1.) Examples of elite institutions are Amherst, Barnard, Carnegie Mellon, Davidson, UNC, UVA, USC. Examples of highly selective privates are Bard, Baylor, Elon, Dickinson, Fordham, Northeastern,

- Elite liberal arts colleges vs. other elite colleges and universities,
- Highly selective, private liberal arts colleges vs. other highly selective, private colleges and universities, and
- Selective, private liberal arts colleges vs. other selective, private colleges and universities.

While we know that many students attending colleges and universities that are not classified as liberal arts colleges may receive an education very similar to that offered at liberal arts colleges, liberal arts colleges, on average, have more attributes that are associated with a liberal education (see figure 1). If the typical student at a liberal arts college receives a more liberal education than the typical student at other institutions, these comparisons will shed some light on the impact of a liberal education. The comparison of outcomes by type of institution, controlling for selectivity, offers some evidence on the value of a liberal education and suggests important directions for future research.

Using the EOOP data, we first explore the relationship between students' family incomes upon enrolling in college to students' earnings at age 34 for each of the three comparison groups outlined above (see Figures 2, 3, and 4).²⁹ These figures display the distribution of students' family incomes across each income quintile ("Parent Income") and the likelihood that a student whose family was in a particular income quintile is herself in the top income quintile at age 34 ("Student Outcomes"). In each figure, we compare liberal arts colleges to other colleges and universities in the same selectivity group.

Smith, Wheaton. Examples of selective privates are Hofstra, Ithaca College, Pace, Seton Hall. The complete list can be found in Chetty et. al 2017.

²⁹ These figures use different institutional groupings to replicate figures provided to the authors by the EOOP team.

Figure 2 shows that the parent income distribution at elite liberal arts colleges is not substantively different from the parent income distribution at other elite colleges and universities; elite colleges and universities overwhelmingly enroll students whose families are in the top income quintile. Students who attend elite liberal arts colleges, however, are less likely to themselves have incomes in the top quintile, regardless of the income quintile of their parents. For example, 54 percent of elite liberal arts college students whose families are in the top income quintile are themselves in the top income quintile at age 34, compared to 62 percent of other elite college and university students.

At highly selective private colleges and universities, Figure 3 shows even larger gaps in student outcomes between liberal arts and other institutions. Students at highly selective, private colleges and universities which are not liberal arts colleges achieve outcomes on par with students at elite liberal arts colleges; students at highly selective, liberal arts colleges experience less economic mobility across all parent income quintiles, as measured by achieving earnings in the top income quintile. For example, 35 percent of highly selective liberal arts college students from families in the bottom income quintile earn wages in the top income quintile at age 34, compared to 45 percent at other highly selective, private colleges and universities.

At selective, private colleges and universities, Figure 4 shows that, students, on average, are less likely to reach the top income quintile than students at elite or highly selective, private colleges and universities. Yet, the gap in student outcomes between liberal arts colleges and other colleges and universities within the selective category of institutions has essentially disappeared.

Students at selective liberal arts colleges appear to have incomes on par with their peers who attend other selective, private colleges and universities.

The share of students who reach the top income quintile by age 34 is not the only meaningful student earnings outcome measure. We can expand our analysis to include the share of students in each parent income quintile whose earnings at age 34 are in the top two income quintiles, or the top 40 percent of the income distribution. Attaining the top 20 percent of the income distribution may be strongly affected by certain professions or occupations, and liberal arts college graduates may be less likely to be found in these occupations, in part by self-selection or preference. The extent to which these preferences play a role in students' decisions about the type of institution to attend will determine whether selection or treatment are driving earnings outcomes of attaining the top 20 percent of the income distribution. Using the same selectivity groupings as the prior figures (i.e., elites, highly selective privates, selective privates), Figures 5, 6, and 7, display the distribution of parent incomes and the likelihood a student's earnings are in the top 40 percent of the income distribution for liberal arts colleges and other colleges and universities.

For elites and highly selective privates, the gaps between liberal arts colleges and other colleges and universities remain but are significantly reduced when we include students whose earnings are in the second income quintile. For selective privates, across all family income quintiles, the share of students whose earnings are in the top 40 percent of the income distribution is nearly twice as large as the share of students whose earnings are in the top 20 percent. With these

institutions, a similarly small gap between liberal arts colleges and other colleges and universities is in favor of the liberal arts colleges.

Things to note:

- The less selective the group of schools, the lower the share of students who get into the top quintile or the top two quintiles of the income distribution, for both liberal arts colleges and other colleges and universities. This suggests that talented lower income students who “under-match” and attend a less selective school than they are qualified to attend may be lowering their expected future earnings.³⁰
- The gap in the share who reach the top quintile by parent income between liberal arts and other institutions is the largest for the highly selective schools.
- This gap reverses, with a small advantage for the liberal arts colleges, for the selective schools.
- The gap between the liberal arts colleges and other institutions declines significantly when we expand our analysis to include students moving into the top 40 percent of the income distribution. Controlling for selectivity, the type of school appears to matter more for students moving to the top 20 percent of the income distribution than for students moving to the top 40 percent of the income distribution.

³⁰Several studies have suggested that talented lower income students do not attend as selective schools as their credentials qualify them for, a phenomenon referred to as “undermatching.” Reasons can include their not even applying, because of lack of information and concerns about cost, or getting rejected because of their need for financial aid. See Hoxby and Avery 2013. Hill and Winston 2006, reports on the availability of talented low-income students in the national pool of standardized test takers, compared to those at a highly selective group of colleges and universities.

This analysis does not reveal the specific factors that explain the differentials in the first two graphs nor the reasons the gap disappears for the selective schools or decreases for mobility to the top 40 percent of the income distribution. We do know from other research that the gender, race and occupation of graduates all affect earnings. Part of the gap in mobility may be explained by differences between liberal arts colleges and the comparison institutions with respect to these characteristics. In this section, we begin to explore the impact of these mediating factors on student outcomes in order to explain the student outcome gaps between the most-selective liberal arts colleges and other colleges and universities.

Based on the previously discussed research on earnings differences by major and occupation, we posit that the student earnings gap between liberal arts colleges and other colleges and universities may be at least partially explained by substantive institutional differences in students' choice of majors and occupation after graduation. We use information on types of degrees awarded and graduation rates to explore which institutional factors, if any, may explain these earnings gaps. The analysis presented here is purely descriptive but can help frame a future discussion about an appropriate strategy to identify earnings differences across various educational options. Much like grouping schools by selectivity is an attempt to control for differences in ability, examining major and occupation is an attempt to control for the impact of occupational preferences on earnings outcomes.

To start, we identified those colleges and universities in each selectivity grouping whose students' earnings at age 34 were higher or lower than expected based on their distribution of student family incomes. For example, in Figures 8a and 9a, respectively, we report the

distribution of student family incomes and student outcomes for two elite liberal arts colleges, one, a high-performer, and another, less successful at moving students into the top quintile of the income distribution. Across nearly all income quintiles, students at the first institution, which has a very strong STEM focus, are more likely to attain the top income quintile, on average, than students at all elite liberal arts or other elite colleges and universities.

Interestingly, students whose families are the poorest are most likely to earn wages in the top quintile—74 percent of students whose family incomes are in the bottom quintile themselves earn wages in the top income quintile by age 34. At the other institutions, students, however, earn substantially less, on average, than students at all elite liberal arts or other colleges and universities as measured by getting into the top income quintile. Only 30 percent of students at this institution whose family incomes are in the bottom quintile themselves earn wages in the top quintile by age 34, an average mobility rate more like the rate at selective privates than elite schools.³¹ This institution has a very distinguished arts curriculum, and graduates experience lower incomes. It also attracts students more oriented towards “social justice” fields and thus, who may self-select into professions they perceive to have higher social impact but lower earnings.

These data suggest that an institutional focus on certain majors or degrees, like engineering or STEM, is likely associated with higher average student earnings at age 34. Strong student earnings outcomes at the first institution, a college with a focus on engineering, reinforce this hypothesis. We use EOOP and College Scorecard data to explore differences in the shares of

³¹ These findings are similar for students moving into the top 40 percent of the income distribution, rather than the top 20 percent. See figures 8b and 9b.

certain types of degrees awarded at liberal arts colleges compared to other colleges and universities within each selectivity grouping (Figures 10 and 11).³² At elite and highly selective privates, liberal arts colleges awarded substantively larger shares of arts and humanities degrees and substantively smaller shares of STEM degrees in 2000, compared to other colleges and universities. These differences were especially large for highly selective liberal arts colleges and other highly selective private colleges and universities, which may explain why the gaps in student earnings outcomes between the two school types was largest for highly selective colleges and universities. Figure 11 suggests that differences in the share of STEM degrees awarded may be largely driven by substantive differences in the share of engineering degrees awarded rather than differences in the share of science, technology, or math degrees.³³

All of this suggests that differences in earnings outcomes across types of schools may have more to do with choice of major or occupation, rather than the impact of the different types of institutions or educational philosophy. It would also be useful to examine the differences between liberal arts colleges and other institutions in terms of race and gender, which also affect earnings outcomes.

Individual student data would be extremely useful in learning more about the economic impact of a liberal education. What we would really like to know is whether the likelihood of getting a

³² We report shares of degrees awarded in certain disciplines using federal data from school year 1999-2000 compiled by the EOOP team (Figure 10) and College Scorecard data from school year 2013-14 compiled by the authors (Figure 11). The EOOP team reports these data for school year 1999-2000 since it was during that school year that students in their analysis were attending college. Compiling our own data allows us to further disaggregate the degrees awarded than the aggregation available in the EOOP data.

³³ The evidence on the role of business degrees is less clear. The existing literature, as mentioned above, doesn't suggest a life-time earnings premium to business majors.

particular job and achieving earnings outcomes differs for students with similar abilities (and other attributes such as race and gender) depending on the type of education they received. We would like to compare similar students with similar preferences, abilities, and access to the basic necessary curriculum (courses) that prepare one for a given future path, and see if a liberally-educated student does less well, as well, or perhaps better in the future in terms of earnings.

College Scorecard data on earnings could be used to do a similar comparison on earnings between liberal arts colleges and others, for given levels of selectivity. The data are more limited in that the earnings are only for students receiving federal financial aid, ten years after they first started school. Earnings at 34, as reported in the EOOP, may be a better indication of life-time earnings.

Beecroft 2013 cites payscale.com data that suggest that humanities majors earn less than those undergraduates with professional degrees right out of college, but that the gap shrinks and in some cases reverses 15 years out. Payscale published their 2017 report, “Payscale College Return on Investment,” in April. The net return on investment³⁴ is reported by college type, including liberal arts colleges,³⁵ as well as by major and type of job. The data are self-reported by individuals who use Payscale services and only include those who earn a bachelor’s degree but do not pursue graduate studies. The data include 1,400 public and private non-profit colleges and universities. There are significant concerns about the data, including that they are

³⁴ The net ROI is defined as the difference between the 20 year median pay for a bachelor’s graduate and the 24 year median pay for a high school graduate minus the total four year cost. This calculation takes into account the opportunity cost of not working for four years while in college.

³⁵ Other categories include private, public, Ivy League, engineering, research and business schools.

self-reported and incomplete, but overall, the conclusions are in large part consistent with other sources.³⁶ For example, engineering schools have a higher net return on investment (ROI) than liberal arts, religious, or art schools. The extent to which this is explained by selectivity of school attended or choice of major or occupation is not discussed. They also report that students “from the highest quintile of household incomes have the highest median income after graduation.”³⁷ The data, in calculating return on investment, take into account costs, including not only tuition but the opportunity cost of attending school and foregoing earnings. We will turn to other evidence on costs below.

Summarizing the evidence, going on to receive a bachelor’s degree is associated with higher earnings and there is evidence that the relationship is causal. There is inadequate evidence to conclude that the earnings impact of receiving a liberal education differs significantly from alternative types of higher education. This is in part because we do not have a clear definition of a liberal education so as to test the hypothesis. Some majors and occupations are more highly rewarded in the labor market, but these are not uniquely associated with any one type of education, and choice of major and/or occupation may have more to do with preferences and abilities than what one is qualified to do upon graduation from any particular college or university as a result of that education. It is possible to compare the earnings outcomes of graduates of dedicated liberal arts college with graduates from other equally selective private, non-profit colleges and universities. But, differences in earnings outcomes may be largely explained by differences of choice of major and occupation, and other characteristics of the

³⁶ www.payscale.com/college-roi/methodology

³⁷ PayScale, “PayScale’s 2017 College Return on Investment Report reveals “the Rich Get Richer.” April 18, 2017.

students such as gender and race, and not by the type of education offered. More research is needed to more carefully define and then measure the impact of a liberal education, controlling for these other factors that affect earnings.

iv. Societal returns to higher education

Thus far, we have focused on the economic benefits to individuals of attaining higher education. We will now briefly discuss the literature on the economic benefits to society more broadly. There appears to be little empirical work that examines the economic benefits to society of a liberal education compared to other educational pathways. To the extent that some benefits to the public sector result from the private earnings impact of alternative forms of higher education, then any differences in earnings impact for individuals would have an impact on public benefits as well.³⁸

Because education contributes to economic mobility, making higher education available to students from lower income families can contribute to societal commitments to equal opportunity and social mobility. While not exactly an economic benefit accruing to the society at large, it does contribute to meeting societal objectives. And, the welfare of the country depends on the welfare of its individuals, although once there are winners and losers from a change in aggregate income, we run into valuing alternative income distributions.³⁹ The earlier

³⁸ As an example, tax revenue is positively correlated with earnings. If one type of higher education generates higher earnings, it would also generate more tax revenue, absent changes in policies.

³⁹ Economists recognize Pareto-improving changes as ones where some individuals are better off and no one is worse off. Once there are some who lose, valuing aggregate welfare requires a judgment about the relative value of the benefits and costs to winners and losers.

graphs that report the differences in earnings outcomes, as defined by reaching the top income quintile, suggest that the most selective liberal arts colleges have slightly fewer lower income students (measured by the share of students coming from the bottom three quintiles) compared to other private institutions with similar levels of selectivity and that they do not do as well at moving these students into the top quintile of the income distribution. Again, however, the earnings outcomes may be explained by other factors such as gender and choice of occupation and not by attending a liberal arts institution. And, if we look at the share that reach the top two quintiles of the income distribution at age 34, the difference between the most selective liberal arts colleges and other private institutions is significantly smaller. And, the selective liberal arts colleges do better than other private institutions on these measures.

The economic benefits of higher earnings for individuals who obtain more education also generate benefits for the public sector in more directly economic ways. Higher earnings translate into higher tax revenues as well as lower demand for public social service expenditures. Higher tax revenues and lower public expenditures on social services free up resources that can either be used for other public programs or returned to individuals through lower tax rates. Carroll and Erkut 2009 examine the impact of additional educational expenditures on tax revenues and contributions to programs such as social security and Medicare, public expenditures on a variety of programs, and spending on prisons and jails. They conclude that increased educational attainment (including a college degree versus some college) yields significant net economic benefits to taxpayers.

In addition to examining earnings, others have looked specifically at the impact of having a higher education degree on unemployment outcomes. There is evidence that those with more education experience lower unemployment rates, particularly in economic downturns. This of course contributes to higher lifetime earnings (Ma et al. 2016, p. 29), but also reduces claims on public resources. Abel, Deitz and Su 2014 report that college graduates at the start of their careers take time to transition to the labor market and experience both unemployment and underemployment and that this transition has become more challenging since 2000. At the same time, they also show that the situation is significantly worse for those without a college degree. What is not clear is whether these changes are structural or the result of the two recessions of the 2000s, including the “Great Recession.”

There is also evidence that those with higher levels of education are more likely to receive retirement and health insurance benefits (Baum, 2013, p. 13), and that greater education is also associated with better health outcomes for individuals. These could all be considered both pecuniary and non-pecuniary benefits of higher education for both individuals and society (Baum, Kurose, and Ma, 2013; Mirowsky and Ross, 2003). While some of the same self-selection issues around the effects of higher education on earnings also exist for the effects on health, Cutler and Lleras-Muney 2010 conclude that about a third of the correlation arises from knowledge and skills gained through education. These health benefits are valuable for the public sector, as well as individuals, because many of the costs of poor health are borne by the government and tax payers, and not the individual. Some of the health benefits to both individuals and the public sector result directly from the higher income that results from more education. Others accrue independently of higher income. In looking at the societal economic

returns of going on to higher education, the existing research does not in general make a distinction in the type of higher education pursued.

Heckman, Humphries and Veramendi 2017 examine a variety of non-market (non-earnings) outcomes related to higher education, including crime, mental health, civic engagement, self-esteem, trust, and participation in welfare. Some of these represent private, non-pecuniary returns to individuals and some affect the societal returns to investments in higher education, both pecuniary and non-pecuniary. Confirming major non-market benefits to education, they conclude “ignoring these outcomes could lead policy makers to greatly underestimate the benefits of supporting education”⁴⁰ Their work also demonstrates that these non-market returns to education appear to be larger for individuals with lower ability. They do not distinguish returns by type of education or educational institution, although to the extent there is correlation between selectivity and ability their results would suggest greater non-pecuniary benefits to students at the less selective institutions.

Moretti 2012 discusses another way in which society benefits above and beyond the benefits that accrue to the individuals who go on to higher education. When a community attracts a large number of highly educated, innovative workers and the firms that employ them, all workers benefit. Not only does such a concentration of high skilled workers create additional jobs in the community (in both professional and non-professional occupations), but it increases the salaries of workers with only a high school degree, increasing all workers’ productivity. Part of the explanation for this is that people learn from each other, and there are spillovers

⁴⁰ Heckman, et. al., p.4.

(positive externalities) from the high concentration of highly skilled employees. In such an environment, communications and networking are more efficient, increasing the productivity of all workers. It would be of interest to know if the innovation hubs identified by Moretti have over or underrepresentation of liberally educated workers.

v. Costs and Return on Investment

a. The importance of costs to individuals and society

Higher life-time earnings increase the return to any given investment in attaining a higher education degree, but the actual return depends on the size of the investment, or the costs. When thinking about returns to individuals, the price that they pay needs to be taken into account in determining their individual returns. For students who do not receive any financial aid, the price that they pay is the sticker price. For those who receive scholarships, it is the net price, or the sticker price minus any grant aid.⁴¹

For society, the net economic benefits or returns depend on the total cost of producing that education, not what the individual student is asked to pay. The difference is the subsidy that the student receives, which may be covered by state appropriations at public institutions, earnings on endowments, and gifts and grants. At almost all private non-profit and public institutions, the cost is greater than the sticker price, so that all students at these institutions receive a subsidy.⁴² Those receiving financial aid receive a greater subsidy that depends on the amount of grant aid.

⁴¹ While loans and work study support are often part of financial aid packages, these are means of paying the net price.

⁴² The for-profits are not included. One of their distinguishing features is that their goal is in fact to make a profit. The non-profits and publics do not have shareholders or owners, so there is no incentive to generate profits.

While the evidence strongly supports the conclusion that a college degree increases life-time earnings, the costs of higher education have also been increasing at high rates for which there are a variety of explanations. Archibald and Feldman in *Why Does College Cost So Much* 2010 provide a good discussion of all the possibilities and conclude that the skilled labor intensive nature of higher education is the main driver of costs. Absent productivity advances to reduce the requirement for skilled labor, in the form of faculty and high-level support personnel, while maintaining quality, increased returns to skilled labor in the economy have driven up the costs of higher education.

Rising costs are often associated with increasing prices or net prices, but not always. The reduced support through public appropriations for public institutions has led to high prices (either the sticker price for students paying the full price, or the net price when financial aid doesn't increase at the same rate as the sticker price) independently of cost increases. At many other institutions, the sticker price has gone up because of rising costs, but the net price for many families has increased at more modest rates because of increased need-based financial aid (College Board 2016 a,b).

For a given increase in earnings, higher costs (net price) reduce the return on investment to society (individuals). While the higher price that families are asked to pay decreases net

When they do, resources are accumulated for future spending. The for-profit institutions are growing and accounting for increasing shares of students. Many have been very unsuccessful at graduating students and transitioning them to the workplace. Understanding the economic returns to the various types of for-profit higher education options is an important issue. This issue is the focus of the current "gainful employment" debate.

returns, the evidence suggests that the gain in expected life-time earnings outweighs these rising costs for the average student. For example, the College Board 2016 reports that “the median four-year college graduate who enrolls at age 18 and graduates in four years can expect to earn enough relative to the median high school graduate by age 34 to compensate for being out of the labor force for four years and for paying the full tuition and fees and books and supplies without any grant aid” (Ma, Pender and Welch 2016, p. 18). Even if one looked at some of the most expensive schools, rough estimates suggest positive returns. As a simple example, at a school with a sticker price of \$65,000, a student receiving no financial aid would pay \$260,000 for four-years of tuition, room and board. Given the differences in lifetime earnings (the median earnings differential for a bachelor’s degree is about \$24,600), even including the opportunity cost of attending college, the earnings differential offsets the price over time. Including the opportunity cost recognizes the fact that individuals forego earnings while in school and that this is in fact part of the cost of attaining higher education. In addition the full room and board portion of the high sticker price should probably not be included in the costs (while forgone earnings are appropriately included), even though as will be discussed below these costs may be bundled with the education. Also, the median earnings for the most expensive schools according to the EOOD data are also higher than for other schools. Both of these factors would increase the net gains to the bachelor’s degree at the most expensive schools.

The societal costs are higher than the sticker price, since schools subsidize the educations they offer from state appropriations, gifts and grants, and earnings on endowments. But, even if we

took a rough estimate of some of the most expensive bachelor's degrees, the expected life-time earnings differential would still justify the costs.

Autor 2014 makes this point. The economic evidence of increased returns to higher education, despite its rising costs, strongly refutes the notion that we are in the midst of a "college bubble." Instead, it is the relative shortage of skills and those with a post secondary education that explains the increased earnings premium. Of course, the returns to this education would be even higher if the costs were lower, but the higher costs do not in and of themselves suggest a "bubble."

Of course, there will be students for whom the investment does not pay off for some reason. Since there is a distribution in earnings outcomes for students around the median and students pay different prices depending on financial aid, some students will not do as well as others. But, the evidence strongly supports the increased earnings impact of and positive return to receiving a higher education degree for many students.⁴³

Given the evidence on the increased earnings and returns, the anxiety and hostility toward higher education may have more to do with the cost and possible liquidity constraints faced by many families who worry about getting access for their children to these higher earnings, rather than concerns that the education is not worth it. Similarly, recognition of the increasing cost and price over time relative to other goods and services cannot help but raise questions about

⁴³ It would be useful to know what share of students experience negative returns at which types of schools and for what reasons. We know that investing in higher education but not getting a degree reduces returns. Differential probabilities of completion across different types of schools matter.

how much better off families would be if these relative prices for higher education had not increased. With higher net prices increasing the investment required, even if the expected return is positive, the cost of not graduating also increases, increasing the risk of the investment compared to the past. There is also variation in earnings around the expected value for those who graduate, which also adds risk for individuals (and society) undertaking the investment in higher education.

The rising prices, combined with the evolution of family incomes with increasing income inequality, may have contributed to more low to even upper middle income families facing liquidity constraints as they consider different types of higher education for their children. In addition, because of rising income inequality, the relationship of price or net price to family income has moved differently across the income distribution, with lower and middle income families facing higher net prices for higher education relative to income than higher income families (Archibald and Feldman 2010).

b. Price and net price at liberal arts colleges compared to other institutions

Figure 12 reports net price by liberal arts college by selectivity for students receiving financial aid, compared to other private four year institutions of similar selectivity. Figures 13, 14 and 15 report net price by income bracket of the family by type of institution by selectivity. Figure 16 reports the net prices for highly selective and selective publics, based on the EOOP selectivity tiers. The return on investment for any individual student depends on the net price he or she pays, so that the average net price for all financial aid students at any institution can be misleading for any individual student.

These data suggest that the average net prices that students face at liberal arts colleges compared to those at comparable private non-profit institutions and publics, depends on the income category of the student. At the elite and highly selective institutions, the liberal arts colleges have lower net prices than similarly selective private non-profits for low and middle income families. The mean net prices for the publics are below those of the privates, including the liberal arts colleges. Looking by income category, these data suggest that the public institutions are less expensive but by different amounts depending on family income.

Even though the average net price at selective public institutions is substantially lower than selective private institutions, students at selective publics are equally as likely to move into the top 40 percent of the income distribution as students from selective private institutions, both liberal arts colleges and other private non-profit institutions (see Figures 17 and 18). In the highly selective tier, the publics and the liberal arts colleges look very similar, while the other private institutions do better in terms of moving students into the top 40 percent of the income distribution. To understand the implications of this for individual student ROI by income, we need to include net prices by income level for students, since these can differ significantly by income level between publics and privates. The privates have relatively lower net prices for the lowest income students attending their institutions compared to higher income students. Compared to private institutions, public institutions have lower average net prices for students in all income categories; the differential in net price between privates and publics is the largest for students in the highest income category.

Combining these data and the data on earnings suggests that:

- The expected returns on investing in higher education are positive, even for those paying the full sticker price at the most expensive and selective institutions.⁴⁴
- This is true for all selectivity tiers of liberal arts colleges.
- The differences in individual returns on investment across different types of private higher education, controlling for degree of selectivity, are primarily driven by the differences in earnings, since net prices appear to be fairly similar.
- Because of the different pricing structure at the publics, net prices play a more significant role in affecting the returns to individuals on investment between publics and privates for many students.

Student graduation rates may also play a mediating role in costs and a college's average student earnings outcomes. Figure 19 reports the six-year graduation rates for liberal arts colleges and other colleges and universities across each selectivity grouping and for publics and privates.

Unsurprisingly, graduation rates at elite schools are higher than at highly selective or selective privates or publics. There is little difference in the graduation rates of liberal arts colleges and other colleges and universities in the elite and private highly selective groupings; six-year graduation rates at selective liberal arts colleges, however, are seven percentage points higher than other private selective colleges and universities. In addition, the liberal arts colleges have much higher graduation rates than the publics in both the highly selective and selective categories, by 18 percentage points and 13 percentage points respectively. The longer it takes

⁴⁴ This is consistent with the long lines of students queuing to be admitted to these selective institutions.

to complete the degree, the greater the costs, both in terms of annual tuition payments and the opportunity costs of foregone earnings of not working while in school. This gap in graduation rates as well as small differences in the share of engineering degrees awarded, and higher shares in science, math and technology at the liberal arts colleges may also explain why student earnings outcomes at selective liberal colleges are on par with student earnings outcomes at other selective colleges and universities, in contrast to the elite and highly selective institutions.

c. Costs of liberal arts colleges compared to other institutions

The costs to society are the full cost of producing the year of education, not the net price that families are asked to pay. Winston 1998 discusses how to calculate these costs, including capital depreciation costs and the opportunity cost of capital. These costs could be calculated for liberal arts colleges, by selectivity, and compared to other higher education institutions.

The College Board's "Trends in College Pricing" report examines education and related expenditures per full-time equivalent student by type of institution. The categories reported are private non-profit doctoral, master's and bachelor's and public four-year and two-year. These data do suggest major differences in costs across institution type, which will of course impact estimated ROIs for society. Figure 20 reports these data aggregated for liberal arts colleges and other institutions, by degree of selectivity. These data can be combined with the earnings data to learn more about the net returns to society of different forms of higher education. These data suggest that costs are associated primarily with selectivity, with the elites spending significantly more per student than the highly selective or selective institutions. The differences in expenditures between liberal arts colleges and other institutions, within each

selectivity category, are much smaller, although the liberal arts colleges spend more than other privates or the publics.

vi. Consumption versus Investment

In calculating the costs of producing a year of education by type of institution in order to estimate ROIs, deciding which costs to include is complicated for a variety of reasons. The College Board calculations exclude auxiliary enterprises, for example, including room and board. The argument for this is that students would have to live and eat even if they weren't attending college or university. But, many schools that serve 18 to 22 year olds and that are more selective require students to live on campus and take the meal plan. And, there may be little choice in terms of room and board options that differ by price. If the room and board supplied is of a different quality and cost than the students would incur were they not in school, should this differential cost be attributed to the costs of the education that they receive? They do not have the option of receiving the education without this cost. An added complication is whether the living on campus and eating together is part of the learning experience that contributes to future outcomes, suggesting that some share of the costs should rightly be included in the cost of a year of education.

Other examples of the challenges of which costs should be included in calculating the cost of producing a year of education could include spending on a variety of amenities that attract students, but perhaps do not add to the educational experience. For example, should the costs of a Division I football program be included? At many institutions, everything the school does comes bundled together, and students and families do not have the option of picking and

choosing different aspects of the year of education. In this case, the full cost is probably appropriate in calculating ROI. But, it is important to understand that cost could be reduced without affecting the educational experience and therefore the earnings impact of the education. Some of the expenditures that colleges and universities make and that students and families pay for might best be considered consumption. Treating them as such can change estimates of costs and ROI. Of course, it would be ideal if we had a greater understanding of which aspects of a year of education at any institution contribute to the earnings impact of the education offered and what students learn. This would help us understand how to control costs while protecting those aspects that we consider investments with future returns. Even with this information, there would be challenges in terms of unbundling many of the services currently supplied at many colleges and universities. But, other institutions where these services are not bundled together could focus on those services with the largest impact.

vii. Conclusion and Future Research

The evidence suggests that there are positive economic returns on average for individuals going to college and attaining a bachelor's degree. The economic returns in terms of expected higher lifetime earnings offset the costs of net tuition and the opportunity costs of foregone earnings while in school. The earnings impact and the net prices of higher education differ by sector, between publics and private non-profits, and between institutions with differing degrees of selectivity.

Given available data, it is possible to compare liberal arts colleges with other institutions, both in terms of net prices and earnings outcomes. The data suggest that the earnings outcomes for

liberal arts college students (as measured by the share of students who attain the top quintile in terms of earnings at age 34) are not as strong as for other equally selective private institutions when looking at elite and highly selective private institutions. We have some evidence, however, that these differences may, in part, be explained by other variables besides going to a liberal arts college, such as gender, race, and choice of major or occupation, all of which affect earnings. The differences between liberal arts colleges and other privates shrinks significantly when we look at who attains the top 40 percent of the income distribution. For selective, as opposed to elite or highly selective schools, the earnings outcomes are similar for liberal arts colleges and other private non-profit colleges and universities of comparable selectivity. We also find that students at selective public colleges and universities experience average earnings gains on par with their peers at selective liberal arts colleges.

If we believe that an education at a liberal arts college embodies more of what we believe are important characteristics of a liberal education, then these school type comparisons shed some light on the economic returns to a liberal arts education compared to alternative forms of higher education. We use the EOOP data to compare the earnings outcomes for graduates of liberal arts colleges with those of alternative four year institutions of comparable selectivity, both private non-profit and public. Controlling for selectivity and choice of major and occupation, there appears to be little conclusive evidence of substantive differences in earnings impacts of different types of higher education. This is particularly the case when we look at selective institutions (about 1,100 in total) compared to the elite and highly selective institutions (about 210 in number). Claims that a liberal education is of little value because it does not lead to employment is clearly not supported by the existing data.

More work could be done using these newly available data. We have argued that a liberal arts college education is neither necessary nor sufficient for having received a liberal education. Using the EOOP data, different sets of institutions could be compared, using other attributes to identify those that offer a liberal education. A few examples of attributes that could be used to identify a liberal education include: share of liberal arts courses, share of small classes taught by full-time faculty, and share of residential students. In looking at the earnings outcomes of different institutions, other characteristics that we know affect earnings could also be controlled for, including gender, race, and selectivity (as a proxy for ability.) While individual student record data would be preferable for studying the impact of a liberal education, and all the various aspects of such an education, the institutional level data may allow for some greater understanding of the earnings impact of alternative types of institutions and the type of education they offer.

To really understand the economic benefits of a liberal education, it would be necessary to define exactly what we mean by such an education. Is it all about the curriculum, how that curriculum is taught, or also about the living and extra-curricular experiences? With a clearer articulation about the attributes of a liberal education, it would then be possible to try to identify the earnings impact of each of these attributes, along with the aggregate impact. It may be difficult to do this effectively with institution level data.

Individual student data, including more than just information about the curriculum taken, would allow for a more careful analysis of what parts of a liberal education have the largest impact on

a set of outcomes, including earnings. This would perhaps allow and encourage some unbundling of the components we associate with a liberal education, and extending those with the largest positive impact to other sectors of higher education in a cost effective way. A large number of postsecondary students are older, not in college for the first time, attending part-time, working, parenting, etc., and are much more likely to be underrepresented minority and lower-income. It is worth asking what a liberal arts education looks like for those students. How can we offer a non-traditional population the best aspects of a liberal arts education?

With individual student record data, including information on courses taken, residential experience, and extracurricular activities, along with information on institutions attended (including information about type of pedagogy and class size) it would be possible to identify students who had experienced a more carefully defined liberal education. We know that such an education takes place at institutions other than liberal arts colleges and that not all students at liberal arts colleges receive such an education. A place to start would be to determine whether existing longitudinal student-level data sets (national and/or state) would support such a study. Even with this information, the difficulties of correlation versus causation and issues of selection versus treatment will continue to exist.

With a clearer definition of a liberal arts education, and the components considered important, another strategy would be to conduct experimental evaluations of programs to test which features of a liberal arts education have the largest impact, and whether the benefits of a liberal arts education can be maintained when conditions vary, including importantly when the expenditure is lowered in various ways. Since the time horizon of measuring life outcomes,

even earnings, is too lengthy for experiments, we would have to identify more proximate variables that serve as predictors for longer-run outcomes. Conducting experimental evaluations, if effectively designed, addresses the causality and self-selection issues. Another strategy would be to look for possible natural experiments that would shed light on the value of a liberal arts education.⁴⁵

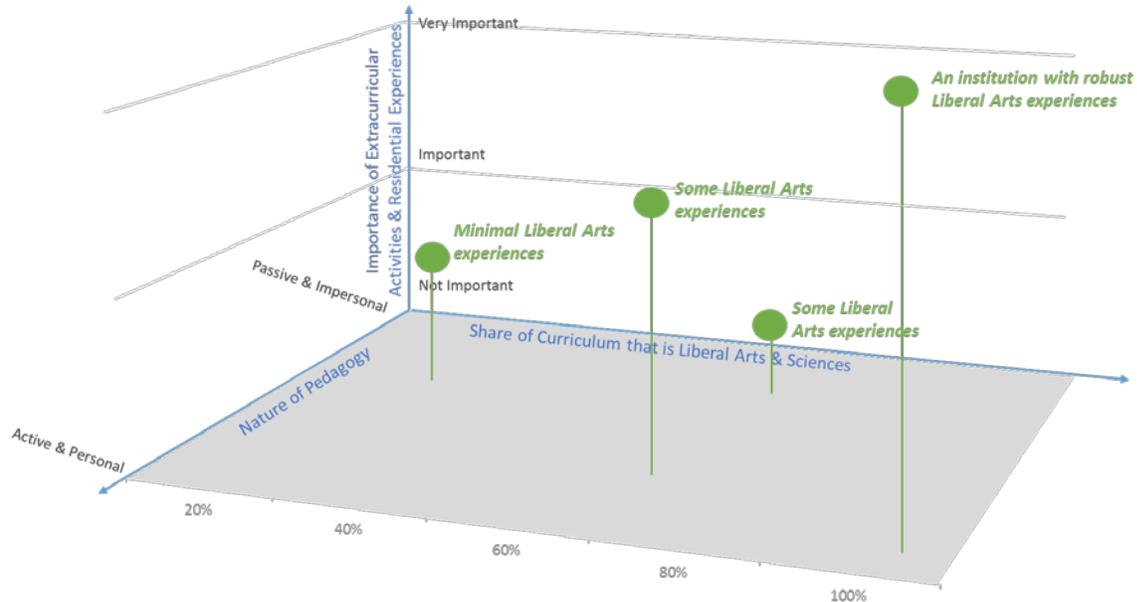
In conclusion, there remains significant work to be done to understand the benefits to individuals and society of a liberal education, and different aspects of that education, and how these benefits differ from other forms of higher education. Understanding the relative costs and benefits for individuals and society would allow for better decision making by both students and their families and public policy makers who decide on the allocation of public resources that support higher education.

⁴⁵ One possibility to consider would be to undertake a study similar to that undertaken by Dale and Krueger 2011 to examine the effects on student earnings of attending a more or less selective institution. They attempt to address the bias created by unobserved variables or self-selection by what they refer to as a “self-revelation” model (p.6). Dale and Krueger use the students’ application behavior to “reveal” their unobserved characteristics that may affect earnings. Looking at students who undertook a liberal education (however defined) or not, controlling for unobserved characteristics in a similar way, could help isolate the impact of a liberal education compared to the alternatives.

Table I: Equality of Opportunity Project Selectivity Tiers vs. Liberal Arts Selectivity Tiers

EOOP Selectivity Tiers	Liberal Arts Tier ⁴⁶ (1 - Most Selective; 4 - Least Selective)					Total
	Not LA	Tier 1	Tier 2	Tier 3	Tier 4	
Ivy Plus	12	0	0	0	0	12
Other Elite Schools	34	32	1	0	0	67
Highly Selective Publics	73	0	1	0	0	74
Highly Selective Privates	33	17	21	0	0	71
Selective Publics	545	0	0	0	0	545
Selective Privates	513	1	40	56	30	640
Nonselective four-year public	81	0	0	0	0	81
Nonselective four-year private	124	0	0	0	2	126
Attending college w insufficient data	178	0	1	0	0	179
Total	1,593	50	64	56	32	1,795

Figure I: Graphical Representation of the Attributes of Liberal Arts Education



⁴⁶The EOOP data does not include the following liberal arts colleges: Lyon College (Tier 2), Thomas Aquinas College (2), Wesleyan College (3), College of the Atlantic (3), Principia College (3), American Jewish University (3), Grove City College (3), Concordia College-New York (4), Judson College (4), Sierra Nevada College (4), Sterling College (4), Pine Manor College (4), Bethel College (4), Marlboro College (4). Source: Chetty et. al 2017.

Figure 2: Access and Mobility Rates (Top 20%) for Elite Liberal Arts Colleges and Other Elite Colleges and Universities

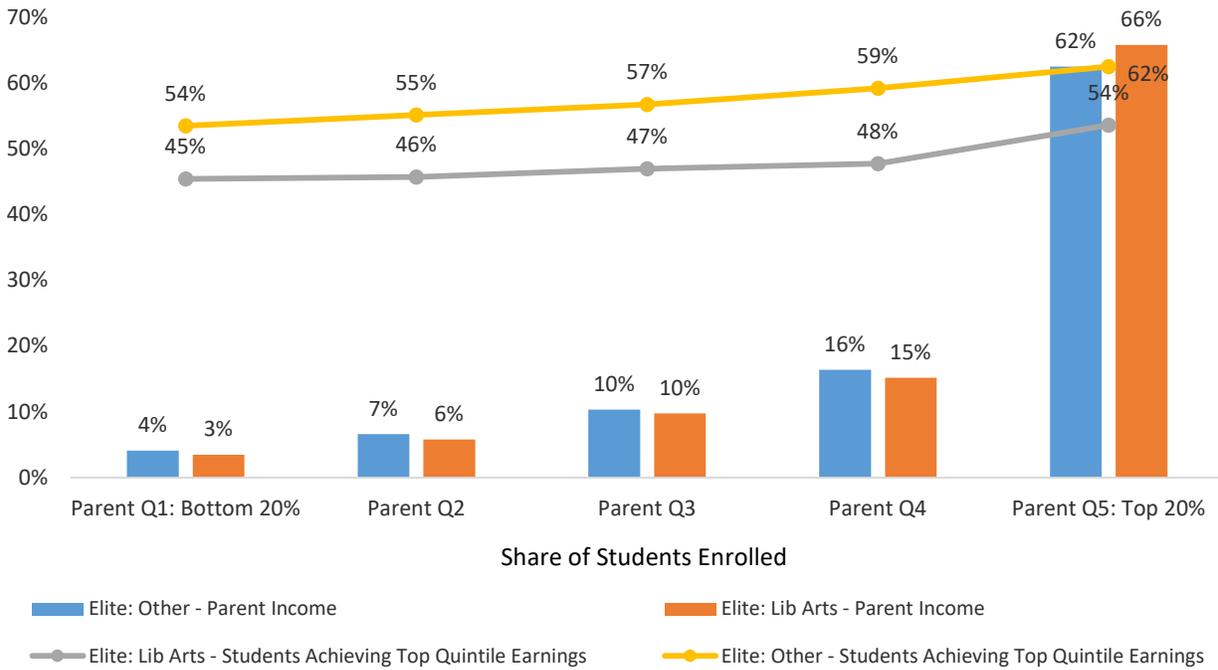


Figure 3: Access and Mobility Rates (Top 20%) for Highly-Selective Private Liberal Arts Colleges and Other Highly-Selective Private Colleges and Universities

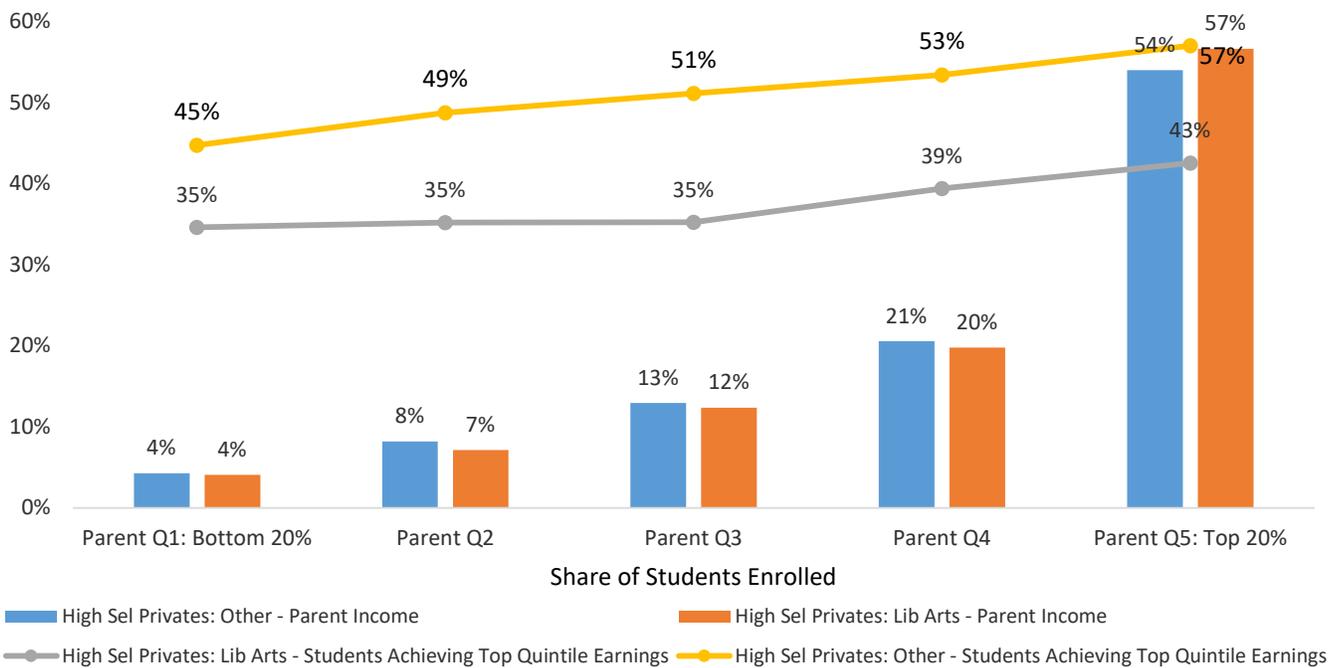


Figure 4: Access and Mobility Rates (Top 20%) for Selective Private Liberal Arts Colleges and Other Selective Private Colleges and Universities

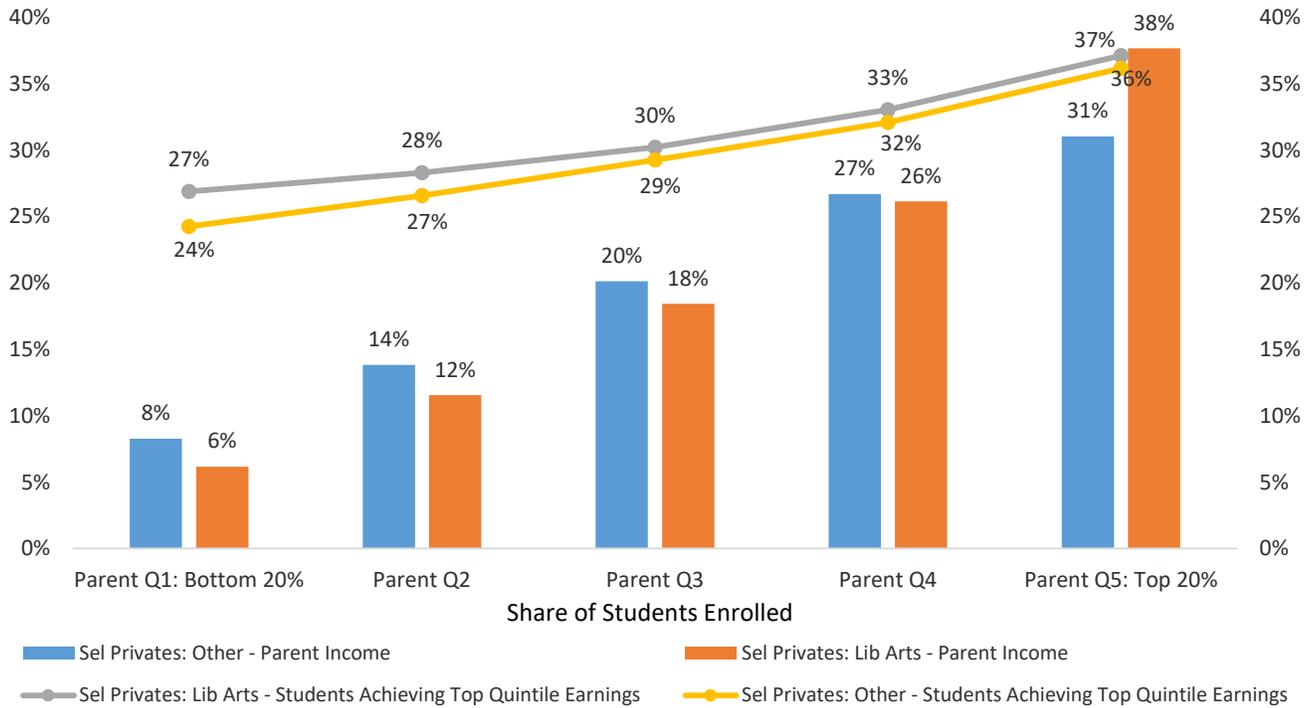


Figure 5: Access and Mobility Rates (Top 40%) for Elite Liberal Arts Colleges and Other Elite Colleges and Universities

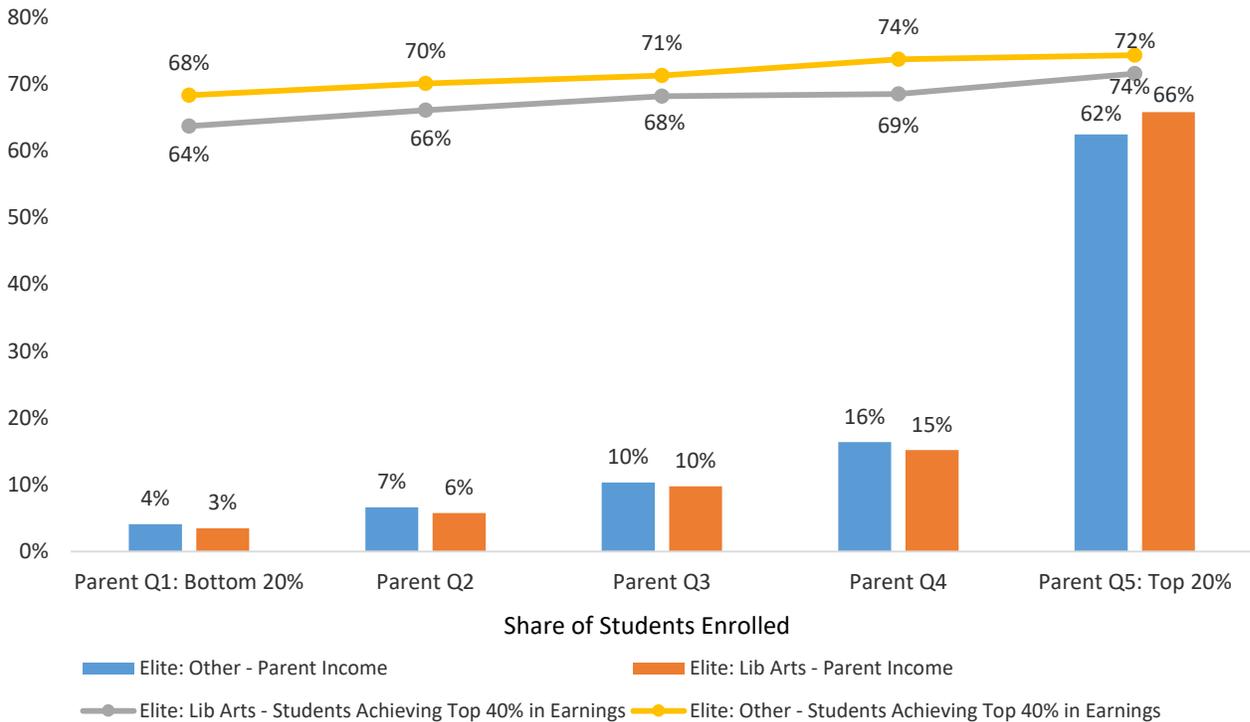


Figure 6: Access and Mobility Rates (Top 40%) for Highly-Selective Private Liberal Arts Colleges and Other Highly-Selective Private Colleges and Universities

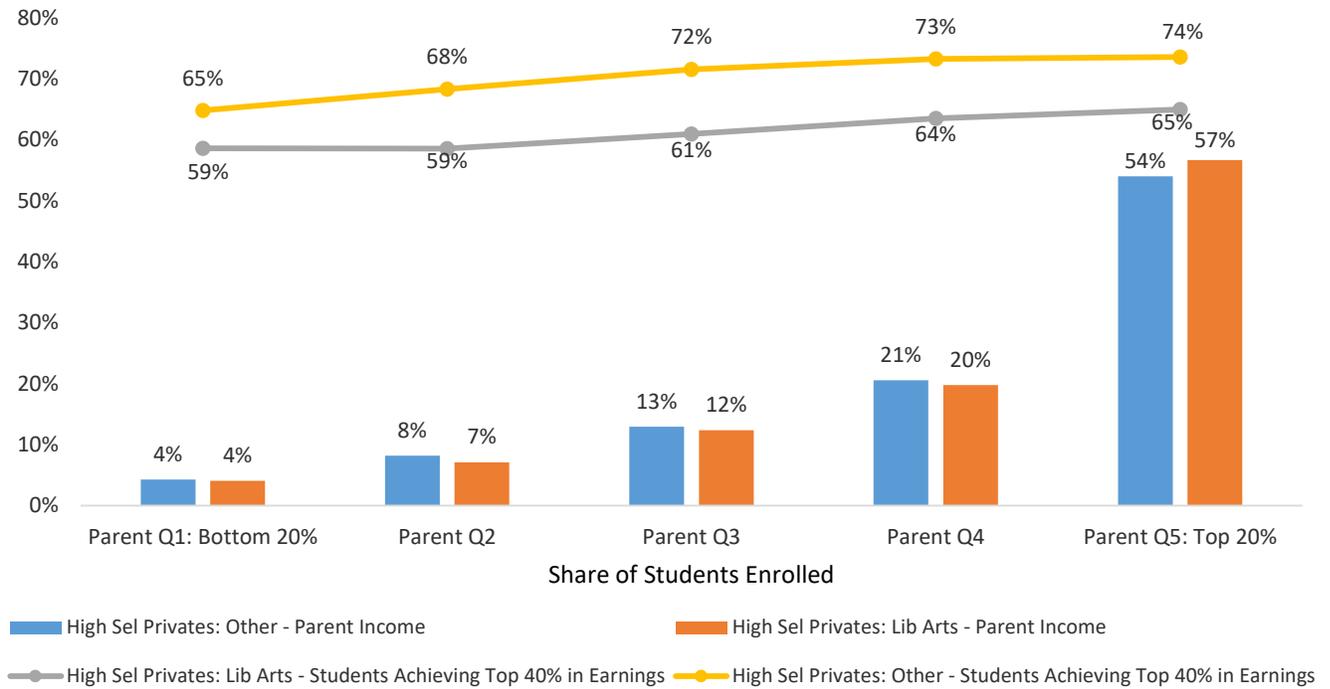


Figure 7: Access and Mobility Rates (Top 40%) for Selective Private Liberal Arts Colleges and Other Selective Private Colleges and Universities

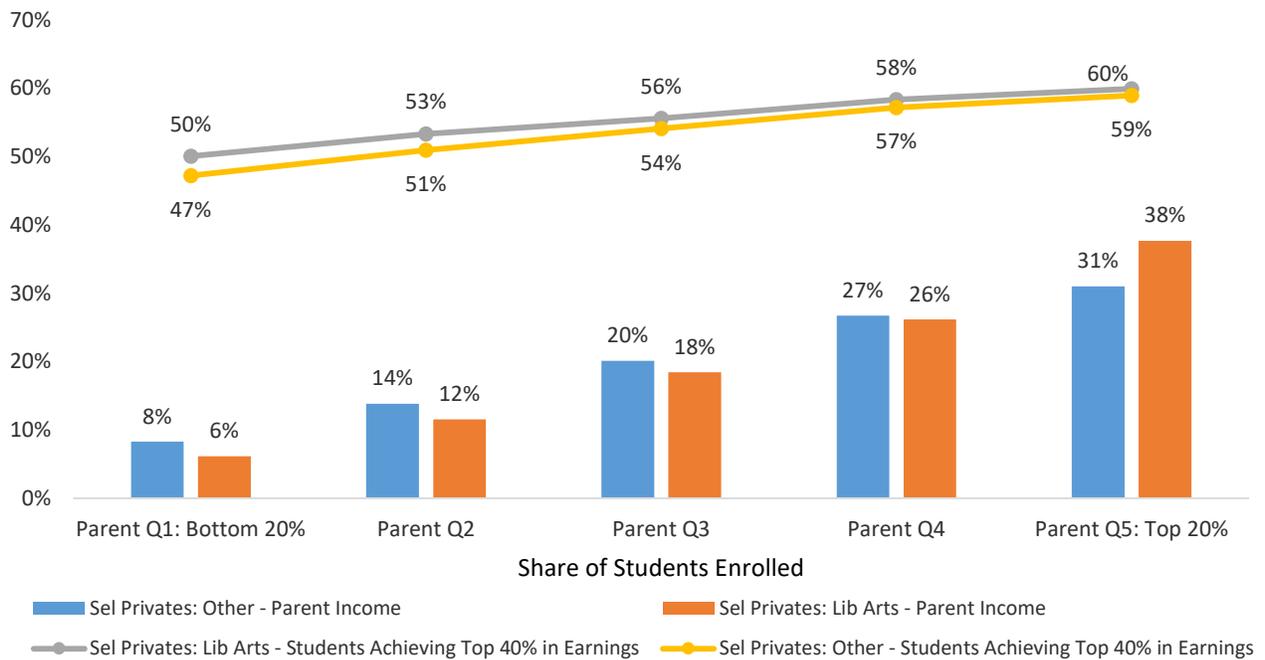
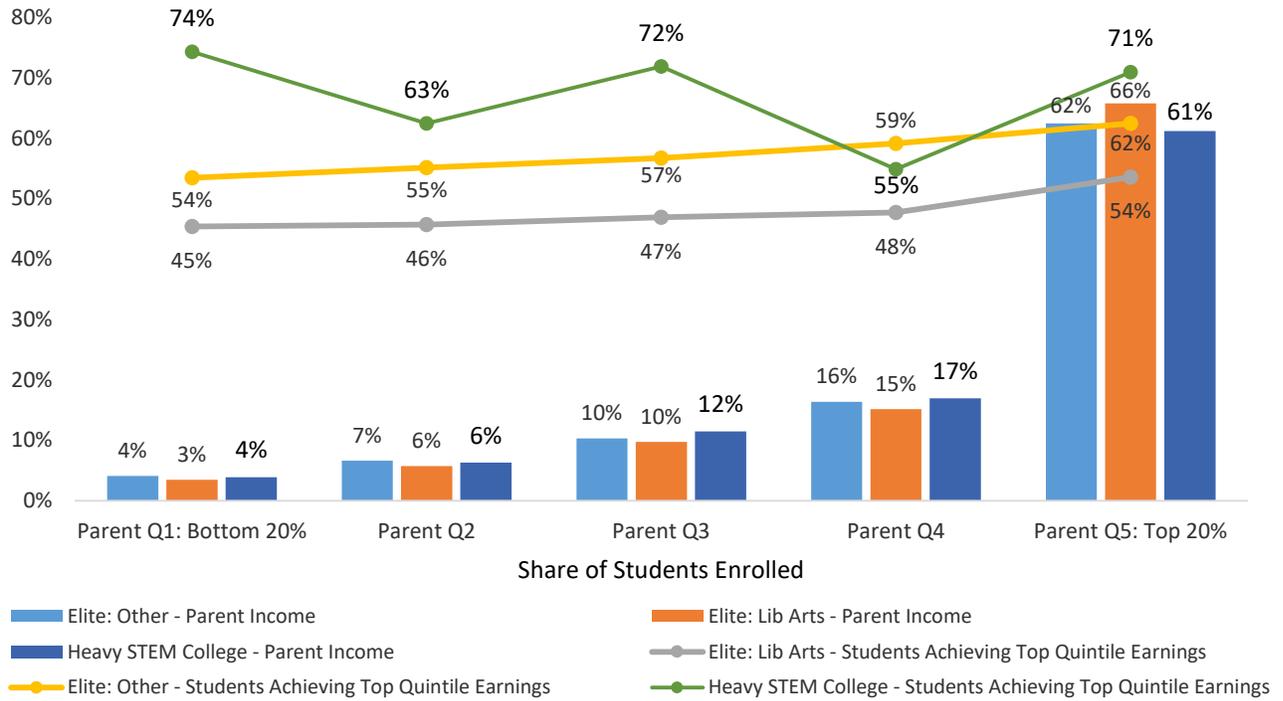


Figure 8: A. Access and Mobility Rates (Top 20%) for Elite Liberal Arts Colleges, Other Elite Schools, and a Heavily STEM-focused College



B. Access and Mobility Rates (Top 40%) for Elite Liberal Arts Colleges, Other Elite Schools, and a Heavily STEM-focused College

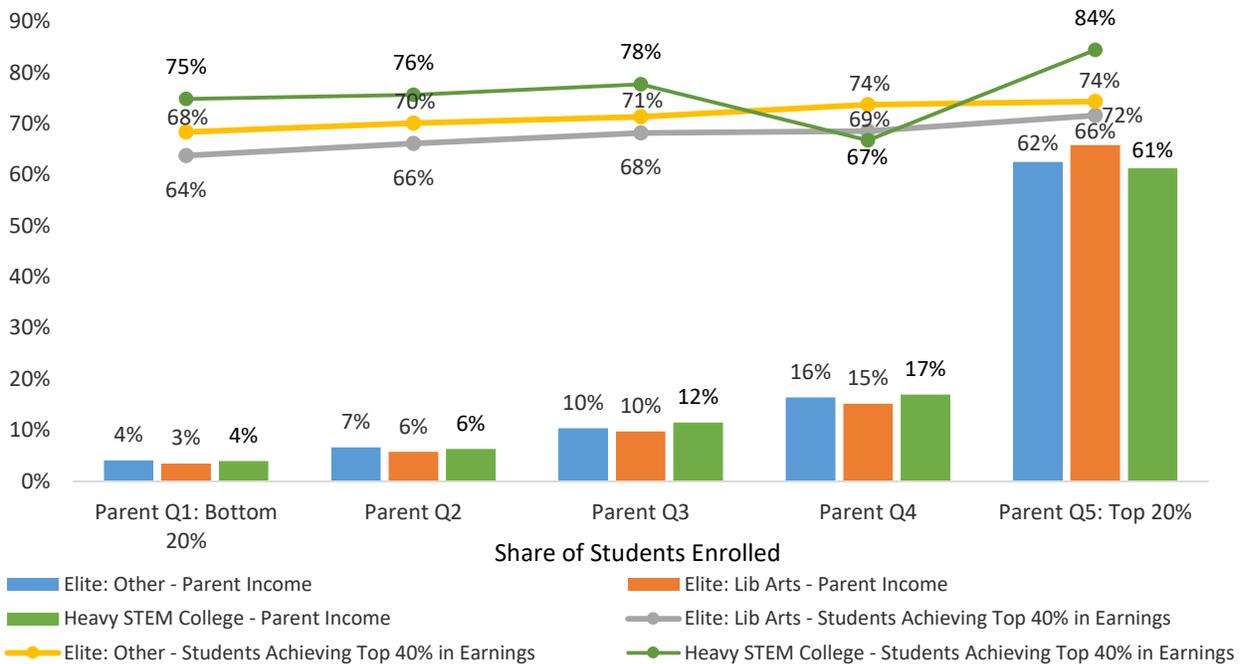
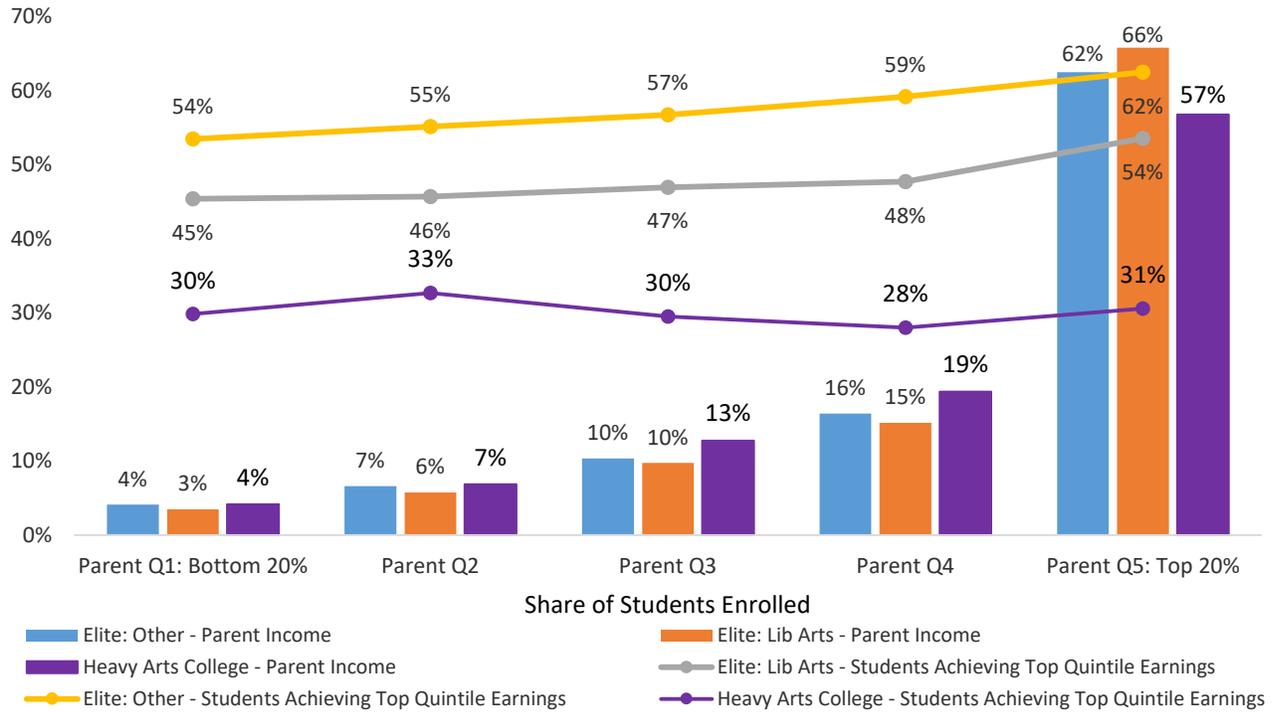


Figure 9: A. Access and Mobility Rates (Top 20%) for Elite Liberal Arts Colleges, Other Elite Schools, and a Heavily Arts-focused College



B. Access and Mobility Rates (Top 40%) for Elite Liberal Arts Colleges, Other Elite Schools, and a Heavily Arts-focused College

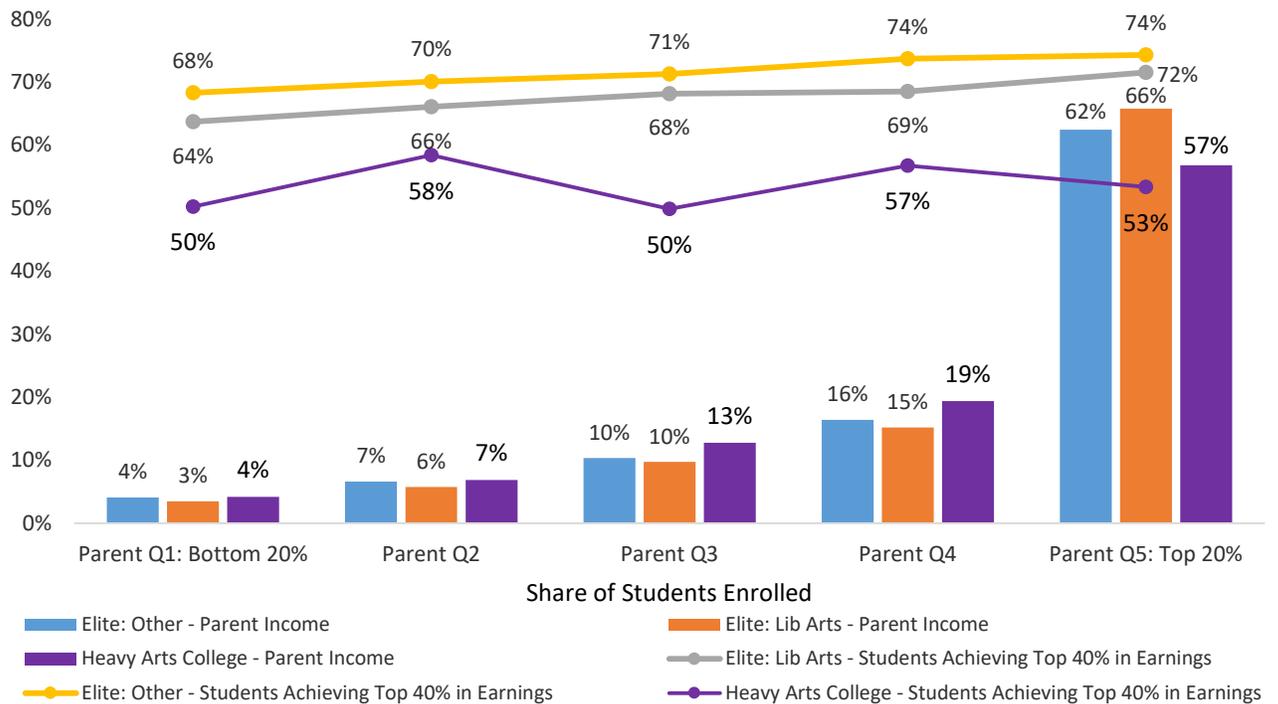


Figure 10: Share of Degrees Awarded in Key Disciplines (2000) at Liberal Arts Colleges and Other Colleges and Universities, by Selectivity

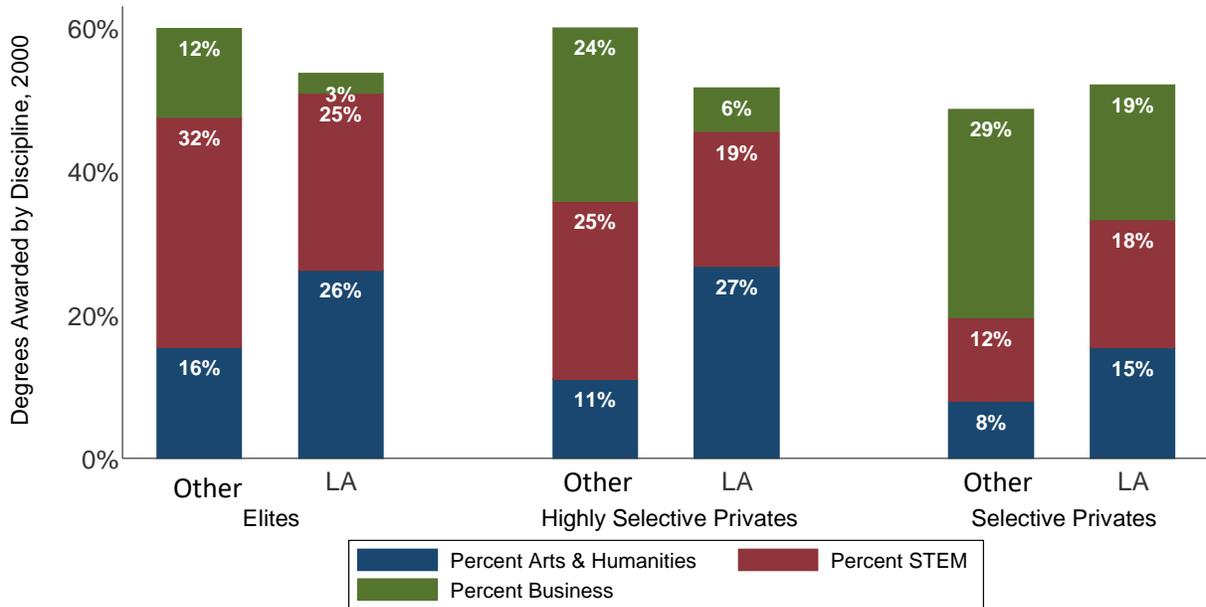


Figure 11: Share of Degrees Awarded in Key Disciplines (2013-14), by Selectivity and Liberal Arts Status

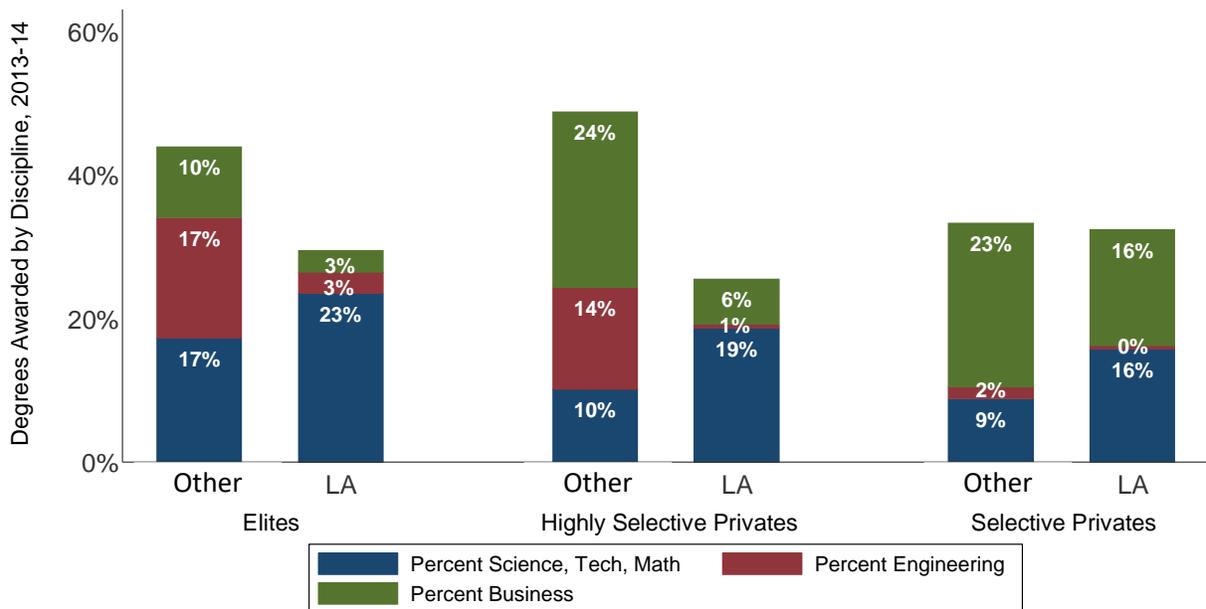


Figure 12: Mean Net Price (14-15), by Institution Selectivity and Liberal Arts Status

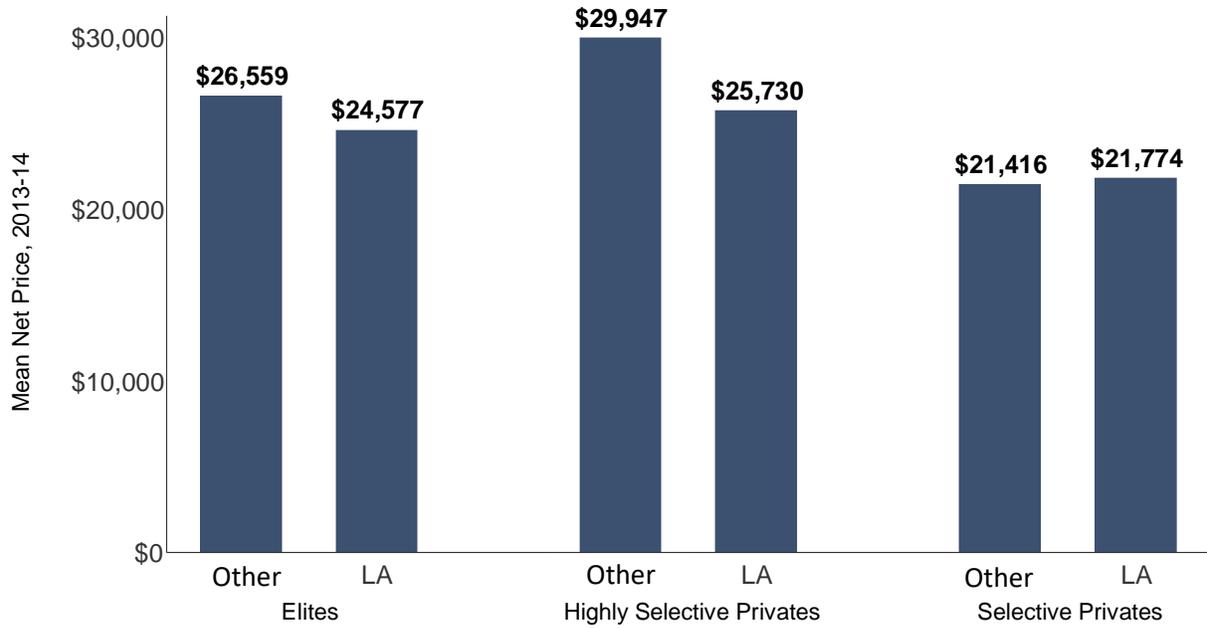
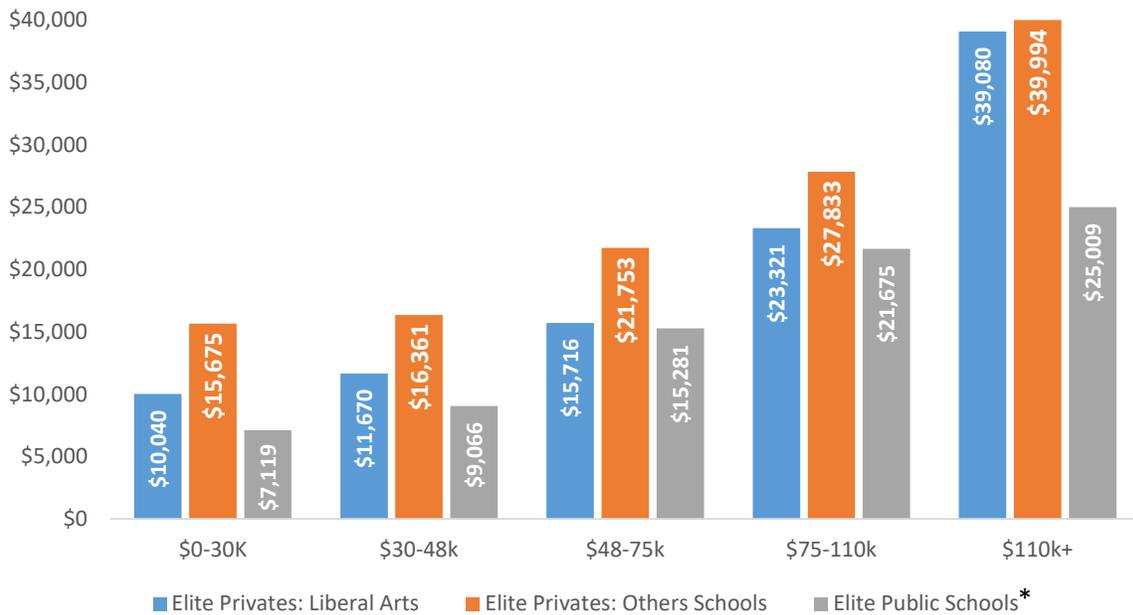


Figure 13: Net Price at Elite Institutions by Family Income Category



* We separately report the net price for the five elite public universities.

Figure 14: Net Price at Highly Selective Institutions by Family Income Category

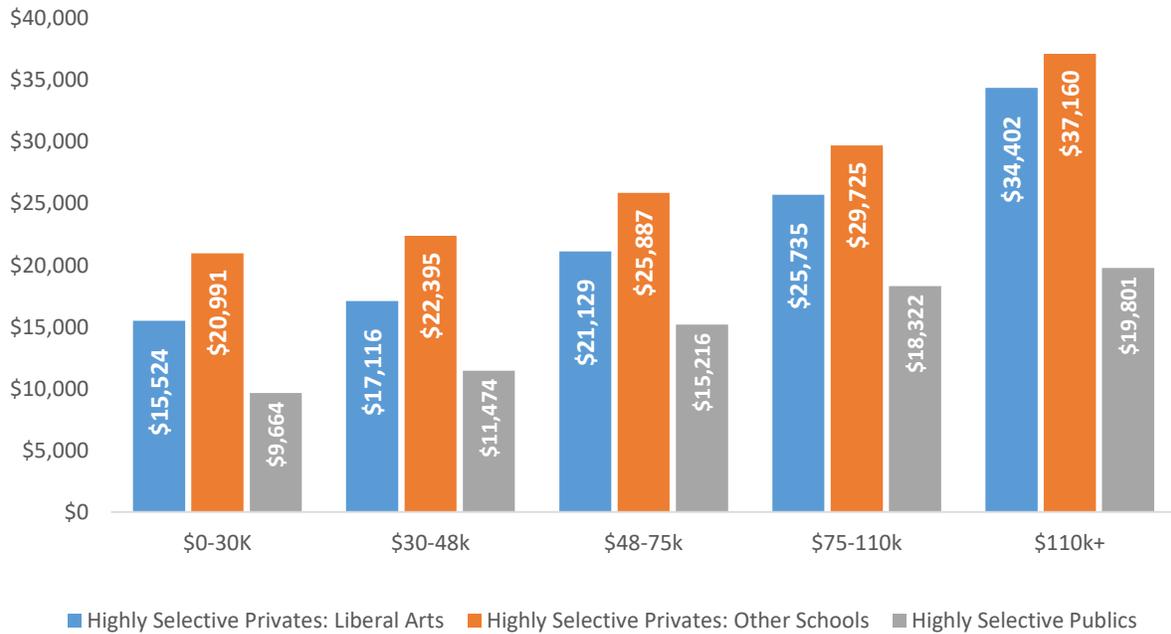


Figure 15: Net Price at Selective Institutions by Family Income Category

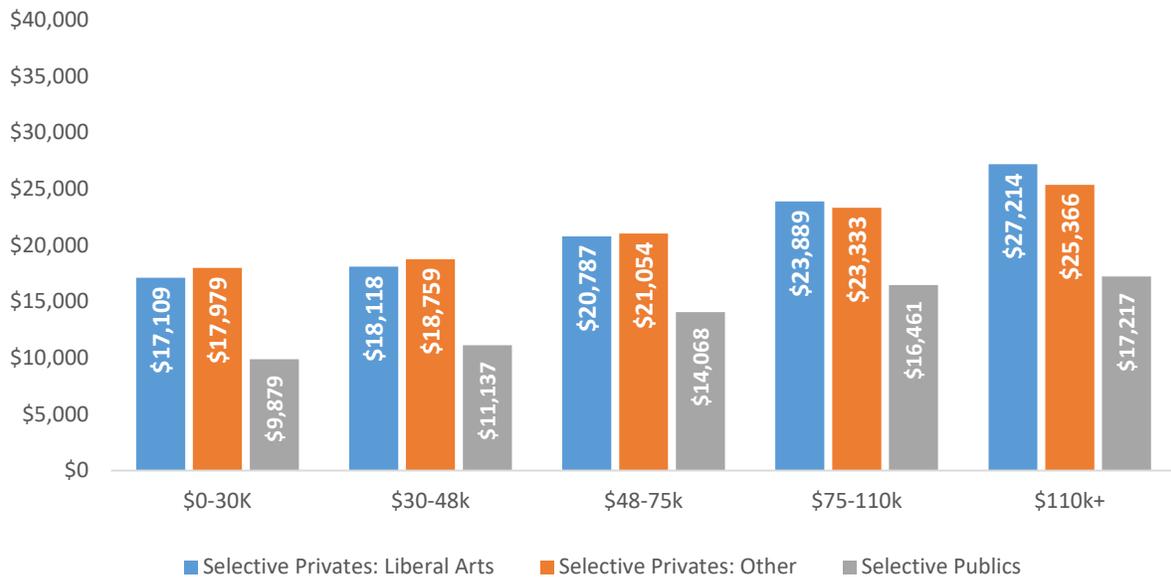


Figure 16: Mean Net Price (I4-I5), by Institution Selectivity for Publics

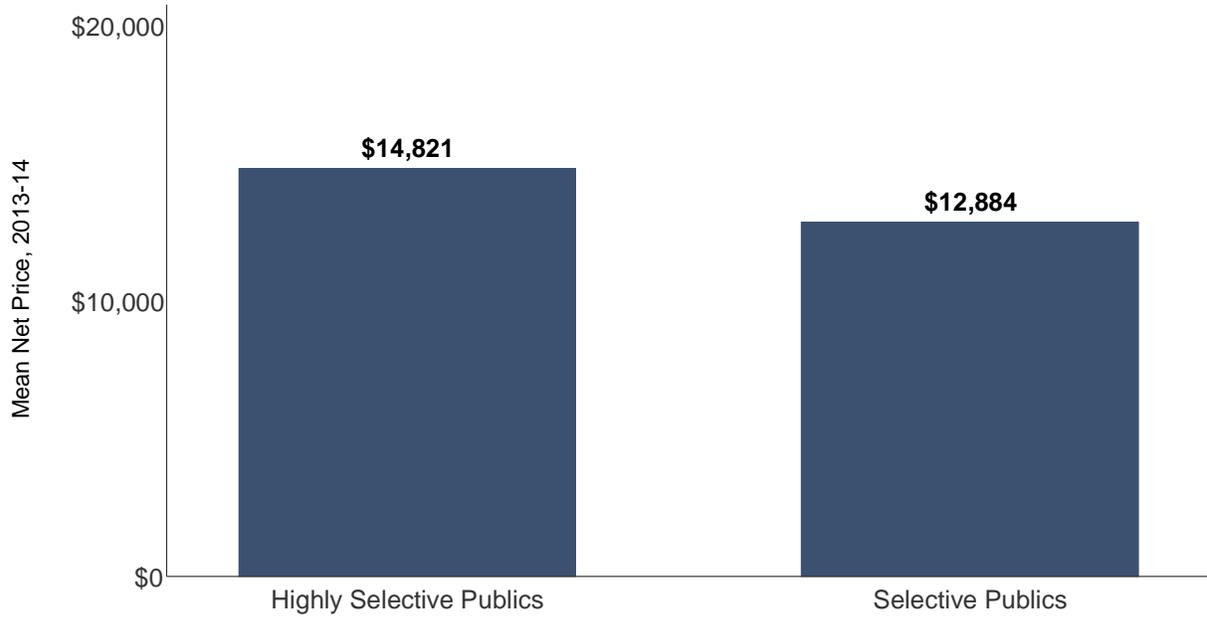


Figure 17: Access and Mobility Rates (Top 40%) for Highly-Selective Public Schools, Liberal Arts Colleges, and Other Highly-Selective Private Schools

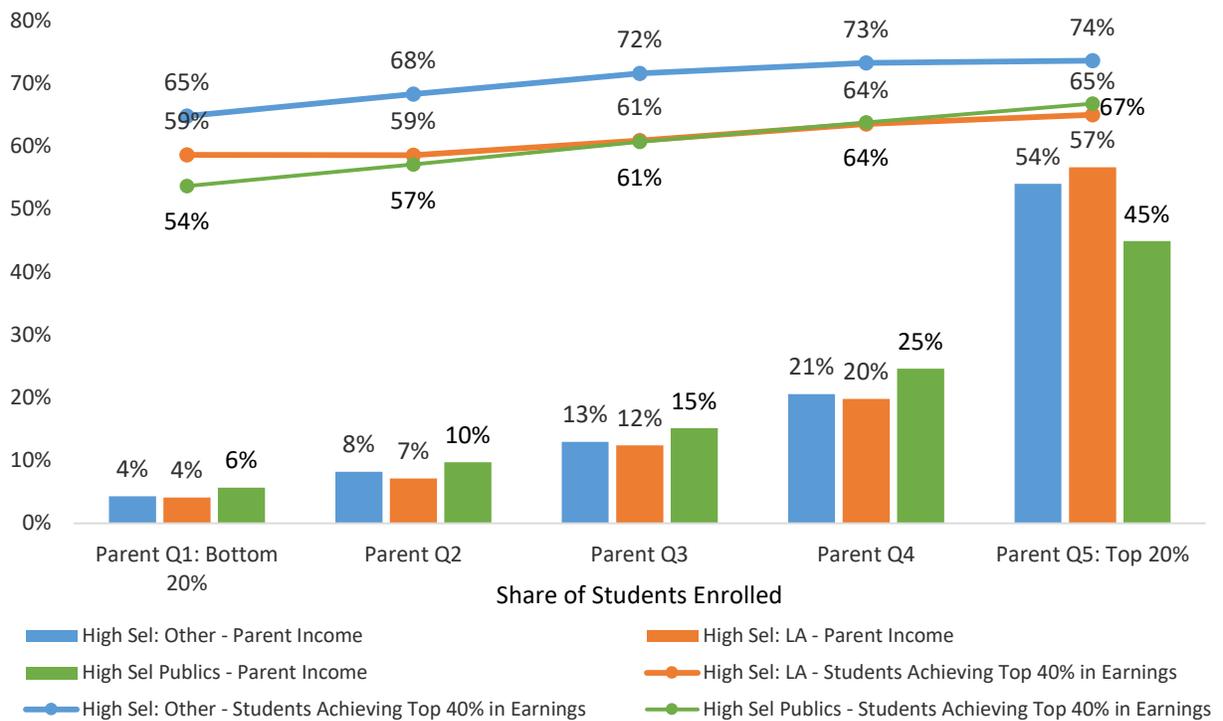


Figure 18: Access and Mobility Rates (Top 40%) for Selective Public Schools, Selective Liberal Arts Colleges, and Other Selective Private Schools

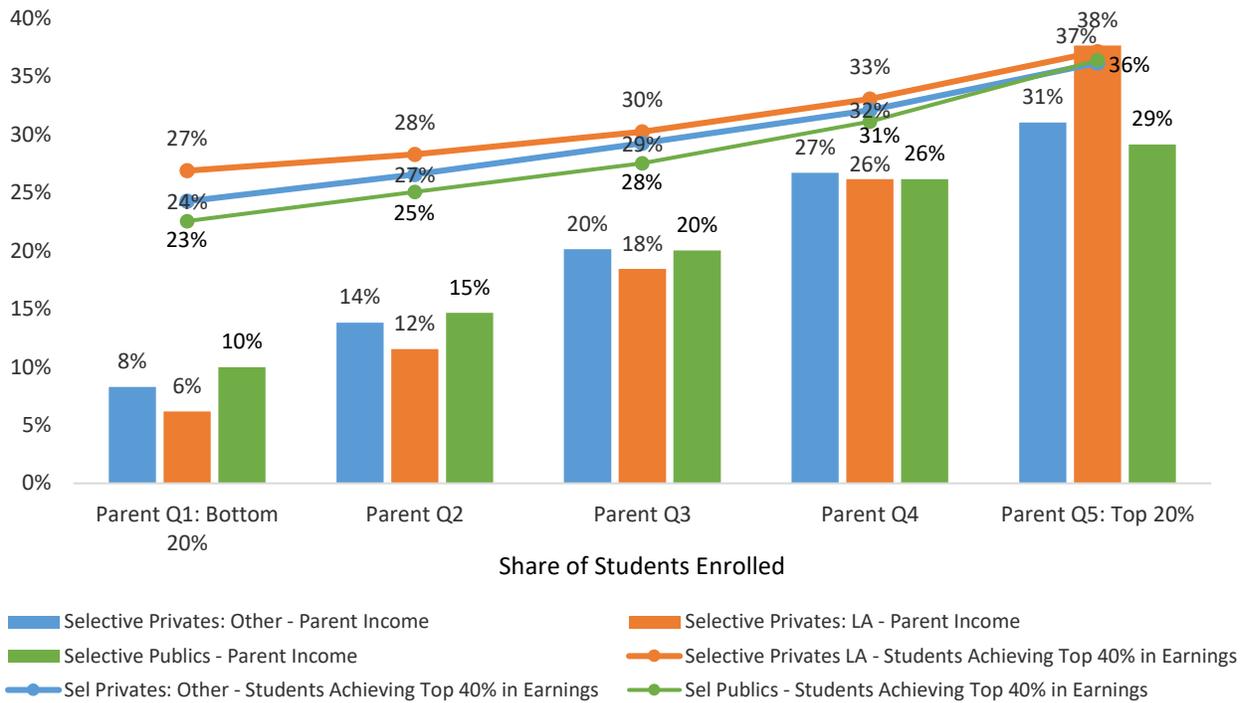


Figure 19: Six Year Graduation Rates (14-15) at Liberal Arts Colleges and Other Colleges and Universities, by Selectivity

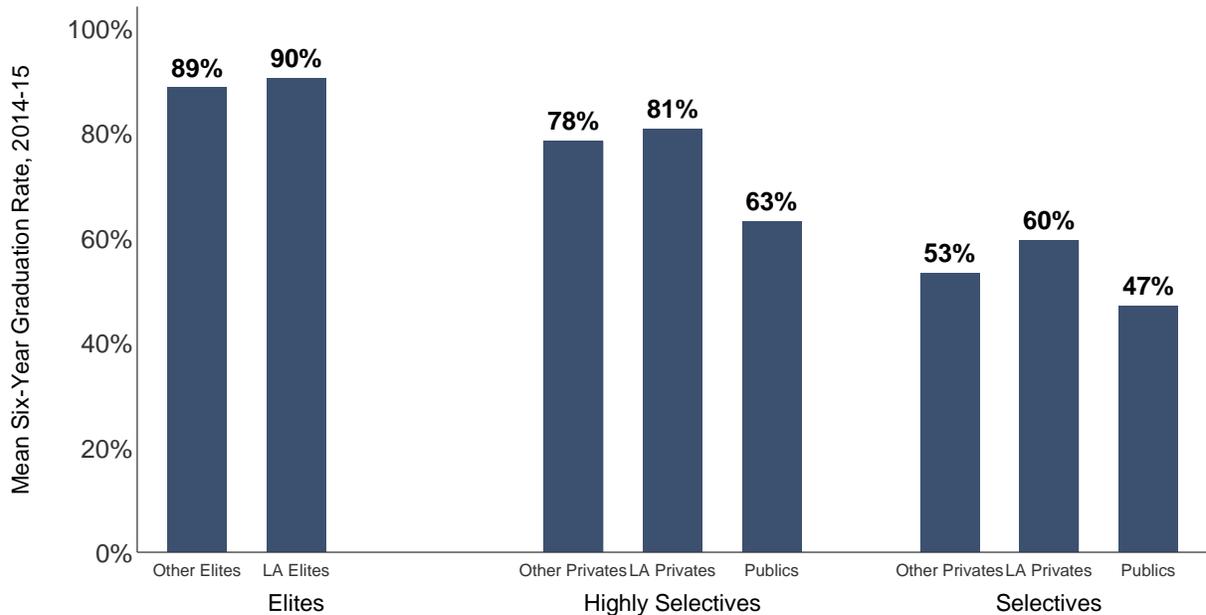
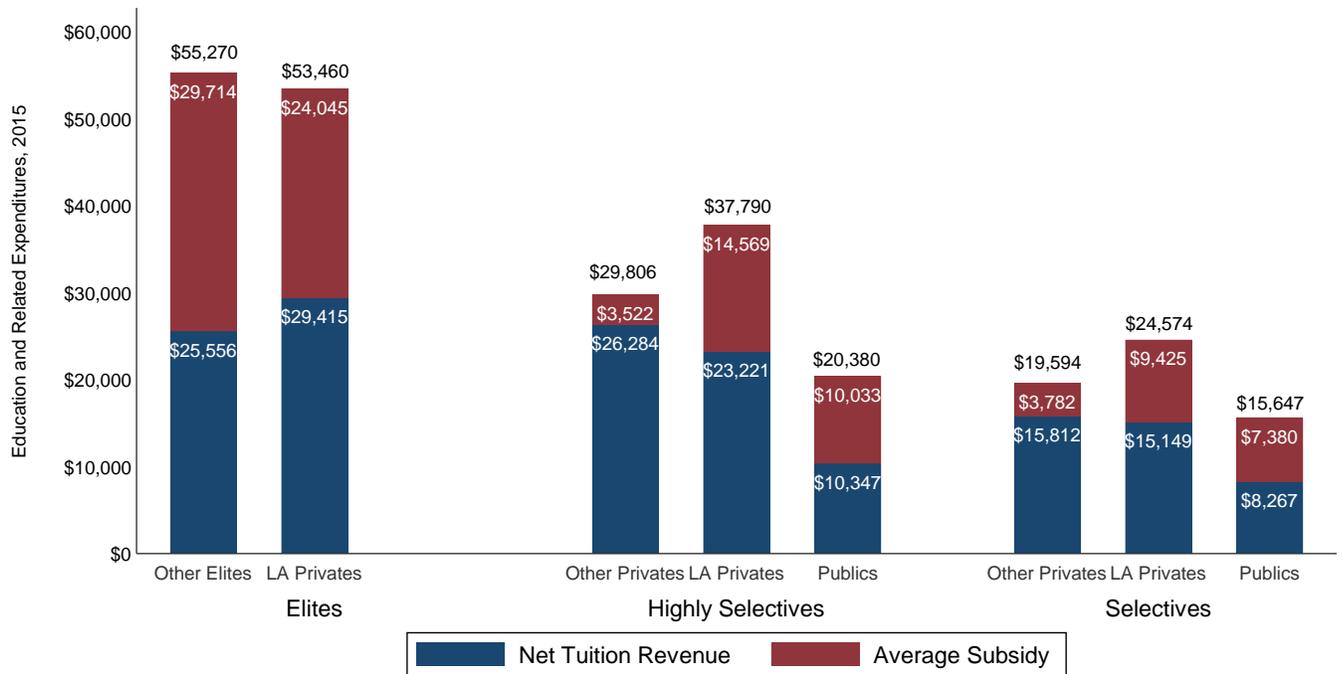


Figure 20: Average Expenditures, Subsidies, and Net Tuition, by Selectivity Tier (2015)



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