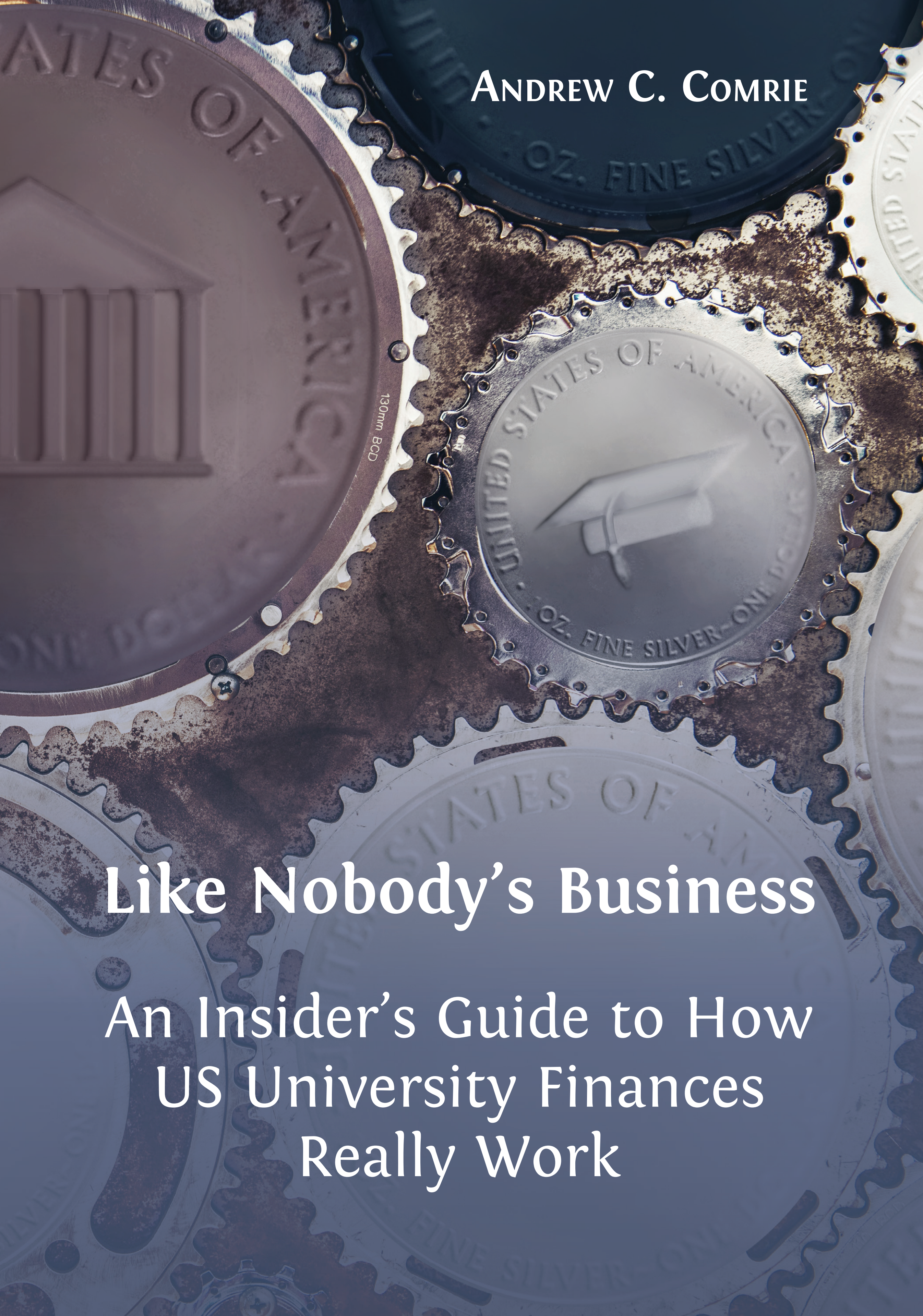

Andrew C. Comrie

Like Nobody's Business

An Insider's Guide to How US University Finances Really Work

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To Lee

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1. Introduction

1.1 Preface

Universities are fascinating institutions. For almost 1,000 years, these corporations of teachers and scholars have been searching for knowledge and transmitting it. In carrying out this mission, universities are "things of unruly paradox"[1] that operate as the birthplace and battlefield of ideas, constantly enlightening, challenging, solving, confounding, serving, criticizing, creating, reasoning, and frustrating both themselves and their stakeholders. And yet, focusing on my initial term above, universities are corporations too. In fact, *universitas*, the Latin root of the word, literally means "corporation" as in a company or guild.[2] It's odd, then, as institutions built on the very notion of knowing, that the people in and associated with universities know so little about them as corporations in the business-oriented sense of the word. That's the charge I'm taking on in this book: to explain how the business of the university works, to provide a grounding in what people want to know and ought to know about how money really flows in and around these vital institutions.

Contemporary universities are part of a global higher education enterprise that has seen unprecedented expansion for decades, growing and succeeding, as the idiom says, like nobody's business. The breadth and complexity of how universities are funded and operated make them, in a managerial and practical sense, utterly unlike any other business either. Nowhere are these observations truer than for universities in the US. During the twentieth century individual states invested in their higher education systems, sometimes more and sometimes less, while elite private universities continued to flourish. Simultaneously, the GI Bill, Pell Grant program and unprecedented research investments at the federal level propelled US higher education into a position of world leadership. These factors, along with the significant

1 Ben Johnson, a past Chair of Emory University's Board of Trustees, coined this redolent term when he said, "A great university is a thing of unruly paradox. It is a place of tranquil reflection and a testing place and indeed a battleground of outrageous ideas… It requires stability, yet is a catalyst for change. It teaches respect for boundaries, yet encourages pushing those boundaries. It is a place of self-conscious egalitarianism, yet a place of studied rank. It trains for the sacred, as well as the secular. It gleans from the past, to prepare for the future." (Williams 2013)

2 The full Latin phrase describing an academic corporation is *universitas magistrorum et scholarium*, a "guild of masters and scholars" that had collective legal rights guaranteed by charter, was self-regulating, and determined the qualifications of its members (Wikipedia 2019b).

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absence of unifying central control by a national ministry of education (unlike many other countries), produced a large, diverse system of universities and colleges and, importantly, an intensely competitive academic marketplace in which they function. US universities are constantly competing for students, for faculty, for facilities, and for the resources to support them and further fuel their success, and generally do so as nonprofits in a business environment like no other. And, US universities have graduated, like no other, tens of millions of people, redefining the middle class to such an extent that a college degree has replaced a high school diploma as the ticket to career success. Finally, add to all this our cultural embrace of universities, their simultaneously elitist and egalitarian aims, their parts in the concurrent pursuit of individualistic American dreams and civic Jeffersonian ideals, their uneasily parallel functions as engines of both social reproduction and of social change, their depictions in movies and novels as variously idyllic or sophomoric, the unique role of college sports, the considerable financial support by alumni and donors, and our obsession with ranking them. In both senses of the phrase then—of a lot happening and of being unlike any other—it's no wonder that the responsibility of running a US university has grown like nobody's business.

There are three broad aspects of running (i.e., administrating) a university: (1) supporting the *academic mission* through teaching and research programs involving primarily the faculty and students, as well as outreach/community engagement; (2) leading and managing the *people*, as in any enterprise, and including here the extensive specialized faculty and staff, administrators, and other employees of the institution; and (3) generating and managing the *money* that pays for it all, from revenue generation to expense allocation, including budgeting, accounting, finance and, increasingly, the nature of the business model. For the faculty, staff, students, alumni, and community members, of these three broad aspects, arguably none is associated with more mystery, confusion, myth or general lack of understanding than the third: money, and the business of the university, the corporation, that it represents.

A significant part of the university spends its time worrying about the first point, academics, especially those in the departments, schools, colleges, centers and institutes. Because the academic mission is the *raison d'être* of the university, how the academic part of the university works is generally well-understood by those who labor in it. Regarding the second point, people: although the faculty generally eschews issues of administration and management, non-academic employees are typically in the majority by a substantial margin—leading and managing people is something that many of them do every day. Furthermore, while there is always room for more to be written and learned about the practical science and elusive art of leading and managing people, especially in academia, there is nonetheless a significant literature already established on how to do so.

Yet the third point, money, is at best only partially understood by the vast majority of those who work on or with a campus. The sheer range and complexity of university finances, when combined with the limited number of people on a campus with the expertise and institution-wide perspective to explain them means that, despite its vital role for the successful operation of the institution, this aspect of how a university works is poorly understood by many who need to know it better. Worse yet, there are serious misunderstandings and oversimplifications of university funding that are commonly held, both on campus and off, and which can lead to poorly-informed decisions and detrimental outcomes.

I'm not entirely sure why the ins and outs of university funding have ended up as such a mysterious topic, with connotations of secrets shared only by those in the know, but I hypothesize that it is the result of at least a few factors: university finances are inherently complicated; revenues have diversified faster than the general understanding thereof; and, administration has historically been a distraction from (and anathema to) academic pursuits. Taking each factor in turn, universities are complicated institutions and their finances reflect this fact.[3] Ironically, public university budgets in all their detail are in fact public, but they are opaque to lay readers because of the necessary technical complexity required to appropriately reflect proper financial rules and institutional accounting practices. Next, university revenue has become far more diverse since the days of direct appropriations that covered most core costs. In public institutions, recent decades have seen a growth in fundraising that is starting to rival the privates, tuition is now a major revenue source, research funding is far larger from both government and private industry, and states have become minority shareholders in terms of the proportion of public university budgets that they fund. Tending to each source requires specialized expertise and experience beyond the realm of most university citizens. Furthermore, there is a longstanding social convention that faculty members don't need or want to be distracted from their scholarly pursuits by the details of administration, which includes the realities of funding flows. Indeed, the role of administrator is often a derogatory stereotype, and faculty who take on administrative roles are half-jokingly said to have crossed over to "the dark side." Likewise, some administrators can be tone deaf to faculty concerns. Much of that culture is understandable, if not constructive, and the blame for this state of affairs, as well as the responsibility to fix it, falls squarely on both sides. Still, an unfortunate side-effect of the oversimplified us-versus-them attitude is a naïve and sometimes misleading understanding of how the institution operates financially.

I can recall times as a junior faculty member when a senior colleague would opine that we were "paid to think" by society, sometimes with the added implication that teaching undergraduates was a necessary irritation. For most universities in the US, to the extent that such a self-absorbed view was ever even partially true, those days

3 William McRaven, a decorated military commander who served as chancellor of the University of Texas system, described the position of university president as "the toughest job in the nation" (Thomason 2018) because of the multifaceted competing political and financial challenges of running such a complicated organization.

are long gone.[4] While the end of the era of more-or-less full public funding for US higher education is still bemoaned by many on campus, it doesn't alter the fact that the halcyon days of public funding for higher education began to recede as long ago as the 1970s and 1980s. This trend accelerated in the 1990s and became a stark reality with the Great Recession that arrived in late 2008. A business model based on increasing privatization and neoliberal precepts is simply the fact of life for a contemporary US campus, reflecting a substantial shift in higher education from a public good to a private good. While I personally don't condone this shift, I am nonetheless a pragmatist: it is hard to argue against the reality that the success of a contemporary US university relies on it being able to function well in this economic environment.

Therefore, whether those of us in higher education like this situation or not,[5] it is worth understanding how university funding works within institutions and across the higher education landscape. For example, at the microeconomic level, and as colleagues serving students and wanting to advance the university, it is essential that we better understand how and why we might increase funding for a program or initiative, or how we provide the necessary support services, or what the financial and academic trade-offs are among different approaches to delivering on the university's academic mission. Further examples, at the macroeconomic level, include dealing with changes in college-going rates, federal funding, and the growth of online education. Perhaps because of the diversity of funding flows across a university, and how they intertwine to make these great institutions run, learning how it all works can be extremely valuable for many campus stakeholders. After all, as responsible members of the university community we *should* know how our institution works so that we can better enable the effective pursuit of knowledge and learning. This need has been made even more essential by the economic and financial effects of the COVID-19 pandemic on higher education.

This book is not a conventional text on higher education budgeting, finance or accounting, and I didn't write it as a published scholarly expert on university funding—any expertise I have was learned on the job. There are some useful books out there that are by recognized scholars and/or are technical texts (Massy 2003; Weisbrod et al. 2008; Archibald and Feldman 2011; Kretovics 2011; Lombardi 2013; Serna and

4 Clark Kerr, who was chancellor of UC Berkeley and then president of the University of California system during the boom years of the 1950s and 1960s, captured this tension with a metaphor (Moore et al. 2013), "The cherished view of some academics that higher education started out on the Acropolis of scholarship and was desecrated by descent into the Agora of materialistic pursuits led by ungodly commercial interests and scheming public officials and venal academic leaders is just not true for the university systems that have developed at least since 1200 A.D. If anything, higher education started in the Agora, the market place, at the bottom of the hill and ascended to the Acropolis on top of the hill… Mostly it has lived in tension, at one and the same time at the bottom of the hill, at the top of the hill, and on many paths in between."

5 In a recent essay, Adam Daniel and Chad Wellmon (2018) argue that higher education's insatiable appetite for acquiring more roles and complexity will be its undoing. They coin the term "omniversity" to replace Clark Kerr's "multiversity" and contend that the university's varied commitments are pulling it apart.

Weiler 2016; Barr and McClellan 2018; D.O. Smith 2019). There are also some excellent recent volumes that are broader in scope and that touch on selected topics in this book (Bok 2013; Clotfelter 2017; Brint 2019; Geiger 2019). All of the above are valuable references for the eager reader. My aim with this book is slightly different: I would like it to serve the kind of reader who is interested in getting a grasp of the essentials of university funding in an approachable form, one that can engage a relative novice while also informing those readers with more background knowledge, and to do so comprehensively with a heavy emphasis on data and visuals. Thus, my intended audience is broad and includes administrators, faculty, staff and students on campus as well as alumni, parents, fans, community members, the media, board members, policy makers and others who deal with higher education. While it can certainly be read from start to finish, this book is designed so that the reader can "dip in" to a specific topic of interest in modular form. I have written the book I wish I'd had when I first had to discover how money flows in a university, i.e., as a non-expert faculty member who became an administrator and had to figure it out bit by bit. Since then, in countless budget presentations I've made as a central administrator, I have learned that most stakeholders in the university community are eager to learn how the money works to enable the successful functioning of the institution and their part thereof. As the questions flow in those talks, as they inevitably do, many in the audience are fascinated as the shrouds of mystery are removed, prompting even more queries and explanations. I've attempted to collect all those questions, asked from an everyday perspective and, in answering them, illuminate how the business of the university works and fits together.

In my experience, there is no more effective way to achieve this understanding than to use real-life facts and figures on university funding along with clear, even pithy, explanations. Better yet, if one starts with simple questions asked by many on campus, the resulting answers lead to more questions and greater engagement, developing precisely the clarity we desire. So, this book will "follow the money" or, more precisely, follow the *data* about how money flows in a university.[6] While those flows are often complicated, and sometimes complex (there's a difference), gaining an understanding of the basics of how money flows in a university is not hard. It just needs to be explained in everyday language with a minimum of financial and accounting jargon, exposing myth and misunderstanding with appropriate data analyses, and illustrating how things truly work with factful charts and graphics (Nyhan and Reifler 2019).

It's easy for a financial topic to seem boring to a non-specialist, just as I have found that science can seem boring to non-scientists in my academic work. I remember a book from my kids' childhood called *The Big Book of Why* (Perritano 2010) that presented

6 The phrase "follow the money" was coined in the 1976 movie *All the President's Men* to describe how to get to the bottom of financial dealings in the Watergate crisis. It has since been used widely in many contexts, sometimes without the negative connotation, as a verbal shorthand to understand how a process or organization really works. It's used in that latter sense here.

science nuggets in an appealing way to children, playing off intriguing (and sometimes impolite) questions and engaging graphics. A fine example of effective communication about business and economic issues to a non-specialist audience is *Marketplace* on public radio (Marketplace 2020)—it is engaging, literate and entertaining, and one of my favorite shows. As a comprehensive compendium for the non-expert there is no better model than Mark Bittman's *How to Cook Everything* (Bittman 1998), another personal favorite. I've tried to incorporate a sense of those styles in this book to explain university funding to non-specialist readers. As a result, it is an introduction, a Frequently Asked Questions (FAQ) list, a chartbook, a pictorial guide at times, a quick-start user's handbook rather than a dense technical manual or, to use academic analogs, a summary akin to *Cliffs Notes* or a 101-level course on how the money works in a contemporary US university.

At one point the working title of this book was *Seeing the Elephant*, a reference to the ancient parable of the blind men, each touching a different part of an elephant and who, when each was asked to describe the animal he was touching, provided a completely different interpretation because he could only sense the part and not the whole. The person touching the trunk thought it might be a snake, the one touching a leg suggested a tree trunk, the one touching the tail supposed it was a rope, and so on. It's an apt metaphor for the widespread poor or partial understanding of how contemporary US university funding works and how limited views from different stakeholders are projected onto the whole. As I learned when looking up the phrase, it also has a relevant second connotation that dates to Civil War times, meaning to have experienced action in combat, to have seen what lies over the hill, or to have overcome an adversity. In all senses I've certainly "seen the elephant" in my experiences as a faculty member and senior administrator—I hope to share some of those insights with you in this book.

Box 1.1. Early University Funding

The first independent universities not established by religious authorities emerged during medieval times in Europe (although the first full-fledged university-like institutions with religious affiliations were Taxila around 800 BCE and then Nalanda in 427 CE, both in what is now India, and Al-Quaraouiyine in 859 CE, in Morocco). The independence of the European universities was born in part from a desire for academic freedom, and the institutions were formed as corporations of scholars and students with an organizational structure and an elected leadership. The price of autonomy was a different funding model: tuition and fees. Initially the students contributed a donation in place of paying outright tuition because knowledge was considered to be given by God and therefore not able to be sold. Unsurprisingly, students did not always make their donations. No doubt the early bursar's office, formal salaries, and the need for financial aid followed soon after!

This development of independently funded institutions also marked the emergence of market forces in higher education because work conditions and the course of study had to meet expectations. Needing little or no specialized physical infrastructure, it was relatively easy for faculty or students to move to a different city and establish or join another competing institution (The Editors of Encyclopedia Britannica 2016; University of Bologna 2018). For example, the University of Padua (est. 1222) was formed by a group that split off from the University of Bologna (est. 1088). Bologna is the oldest secular university and the Latin *alma mater studiorum* on its seal (Figure B1) means "nourishing mother of studies" (yes, the original alma mater), while Padua can boast Galileo Galilei as a former Chair of Mathematics (1592–1610) and both Nicolaus Copernicus and Elena Cornaro Piscopia, the first woman to receive a PhD, as alumni.

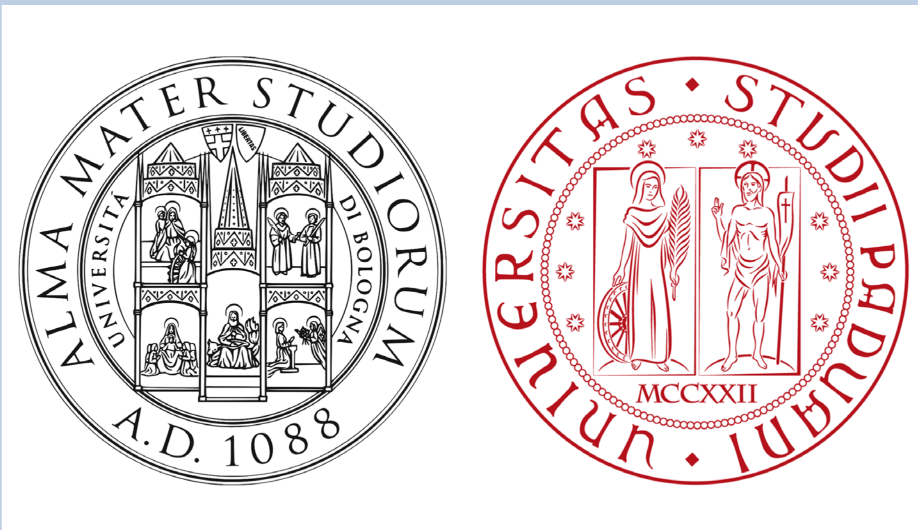


Figure B1. Seals of the universities of Bologna (left) and Padua (right) including the year that each was established. Sources: University of Bologna, Image by Malinion (2016), Wikimedia, Public Domain, https://upload.wikimedia.org/wikipedia/commons/d/d0/Seal_of_the_University_of_Bologna.svg, and University of Padua, Image by OMT5500 (2017), Wikimedia, Public Domain, https://upload.wikimedia.org/wikipedia/it/5/53/Logo_Universit%C3%A0_Padova.svg.

1.2 Structure

The business of the university can be thought of as having six major functional elements (Figure 1.1). The foundation of university funding is students, the community and broader society. Together they support the core threefold academic mission pillars of teaching, research and public service. University business is coordinated by the administration, and it is in turn overseen by external groups such as the state or trustees (that represent the foundational broader community). The hierarchy of service is primarily to students and the broader community (the principal stakeholders served by the university) and then successively to the remaining layers, which can also influence each other. The hierarchy of management is the other way around, with universities chartered and presidents appointed by states and/or a board of regents/trustees. The organizational chart proceeds down through administration to employees in the academic functions. Money flows between and within these functional elements, often in complicated ways among the academic pillars, where individual employees and units often have overlapping responsibilities across all three academic mission areas.

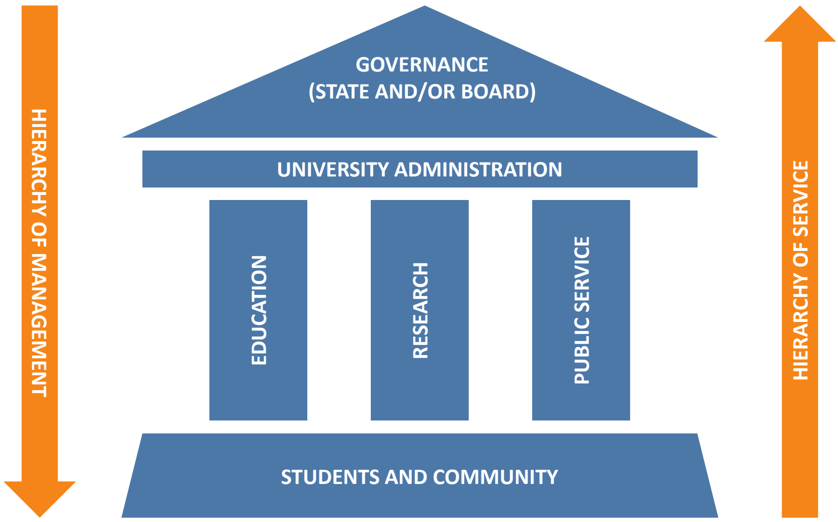


Figure 1.1. Schematic of the six major functional elements of the university.

As we discuss the various parts that make up these major functional elements and how they work financially, you will see this overall structure represented throughout the book. The chapters don't all correspond directly to the six-element structure because there is more detail to the functional organization in practice (skip ahead to Figure 5.1 if you're interested) and I thus expand upon several areas with distinct funding characteristics. Following this introductory chapter, Chapters 2 and 3 focus on institutional revenues and expenditures and Chapter 4 covers public funding, with all three of these chapters connecting to the external elements at the top of Figure 1.1, as well as the foundational student and community elements at the base. The remaining chapters deal with internal components of the university, starting with Chapter 5 on the human resources of instructional and support staff. The next four chapters move on to the mission pillars: Chapter 6 focuses on academic affairs and Chapter 7 covers associated student affairs and support services, Chapter 8 covers research activities and Chapter 9 covers public service, including extension services. We shift to facilities and finance in Chapter 10, and then we consider the somewhat different funding models of the health sciences and hospitals in Chapter 11. Athletics is the topic of Chapter 12, and we circle back to community again in Chapter 13 to focus on fundraising. Chapter 14 concludes the book by examining outcomes and considering the future.

1.3 Budgets don't make decisions, people do

It's not too early to point out something fundamental, something that is easy to forget when discussing university funding: at all times we must ensure that decisions are made first on the basis of academic and societal priorities. Budgets are unquestionably a vital component of decision-making and they can enable or constrain activity, sometimes dramatically, but it is a mistake to let budgets be the core driver of decisions. Even when there is not enough money (which is most of the time, see Bowen's Law in Section 3.7) the decision is more that the proposed activity cannot be prioritized over other competing priorities given the available resources. We should never lose sight of human agency in making money-related decisions about the business of the university—competing priorities are assessed and assigned to deliver on the mission of the university (i.e., ultimately, even if an individual decision is a smaller one).

Expressed another way, in a nonprofit enterprise such as most universities, the "bottom line" on the balance sheet is not dollars (by definition, that is held to zero). Our threefold bottom line is comprised of students graduated, knowledge discovered, and impact on the community. Universities are social enterprises operating under business constraints while, in contrast, companies are business enterprises operating under social constraints. Companies exist to make a profit. Universities exist to make graduates, knowledge, and societal impact (see Box 3.2).

The pursuit of financial resources to support those social goods consumes a substantial amount of time and effort for many on campus. Money is, quite literally, the means by which we carry out the business of the university, albeit a tool that works for us and not the other way around.

1.4 Notes on data

As I mentioned earlier, I employ data extensively to illustrate and explain concepts throughout this book. Most of the data I present can be found in openly accessible reports, online data warehouses, and books. It is all regular stuff for those who specialize in higher education institutional finance and data analytics. However, while much of the information appears individually in those places, this wide *range* of data is rarely pulled together in one place to tell a comprehensive overall story such as I lay out in the coming chapters.

A quick pedantic note: data are plural. I'm trained as a scientist and I served as a journal editor, and therefore I am compelled to say, "data are" rather than "data is" or "these data" rather than "this data" and so on. Data are like staff, or the faculty, a collective noun. Technically, the singular of data is datum, but that is too fussy even for me. I prefer data point, data element, etc., just as we would say staff member or faculty member (and not "a faculty" to refer to an individual person as I've sometimes heard in stifled horror!).

The largest and most comprehensive publicly accessible repository of higher education data is IPEDS, the Integrated Postsecondary Education Data System, run by the US Department of Education's National Center for Education Statistics (US Department of Education 2020b), hereafter referenced as IPEDS (2020). It is a veritable trove of information where you can find many useful summaries as well as technical details just a few clicks into the data section. I have made extensive use of IPEDS's financial and related data in this book. Where necessary for comparison, I have used the closest corresponding categories to allow for technical accounting differences applicable to public and private institutions, and known by their acronyms, GASB and FASB, respectively (US Department of Education 2018). I've augmented the IPEDS data with useful information from reports, academic papers, and statistical websites, and I cite specific data sources in each case.

Inflation adjustments were made using Consumer Price Index (CPI) data from the US Bureau of Labor Statistics (2018b) to convert financial trend data to constant dollars. As a technical detail, I utilized the standard CPI-Urban values for January to reflect the midpoint of each fiscal year.

There are literally thousands of colleges and universities in the US, each with its own set of data. In many analyses it is useful to draw on the overall average or a set of group averages as the clearest way to illustrate key patterns. Thus, I have selected a large cross-section of schools with varying characteristics that represent the range of institutions in the US, essentially all of the public and private nonprofit four-year institutions in the country. My selection criteria were as follows, using IPEDS (2020):

- US only
- Title IV participating (i.e., participating in federal financial aid programs)
- Control:
  - Public, four-year or above
  - Private nonprofit, four-year or above (i.e., excludes two-year and for-profit institutions)
- Carnegie Classification 2015
  - Doctoral Universities: Highest Research Activity (R1)
  - Doctoral Universities: Higher Research Activity (R2)
  - Doctoral Universities: Moderate Research Activity (R3)
  - Master's Colleges & Universities: Larger Programs (M1)
  - Master's Colleges & Universities: Medium Programs (M2)
  - Master's Colleges & Universities: Small Programs (M3)

    ◦ Baccalaureate Colleges: Arts & Sciences Focus (BAS)(i.e., excludes professional schools or colleges with special focus)
- Has full-time first-time undergraduates (i.e., not graduate-only)
- Branch campuses reporting separate financial information
- Valid data for common variables and years analyzed

The resulting data set covers most universities and four-year colleges across the nation and includes 468 public and 706 private institutions, for a total of 1174 in the data set. The Carnegie Classification (Indiana University Center for Postsecondary Research 2015) provides useful categories representing academic level, size and scope. I have collapsed the smaller Carnegie institution types into one group because their financial profiles are broadly similar, producing four categories: R1, R2, R3-M3 and BAS. I have selected only nonprofit institutions to keep the scope of the book consistent and because for-profit colleges, by definition, operate under a separate suite of financial and academic conditions. The set of selected institutions is summarized in Figure 1.2 and mapped in Figure 1.3. A listing of the institutions in the data set appears in Appendix A. This set is used throughout the book where possible, in order to make comparisons consistent and easy to understand.

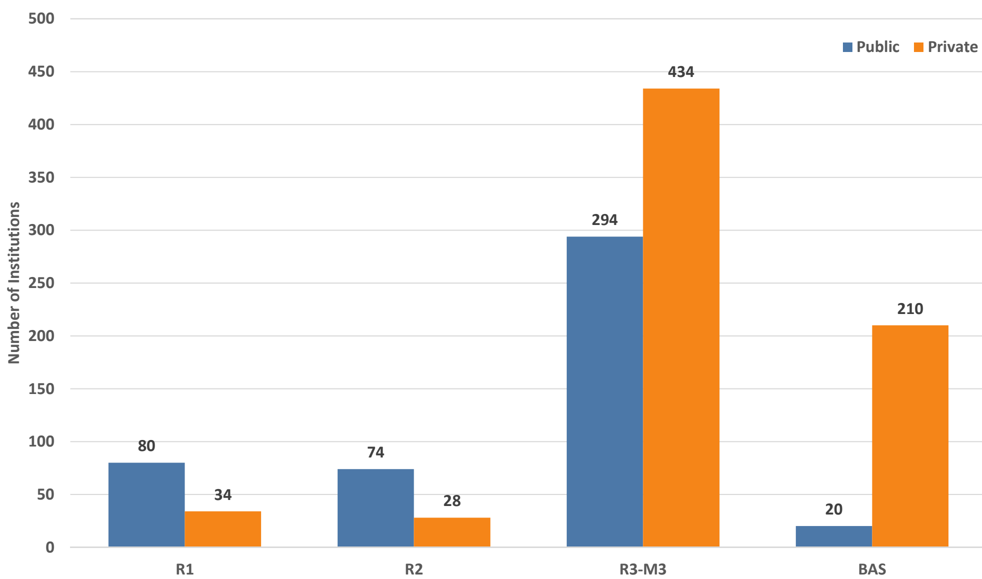


Figure 1.2. Number of public and private institutions in each Carnegie category of the data set used for analysis. See text for details. Source: IPEDS (2020).

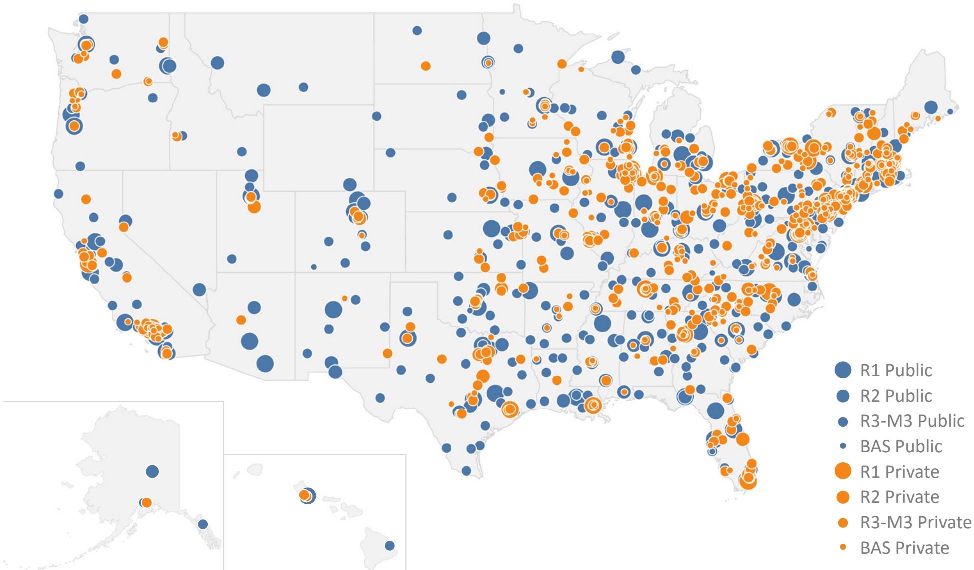


Figure 1.3. All 1174 universities and colleges in the data set, showing location, Carnegie Classification, and public or private control. Alaska and Hawaii are not to scale. Source: IPEDS (2020).

2. Institutional Revenues

2.1 How big is the university budget?

University budgets range from a few million dollars at small colleges to several billion dollars at the largest universities (Figure 2.1). Dealing with millions of dollars is unfamiliar to most people, let alone dealing with billions. Once we examine the details throughout the book you will be far better acquainted with what makes up these numbers and hopefully find them easier to grasp. Note that these revenue numbers are not the same as university endowments, which are more commonly reported in the media; we'll cover those in Chapter 13.

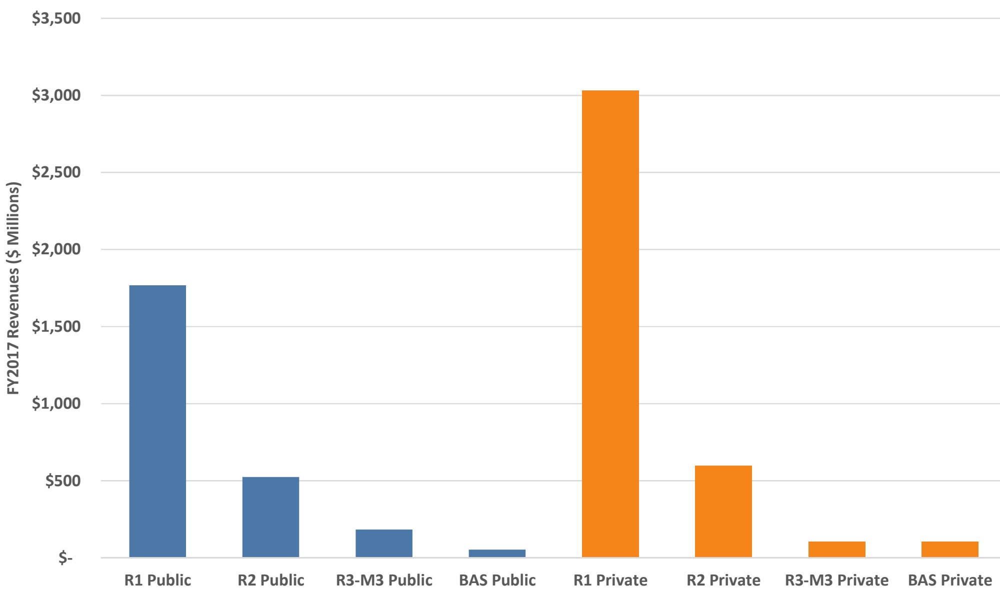


Figure 2.1. Average total institutional budget (FY2017 non-hospital revenues) for the universities and colleges in the data set, by Carnegie classification and control. Source: IPEDS (2020).

These budget numbers are simply the total of what it takes to run the business of the university in a given year. Technically, the amounts in Figure 2.1 are revenues (money coming in) and not expenditures (what was spent to cover costs), but because we are

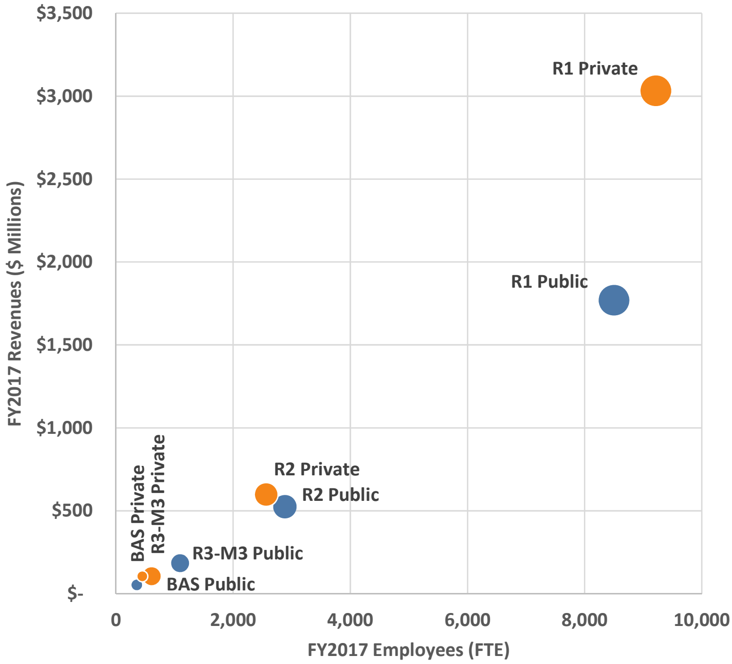
 https://doi.org/10.11647/OBP.0240.02

dealing with nonprofits where we allocate essentially all income to expenditures, the two amounts are similar in practice unless the institution is in dire financial straits or receives windfall income. We'll cover expenditures in Chapter 3.

For comparative consistency, Figure 2.1 excludes hospital revenues because some universities formally include a hospital in their reported budgets. Many universities with medical schools have affiliated hospitals run as independent corporations, even if the hospital name is university-related, and those hospital finances are reported independently. Either way, academic medical school finance and administration are distinct from those of a hospital, although they are often highly dependent thereon. We'll examine hospitals, medical schools and health sciences in Chapter 11.

It's clear from Figure 2.1 that the nation's major research institutions can have truly large budgets that reflect their comprehensive scope as well as their sheer size. This holds true as we look across the categories to medium universities and to baccalaureate colleges, where the latter are focused on providing an educational environment that is purposely small, undergraduate-only, and liberal arts oriented. At this level of aggregation, the distinctions between public and private institutions are not especially remarkable, but as we get into more detail in later sections we'll see some significant differences emerge.

Institutional size and budget are closely correlated, as plotted in Figure 2.2. Across types of institution, average budgets scale in an almost perfect linear relationship with the number of employees and scale almost as well in terms of student enrollment (especially if one considers public and private institutions separately). As a quick guide, if you don't know the size of the budget for your own institution, you can approximate it by simple comparison to similarly sized institutions in these data. All institutions publish an annual financial statement or report, and you can always find the definitive number for your school in that document. Although the size of the institutional budget enables coarse comparisons such as those above, alone it doesn't tell us much more than size itself. The interesting parts are what accounts for those revenues and the matching expenditures. The rest of the book covers all of that and more.



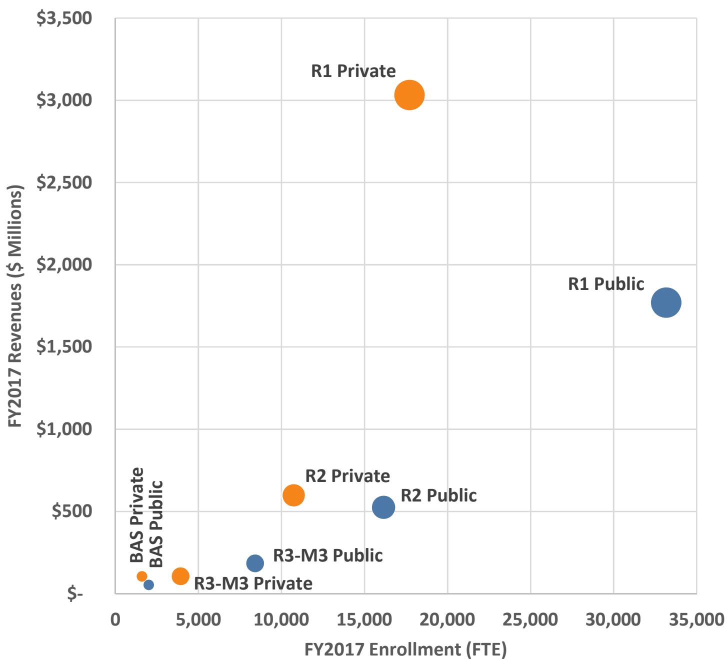


Figure 2.2. FY2017 total non-hospital revenues compared to total FTE employees (upper) and twelve-month FTE student enrollment (lower) by Carnegie classification and control. Source: IPEDS (2020).

Box 2.1. Universities in the Fortune 500?

How do the larger university enterprises compare to the size of companies, just for interest's sake, given that they are different creatures? *Fortune* magazine publishes an annual listing of companies by revenue. The current threshold for number 500 is ~$5.4B and for number 1000 it is ~$1.8B (Fortune 2018). As a guide, recognizable names close to number 500 are Harley Davidson and Western Union, and close to number 1000 are Tribune Media and Vail Resorts. For FY2016 data, eight of the biggest public and private US R1 universities have total revenues (including hospitals) that would put them in the Fortune 500 (Figure B2). A further 41 R1 universities would be in the Fortune 1000. Using the chart-topper, Penn, its FY2016 total revenues were $9.5B, of which $5.3B were from its hospital. Just two of these eight, NYU and Johns Hopkins, do not include hospitals in their budgets, and if we exclude hospital revenues from the others, only these would squeak into the Fortune 500 at $5.6B and $5.5B respectively, with Stanford just missing the cut at $5.1B. Taking the comparison beyond revenues, the median number of employees for companies in positions 490–500 is 10,550 people, which is somewhat smaller than the median of 17,548 for these eight schools, likely because higher education and healthcare are relatively labor-intensive sectors.

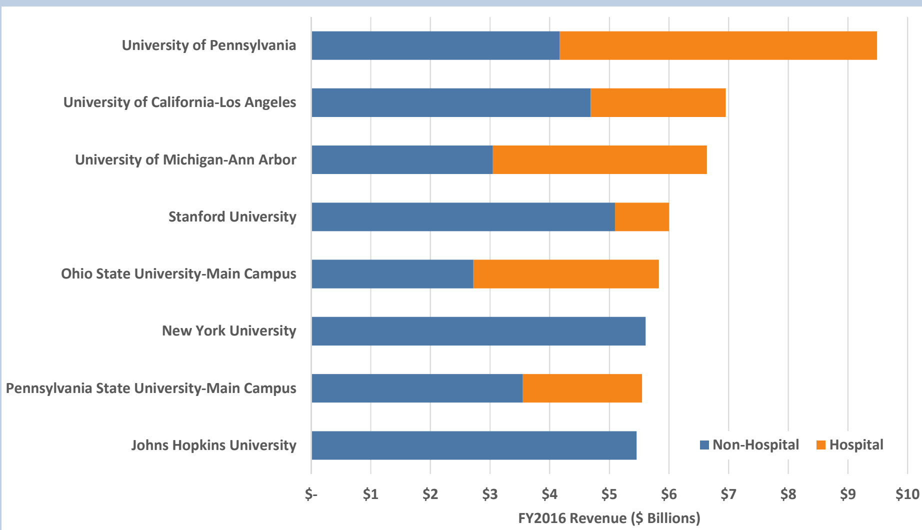


Figure B2. The eight US universities with the highest revenues in FY2016 that exceeded the Fortune 500 threshold of $5.4B. Source: IPEDS (2020).

2.2 How big is the university by enrollment size and growth?

We acknowledged the obvious importance of student enrollments in the previous section on budget size, so let's take a closer look. Enrollment is the most commonly cited measure of university size. As a metric, it is an excellent example of how variable definitions are critically important (and infuriating to the uninitiated) because the truth is that there isn't one correct answer to the question, "how many students are at your university?" The simplest metric would appear to be total headcount—all individuals registered as students—but even that's complicated. Consider the following non-exhaustive list that can influence the answer, in which I've included the IPEDS Fall enrollment definition in parentheses for context (US Department of Education 2019b):

- What if some students are doing two degrees at the same time, do we count them twice? (no);
- What about students just taking the odd class who are non-degree seeking? (yes);
- And those who are only auditing classes? (no);
- There are many part-time students, should we use full-time equivalent (FTE) numbers instead? (no);
- Do we include online students? (yes);
- Include students at the main campus only or include those at branch campuses and off-campus locations? (domestic = yes, international = no);
- What about those taking remedial courses or English as a Second Language before they take regular college courses? (yes);
- Undergraduates only or are graduate students included too? (yes, count all);
- Do we count professionals registered for continuing professional education classes? (no).

As you can see, there are dozens of permutations that each lead to a different number for the "how many students" question. Thus, the right answer is that it depends on how the number will be used. For example, in Figure 2.2 in the previous section, I used FTE enrollment because it arguably aligns better with resource-related amounts like revenue. If we were interested in student-faculty ratios then some version of headcount would be better. There are still further details (e.g., which day of the semester to use as the census day) but at this point you get the idea as to why official enrollment numbers can be simultaneously accurate and yet different for one institution at any given time.[1]

The IPEDS enrollment headcount definition is designed for consistency and comparison across many institutions, and it is the basic metric of institutional size, so let's take a closer look. Figure 2.3 shows total Fall enrollment broken out for undergraduate and graduate students for two individual years that are three decades

1 Similar challenges of multiple variable definitions apply to much of the financial data we'll be looking at too. I'll be sure to point out where definitions might make an important difference to how we interpret the data.

apart, FY1987 and FY2017. The Carnegie classification is closely tied to size, and indeed we see a steady scaling by institution type from the large R1 schools to the small baccalaureates. Public institutions have higher average enrollments than private ones, category for category, and as it happens private schools have enrollments that are roughly the size of the next smaller category of public school (i.e., R1 privates are similar in size to R2 publics, and so on down).

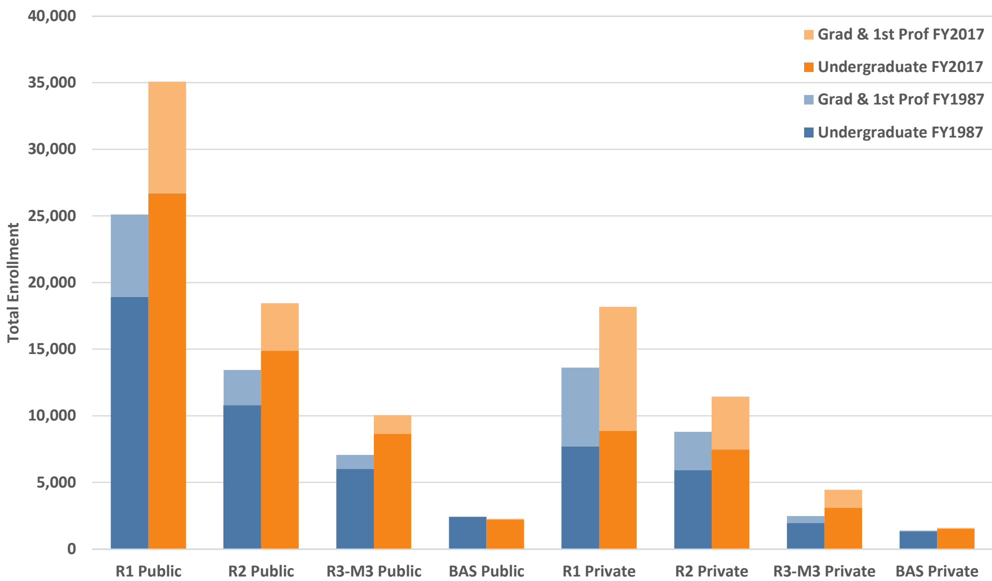


Figure 2.3. FY1987 and FY2017 total Fall enrollment (i.e., headcount, including part-time and full-time) of undergraduate students and graduate and first professional (e.g., JD, MD) students, averaged by Carnegie classification and control. Source: IPEDS (2020).

Figure 2.3 also shows that the average number and proportion of graduate students differs between public and private universities, especially at R1 and R2 institutions, which the bulk of them attend. The majority of them are master's and doctoral (PhD) students but this group also includes what are known as first professional doctor's degrees such as those in law (JD), medicine (MD), pharmacy (PharmD), veterinary medicine (DVM) and a number of other fields. The percentage of graduate students is about 25% and 20% at R1 and R2 publics respectively, while it is over 50% and about 35% at R1 and R2 privates respectively. There are several dimensions to those differences related to revenue and funding for graduate students that we will explore in parts of Chapters 5, 6 and 7.

Enrollments have grown at virtually every type of institution over the last three decades, as illustrated by absolute numbers in Figure 2.3 and by relative growth over time in Figure 2.4. Most types of school grew their total enrollment by 30–40% over that period (a little over 1% annual growth on average). Enrollment growth was alternately faster and slower by decade: fast in the late 1980s, slow in the 1990s, faster again in the 2000s, and then slower in the 2010s. Enrollment growth is counter-cyclical with economic and unemployment conditions, although not across the board at all kinds of institution or across all demographic groups (Dellas and Sakellaris 2003; Schmidt 2018; Li et al. 2019); while it is widely observed and assumed, this general tendency for people to enroll in or return to university studies during tougher economic times or vice-versa when the economy and employment are strong is just that: a tendency, and not a hard and fast rule.

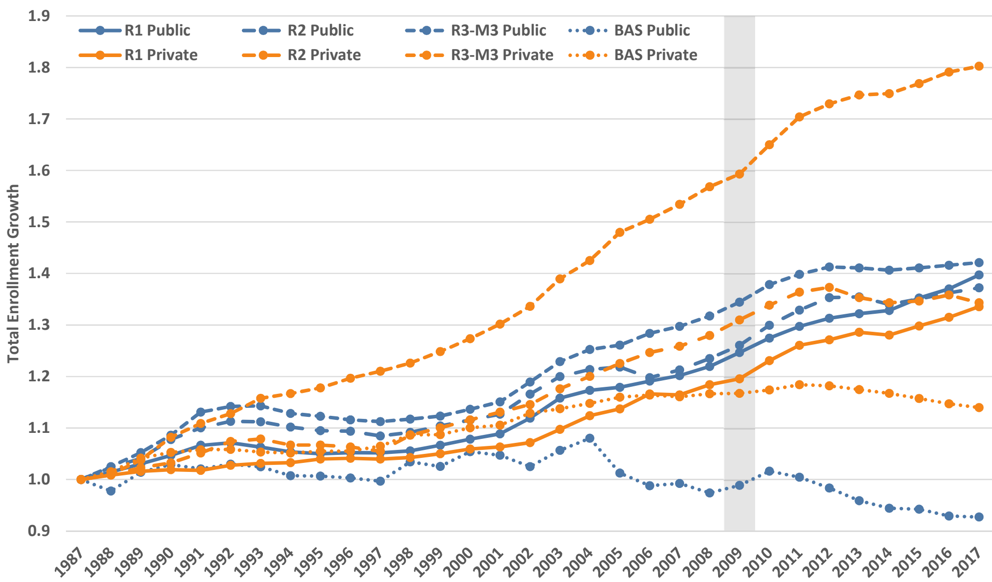


Figure 2.4. Growth in total enrollment (all undergraduate, graduate and first professional students) relative to FY1987, averaged by Carnegie classification and control. The vertical bar indicates the onset of the Great Recession. Source: IPEDS (2020).

There are three types of institution whose enrollment growth trends stand out from the others. R3-M3 private schools grew in enrollment at double the typical rate (80% over the same period, about 2% annually), disproportionately in graduate students. This sector is dominated by a handful of schools with massive growth in online enrollments (see Section 6.11). The baccalaureate colleges make up the other two atypical trends. Private baccalaureate institutions have seen flat growth rates for fifteen or so years, while the small number of public baccalaureate schools have had declining growth over that period and have actually shrunk in absolute size by about 10% since the Great Recession.

As with basic budget sizes, basic enrollment numbers don't tell us much more than size itself. Again, the interesting parts are what accounts for these enrollment patterns and what they mean for the business of the university. There's plenty of that to come in the rest of the book, but for now we return to budgets.

2.3 Are budgets growing or shrinking over time?

Budgets at four-year colleges and universities have grown steadily over time. Figure 2.5 illustrates how revenues have generally increased with occasional brief periods of decline during economic downturns. The effects of the Great Recession on revenues are especially noticeable in FY2009. Notice also that revenues tend to fluctuate more than expenditures although the trend is essentially the same for both—we'll cover more detail on expenditures in Chapter 3. Even with economic fluctuations the broad increasing trend has been present for many decades (see Chapter 4).

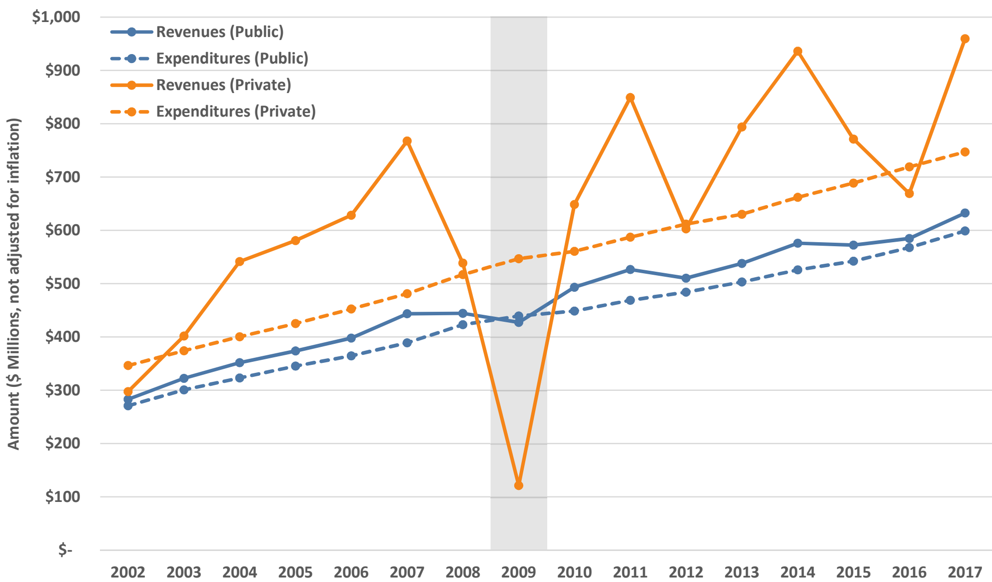


Figure 2.5. Trends in revenues and expenses (current dollars not adjusted for inflation or enrollment) by fiscal year averaged across the four public and private institution types. The vertical bar indicates the onset of the Great Recession. Source: IPEDS (2020).

The trend is sufficiently steep (4.4% per year for publics and 4.2% per year for privates in Figure 2.5) that it is twice the 2% general rate of inflation for this period (US Bureau of Labor Statistics 2018a), with the result that institutional budgets have essentially doubled over these fifteen years.[2] For those of us that have worked on campuses since the early 2000s, it certainly doesn't feel like our institutions now have twice as much money as we did back then—but despite the cognitive dissonance of this trend against the lived experience of multiple budget cuts, the data don't lie! The brief and absolutely crucial explanation is that these trends are not adjusted for inflation or for increasing enrollments that together account for almost all of the trend (skip ahead to Section

2 Although they are beyond our scope here, it is interesting to note for context that recent revenue trends have been flat at four-year for-profit institutions. Furthermore, at two-year institutions, recent revenue trends prior to the pandemic were mixed across type: flat at publics, rising at privates, and falling at for-profits.

2.10 to see how the adjusted revenue trends are essentially flat). Also, underlying costs have also been rising inexorably (we'll see much more on these topics when we cover expenditures in Chapter 3 and public funding in Chapter 4).

You may be wondering why the revenue fluctuations are relatively large for the privates compared to the publics. That's because a key source of revenue for each is driven by different fundamentals: the publics receive allocations from state revenue, which is based on taxes and thus responds to broad economic conditions, in contrast to the privates, which do not receive state allocations and instead rely on endowment and investment revenues that are closely tied to the comparatively higher volatility of the stock market. We'll look at all the major sources of revenue in the next few sections, and endowments in Chapter 13.

2.4 Where does the revenue come from?

Universities and colleges generate revenues from many sources. The average revenue picture across all types of four-year colleges and universities is shown in Figure 2.6. The revenue mix changes depending on the type of institution, public or private and large or small (see Section 2.5 coming up next). However, looking at the broad public and private averages first is a straightforward way to get a feel for the basics before we delve into crucial differences between types of schools. Two data notes: (i) here and in other similar figures I've used the average across types of schools to better show the central tendency, instead of the simple overall average that would be skewed towards the more numerous smaller schools in the set; (ii) for comparability across institutions, I have omitted hospital revenues where applicable, per the discussion in previous sections.

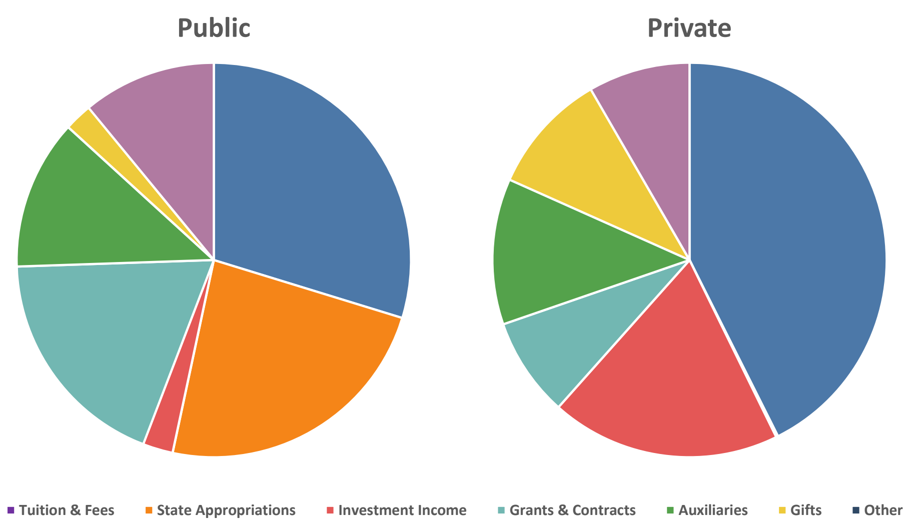


Figure 2.6. Share of FY2017 non-hospital revenues averaged across types of public and private institutions. Source: IPEDS (2020).

The most important take-home point in this section is that tuition and fees are the dominant source of revenue. While certain types of institutions have always relied heavily on tuition, as an across-the-board pattern in all sizes of public and private universities, this is a relatively recent development involving several factors (see the rest of this chapter). Note that Figure 2.6 shows *net* tuition and fee revenue after subtracting discounts (e.g., scholarships and fellowships paid with institutional funds). Gross tuition and fee revenue can sometimes include a third to half as much again beyond net revenue (see Section 2.8). Tuition revenue is important not only because of its size, but also because it can be spent broadly and used to pay salaries and operating expenses (see Section 2.11).

People new to university budgeting are often surprised to learn that state appropriations are nowadays a relatively small part of institutional revenues, because they imagine (reasonably enough) that a state would be the signature funding source for a state university. For medium and large publics in particular, that has not been the case for many decades, and as a result those institutions have diversified their revenue sources over time. State allocations are still a critical revenue source in most public institutions, however, because of their role as a primary funding source that enables the institution to leverage additional funds such as grants and philanthropy (see Chapters 8 and 13).

Investment income can be thought of as the private university counterpart to state income, serving as the signature revenue source for private colleges (as state revenue is for publics). While it is not typically the major source of revenue on a private campus, investment income is nonetheless a critical revenue source. One difference, as we've already seen in Section 2.3, is that investment income is relatively more volatile and private colleges must allow for that in their financial planning. For example, Figure 2.6 uses FY2017 data, a good year for investment income, but in FY2016 many private institutions experienced low or negative investment income. There is a popular impression that private colleges in general are awash in investment income proceeds from their substantial endowments. This is not the typical situation and the misconception likely stems from conditions found only at the wealthiest (and hence highly visible and influential) private institutions (see Chapter 13 for more on this topic).

Grants and contracts can form a sizable portion of overall revenues, especially at larger research-oriented institutions. The Federal Government is the dominant source of these funds, although state and local governments and private industry are also significant sources. An important distinction is that these sponsored projects almost always involve restricted funds, because the funds are obtained and can only be expended for the purposes of the project. By definition, then, they are not to be used for the everyday running of the institution, and instead they augment the activities of the university. See Chapter 8 for more detail on research funding including direct costs and indirect cost recovery (the much maligned and misunderstood "overhead").

Auxiliaries are units within the university that are largely or wholly self-funded through a direct cost-recovery mechanism. Examples of auxiliaries include residence halls, dining services, bookstores, parking, and sometimes the athletics department. This slice of the pie in Figure 2.6 is largely committed because the revenues are used directly to pay for the activity that generates them. Well-run auxiliaries can generate a modest margin for investment in other priorities.

Gifts have always been a critical component of the budget for the privates, and increasingly they are a vital source of revenue at the publics too. Gift revenues come from new gifts each year made to the institution or its foundation(s). Gift revenue is distinct from investment income earned on the endowment (that is built on gifts from prior years). Fundraising, gifts and endowments are covered in Chapter 13.

Finally, there are countless other activities that generate smaller portions of revenue that vary by institution. For simplicity, these are all lumped together in the "Other" category in Figure 2.6.

2.5 How does the revenue mix differ by type of institution?

A useful way to appreciate the differences in institutional revenue mix is to compare portfolios by type and control of the school. Figure 2.7 shows pie charts that break out the same FY2017 data used in the previous section, illustrating several significant distinctions between the categories of institutions. For the publics, both tuition and state funding comprise a progressively larger portion of overall revenue as one shifts from large to medium and smaller schools. Conversely, the portion of revenue from grants and contracts diminishes across the span from large to small campuses, especially at the privates. For smaller publics, almost two-thirds of their revenue comes from tuition and state appropriations in roughly equal proportions.

For the privates, there are several notable differences. Needless to say, there is no state funding. For R1 privates, if one substitutes investment income for state appropriation as a functional parallel, then the rest of the budget mix is not unlike the R1 publics. The relative role of investment income declines with type for the other privates, although it rises in importance at the baccalaureate colleges. Another distinction across all private institutions is that, as expected, gift revenues are clearly a bigger part of the budget than at the publics. For medium and small privates, grants and contracts (essentially research revenues) are a relatively smaller portion of the budget, even compared to their similarly-sized public counterparts.

The dominance of tuition as a revenue source for the medium and small privates is clear, where it can form half or more of the institution's revenue. Many articles have been written in the popular and higher education press about small privates being overly tuition-dependent in an unforgiving market, leading to a precarious financial standing and the risk of closure in some cases (Seltzer 2018). In contrast, at elite private baccalaureate colleges the relative role of tuition can diminish to about one third of

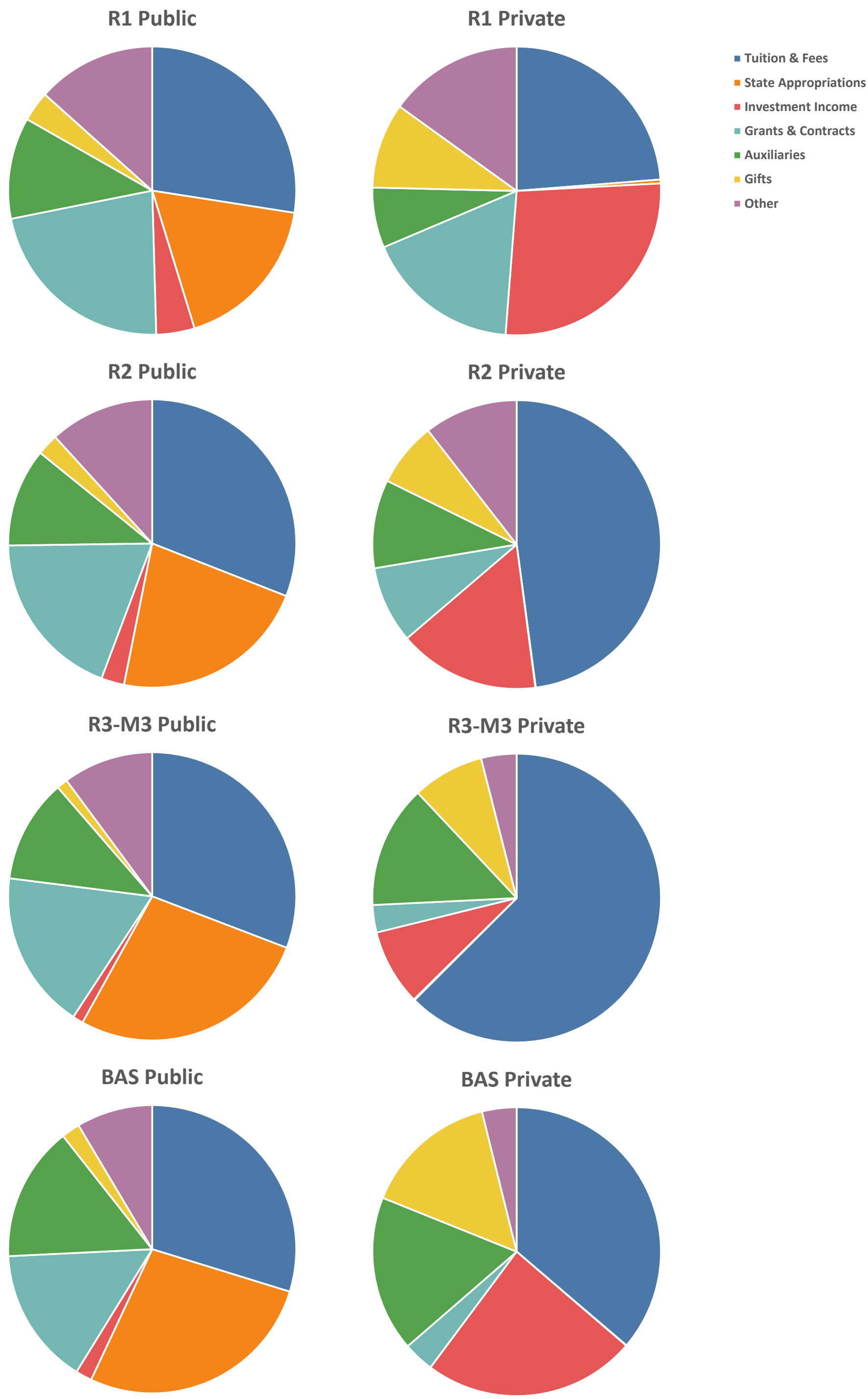


Figure 2.7. Share of FY2017 non-hospital revenues averaged by Carnegie classification and control. Source: IPEDS (2020).

revenues and investment income can instead make up a sizable portion of revenue, averaging about 25%.

Presidents and chancellors, and their senior leadership teams, are usually acutely aware of their institutional revenue profile. They typically pay a lot of attention to developing strategies that can sustain current sources of revenue and grow additional income streams to support the academic mission. This awareness and attention to the revenue portfolio holds across all types of institution, even though some must deal with the reality of a more narrowly constrained business model than others.

2.6 How much is tuition?

Before looking at the details of tuition and fee revenue, it is useful to start with published tuition rates (the "sticker price" using the car sales analogy) and explore the details from there. In Figure 2.8 I've shown these data for entering undergraduates in FY2018 including the out-of-state portion for the publics. Naturally, the overall totals as well as the breakout details all vary by institution. Fees in these data are those that all students are required to pay, which are also different from place to place and variously include fees for information technology, student health service, library, new students, activities, athletics, and so on. These fees exclude those that vary by degree program or individual course fees—the annual total for them will differ individually by student and term. Program fees can sometimes add substantially to the overall amount in professional programs (e.g., engineering) and can be significantly more than regular tuition for special graduate programs such as an executive MBA.

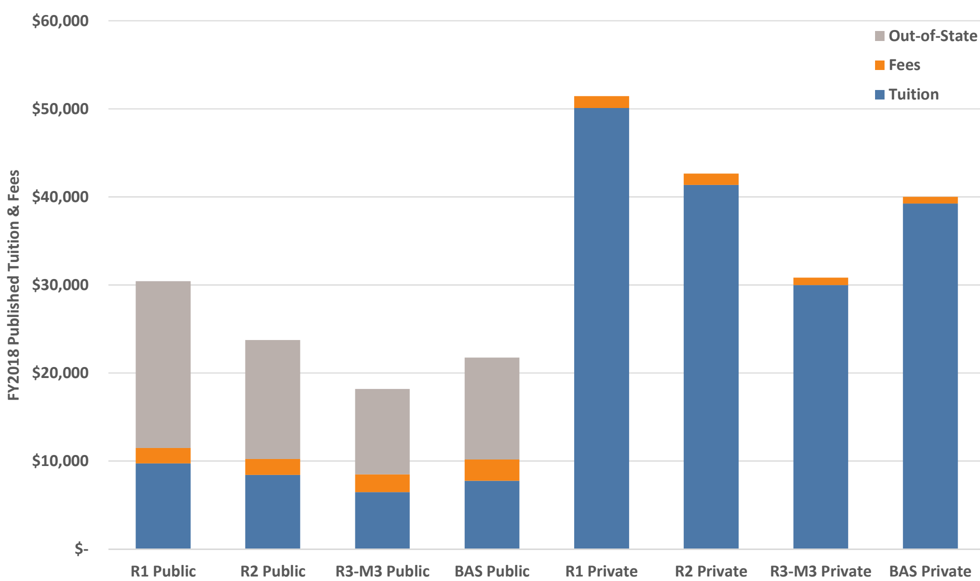


Figure 2.8. Published FY2018 annual undergraduate tuition and required fees by control and Carnegie classification, showing in-state tuition as well as combined additional tuition and fees for out-of-state students for the public institutions. Source: IPEDS (2020).

Still, most students pay less than the full published rate, so one cannot simply multiply a university's enrollment by the posted tuition to obtain its realized tuition revenue. Financial aid, in the form of both need-based and non-need-based aid (sometimes called merit aid), is available to every student and is contingent on family income as well as individual academic preparation (see Sections 7.5, 7.10 and 7.11 for more about price, affordability and debt). In addition to discounting with aid, further factors in the tuition revenue mix include international students and, at the publics, the proportion of in-state and out-of-state students, as well as online students, those attending summer sessions, and the mix of part-time to full-time students (see Sections 3.6 and 6.11). It takes a lot of important and detailed accounting, almost constantly throughout the year, to figure all these details and arrive at the institutional tuition and fee revenue.

2.7 How fast has tuition increased, and why?

Annual increases in published tuition and fees routinely garner media attention, shaping public opinion on the perceived costs of higher education. Even after adjusting for inflation, tuition and fees at all types of institutions have been trending upward for many years, consistently so since the early 1980s (Figure 2.9). Over the last three decades, published tuition and fees have approximately tripled in real terms, with average annual rates of 3.9% for in-state and 3.5% for out-of-state students at the publics, and 2.9% at the privates.

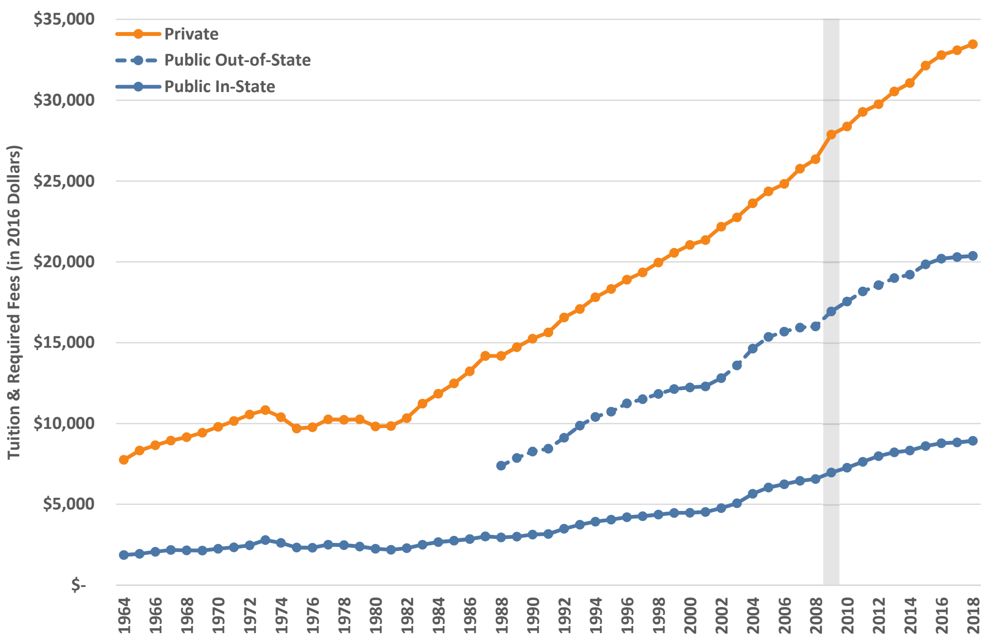


Figure 2.9. Inflation-adjusted trends in published annual undergraduate tuition and required fees at public (in-state and out-of-state amounts) and private institutions, FY1964–2018, in 2016 dollars. Prior to FY1988, private institution data include for-profit institutions. The vertical bar indicates the onset of the Great Recession. Source: NCES Digest (National Center for Education Statistics 2016) for pre-FY1988 data and IPEDS (2020).

What is driving these increases? It is easy to jump to convenient conclusions and blame various supposed causes, such as administrative bloat, high faculty salaries, students demanding resort-like amenities, or reduced government support. In reality, it is not all these things, but instead a combination of fundamental economic forces that include some of these factors and some others—the core explanation on the causes of rising costs is in Section 3.7, with additional material in Chapter 4 on state funding, and in Section 7.5 on discounting.

2.8 What is included in tuition and fee revenue?

Net tuition and fees are those that remain after subtracting discounts and allowances (essentially financial aid) from the gross tuition and fee budget, as illustrated in Figure 2.10. A sizable portion of aid comes from unrestricted university revenues, which one can think of as tuition revenue that is simultaneously "recycled" back to students as aid, with the remainder from restricted funds (gifts), Pell grants and other federal, state and local grants administered by the university. On average, for all degree levels and students, the overall aid-related revenue discount is about 39%, made up of the overall institutional revenue discount at about 26% and an overall government revenue discount of about 13%. These discounts to revenue are closely related to, but not the same as, the undergraduate tuition discount rate that is often simply called the discount rate. Given the vital role of tuition revenue, both discount calculations are key metrics for institutions to monitor and manage in tandem with recruiting as part of enrollment management (see Section 7.5 for more on tuition discount rates).

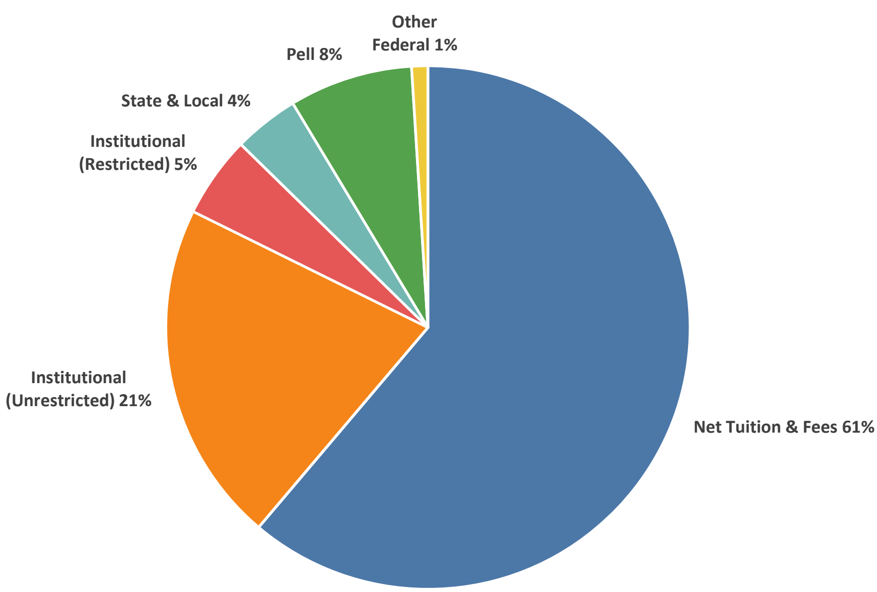


Figure 2.10. Percentages of FY2016 gross tuition and fee budget (all degree levels) comprised of net tuition and fee revenue and associated financial aid expenditures, averaged across types of institutions. Source: IPEDS (2020).

Figure 2.11 shows how aid discounts to revenue differ across types of institution. As one might expect, institutional aid is by far the dominant form of aid at the privates, averaging 44% at the small baccalaureate colleges and over 30% at other privates. At the publics the combined institutional aid is about 17%, but combined government aid plays a far larger role at public institutions. At the large publics, government aid is just under half of all aid, and at the smaller regional publics and public baccalaureate colleges it is over half of all financial aid, highlighting the critical role the smaller publics fulfil in affordability and access (see also Chapter 7). Unsurprisingly, institutions with higher tuition tend to discount at a higher rate and vice-versa, with correlations of 0.73 and 0.65 respectively for in-state and out-of-state, which leads one to how much revenue an institution spends per student (see Section 3.3). Nationwide, aid discounts have been trending higher in recent decades—see more on tuition discount rates in Section 7.5.

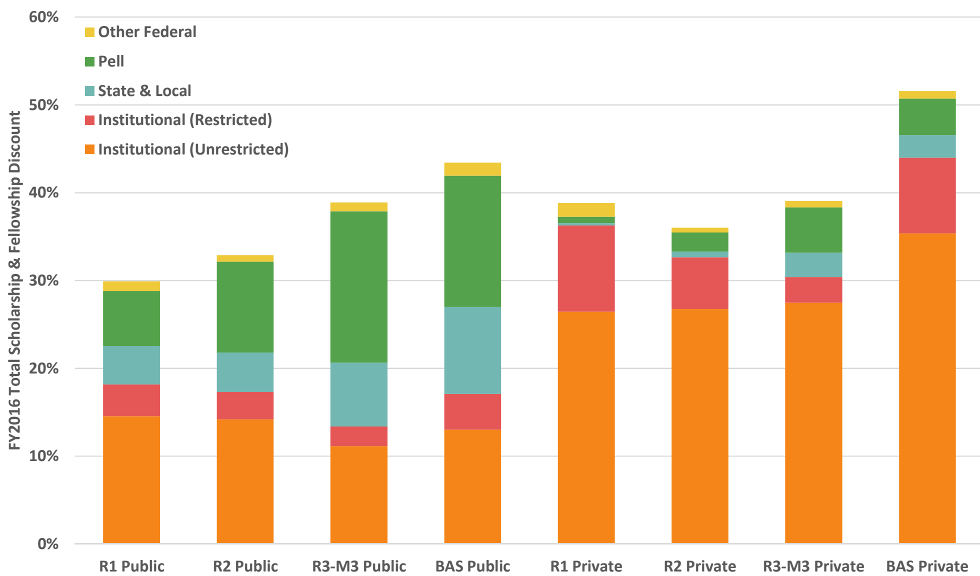


Figure 2.11. Average FY2016 aid discounts (for all degree levels) averaged by Carnegie classification and control. Unrestricted and restricted institutional aid comprise the total institutional aid; Pell grants and other federal, state and local grants comprise government aid. Source: IPEDS (2020).

2.9 How much revenue do institutions receive per student?

As we saw earlier in Section 2.3, gross revenues to higher education have risen over time. Increasing enrollments at new and existing institutions (plus inflation) make up most of the trend in increasing revenues and expenditures and so, to gain a comparable understanding of budgets across institutions, we often express data in terms of amounts per student, combining full-time and pro-rated part-time enrollments into

FTE enrollment, including undergraduates as well as graduate and professional students.

Figure 2.12 illustrates FY2017 revenues per FTE student enrolled across types of institutions, now in dollars rather than in relative percentage terms as we introduced in the preceding sections. Note that these are core revenues that exclude auxiliaries, hospitals, and independent operations. The most obvious feature is that average revenues per FTE at private R1 universities dwarf all others. Revenues per FTE at private R2 universities and private baccalaureate colleges exceed revenues at all types of public institution on average (R3-M3 private institutions receive about the same as the smaller publics). At all types of institution, revenue components generally scale by size, even after the per-FTE adjustment, although there is a notable difference at the baccalaureate colleges that have relatively higher state appropriations at the publics and relatively higher investment returns at the privates.

Returning to the large revenues at R1 private universities, although they are prominent in name and reputation, these institutions have only half the enrollment of R1 publics on average (~17,000 versus ~32,000), which has the effect of increasing the per-FTE revenue amounts. Also, as we'll see in the next section, investment returns are volatile from year to year and, particularly at R1 privates, they can range from the largest to the smallest (and even negative) component of the budget depending on the year. For example, the $63,000 in investment return per FTE at R1 privates in FY2017 was just $3,600 in FY2016.

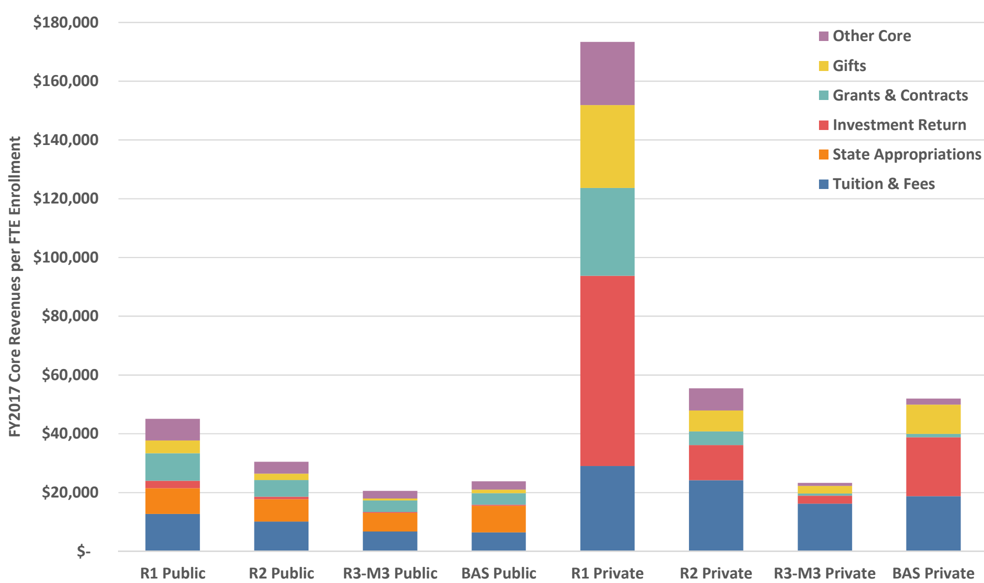


Figure 2.12. FY2017 core revenues per full-time equivalent (FTE) student enrollment averaged by control and Carnegie classification. Source: IPEDS (2020).

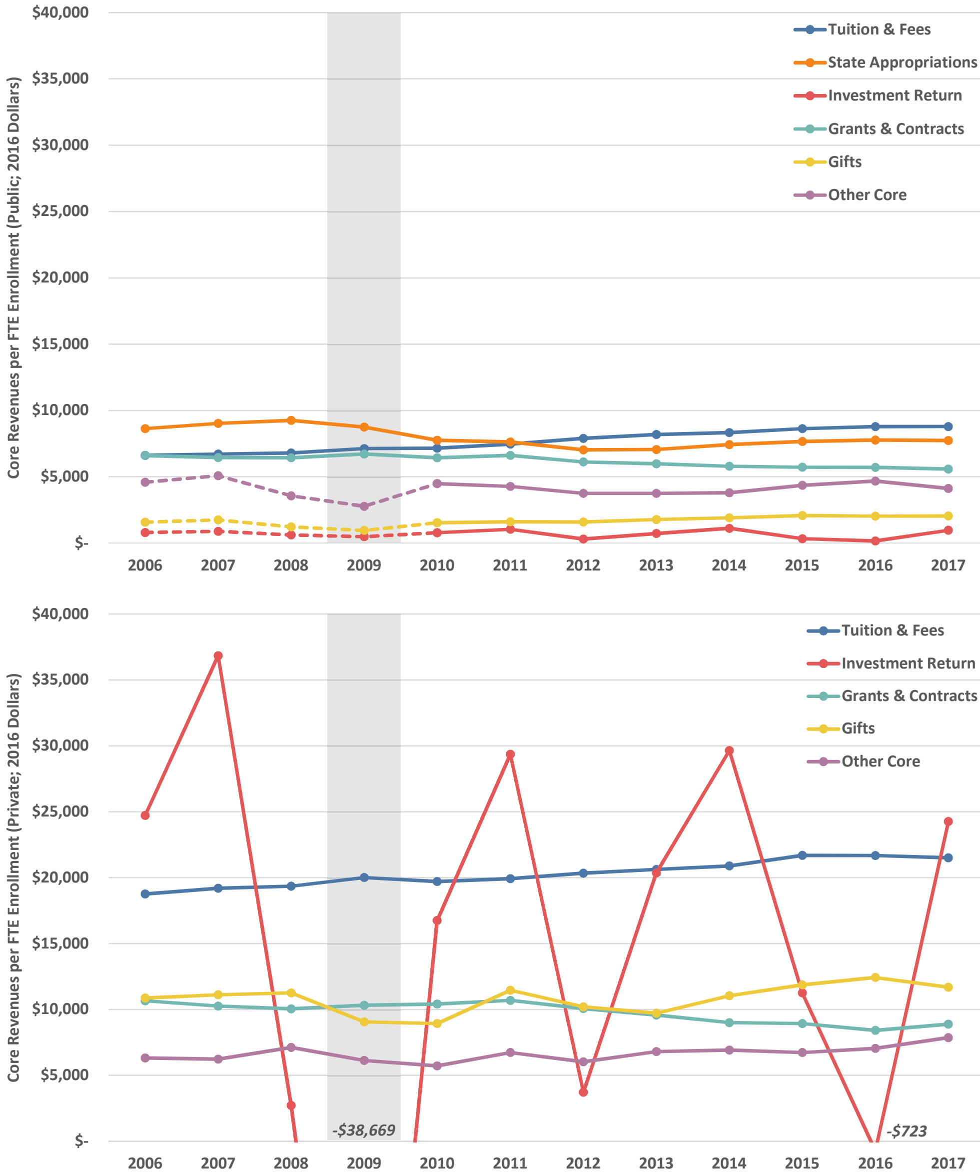


Figure 2.13. Trends in core revenues per FTE of student enrollment (2016 dollars) by fiscal year, averaged across public institutions (upper panel) and private institutions (lower panel). The vertical bar indicates the onset of the Great Recession. Gifts and investment return at public institutions were combined with other core revenue prior to FY2010; dashed lines indicate estimated amounts based on their FY2010 proportions. Investment return amounts below zero (losses) in FY2009 and FY2016 at private institutions are indicated in italics within the chart. Source: IPEDS (2020).

2.10 What are the trends in per-student revenues?

We covered overall higher education trends in both revenues and expenditures earlier in Section 2.3 and in short, before adjusting for enrollment and inflation, they are upward. Now that we have discussed revenues on a per-student basis, we move on to revenue trends per student FTE adjusted for inflation (per Section 1.4). To aid clarity, I've shown the per-FTE core revenue trends in separate panels for public and private institutions (Figure 2.13), and just at that aggregated level because the patterns by Carnegie type across the years are generally consistent with the proportions in Figure 2.12 above.

Starting with the publics, over the last dozen years, tuition revenue has climbed from \$6,628 to \$8,797 per FTE, averaging 2.9% per year. State revenues dropped from almost \$9,300 per FTE right before the recession to about \$7,000 per FTE four to five years later with a \$700 rebound since then. Grants and contracts are shown for completeness but obviously they are not directly related to student enrollment. Private gifts and investment income are both relatively small components at the publics; gifts increased from about \$1,600 to \$2,100 per FTE, while investment returns per FTE averaged under \$1,000 but varied by hundreds of dollars from year to year. Significantly, total core revenues per FTE at public institutions (Figure 2.14) have decreased over the twelve years, from \$35,893 to \$33,436, an average reduction of -0.84% annually.

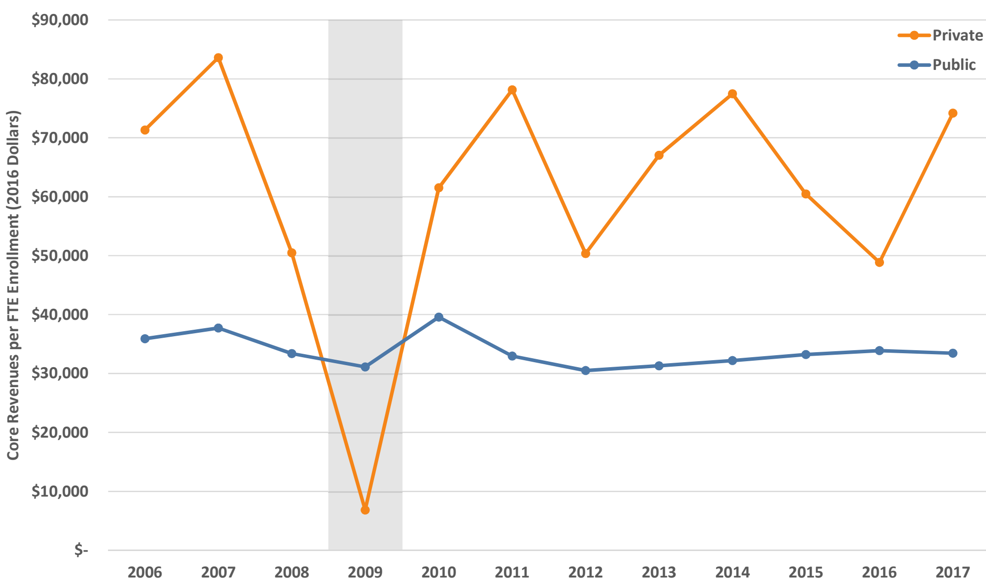


Figure 2.14. Trends in total core revenues per FTE of student enrollment (2016 dollars) by fiscal year, averaged across public institutions and private institutions. The vertical bar indicates the onset of the Great Recession. Source: IPEDS (2020).

At the privates, the volatility in investment returns is the most notable feature (Figure 2.13). Over the last twelve years it has been nominally centered around $15,000 per FTE but has frequently been double or half that amount. The massive losses of FY2009 are clear, and even in "normal" years these revenues can be close to zero or as high as $30,000 per FTE. Managing institutional finances with this kind of volatility can be challenging, particularly at the private R1 universities where investment returns can approach half the overall budget. Financial officers must budget these revenues conservatively, estimating the level that produces a reasonably constant funding stream from year to year by keeping funds in reserve from the good years to cover the bad years. We'll examine cash on hand and related financial issues in Chapter 10. Average tuition revenue increased from $18,760 to $21,503 per FTE, about 1.3% annually over the twelve years. Gifts rose from about $11,000 to about $12,000 over the period, averaging a 1.2% annual increase. It is crucial to note that total core revenues per FTE at private institutions (Figure 2.14) have been essentially flat (with high volatility) over the twelve years, as well as the post-recession years.

I want to reiterate just how important the trends are in Figure 2.14: in contrast to claims of rampant increases that use unadjusted numbers, on a per-student basis and adjusted for inflation, FY2006–2017 total core institutional revenues decreased at the publics and were flat at the privates.

2.11 Why isn't all revenue treated the same way?

All money is green, as the saying goes, although at universities and other nonprofits the source of funds and their intended use lead to various shades of green with different associated allowable expenditures (Figure 2.15). This is what is meant by different "colors of money" in accounting slang on some campuses. We'll leave the technicalities of fund accounting to the experts, but there are some relevant peculiarities that attentive campus citizens should be aware of. I've briefly mentioned the big ones already when introducing revenues: restricted and unrestricted funds.

Restricted funds, as the name implies, carry external stipulations limiting their use to specific types of expenditure. The largest sources of university restricted funds are expendable gifts and endowment income from gifts, as well as the direct cost portion of sponsored grants and contracts. Most donors designate their gifts for a specified purpose, such as a scholarship for women engineers or construction of a new biotech building. When the university accepts the donation, it obligates itself to spend the funds in accordance with the donor's desires. Likewise, when the university is awarded a contract, such as a federal research grant from the National Institutes of Health, it is contractually obligated to spend the award only on the directly budgeted costs of that project (laboratory equipment, specialized labor, etc.).

Unrestricted funds, in contrast, can be used for most of the general expenses of running an institution, and their local names can vary, including general funds,

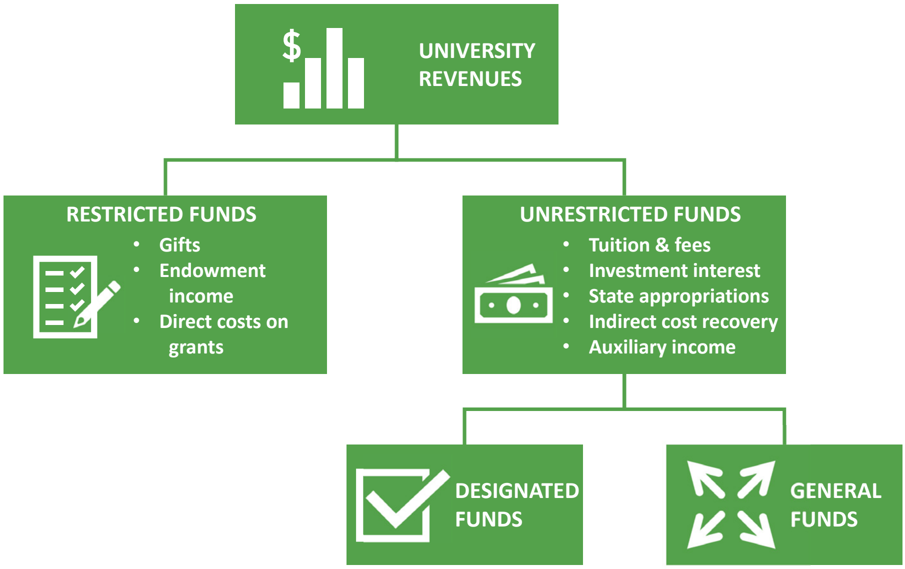


Figure 2.15. Types of university revenue funds. Restricted funds are limited to externally stipulated uses. Unrestricted funds can be used for the general running of the institution. Some unrestricted funds may be designated by the university for special purposes.

institutional funds, state funds, and more. The largest sources of unrestricted funds are tuition and fees, interest earned on investments, state appropriations, the indirect cost recovery portion of grants that covers institutional facilities and administration costs (see Chapter 8), and income from auxiliary units.

Even unrestricted funds have some notable fine-print exceptions. For example, in many states public universities cannot use them to purchase alcohol, such as for special events and receptions (a common work-around is to use unrestricted gift income instead, especially as such events often involve donor development). Another kind of exception is income from specially targeted fees, such as course fees to cover expendable supply and equipment costs (e.g., laboratory courses in chemistry)—such fees are often approved for a narrow purpose only, and the related expenditures are usually vetted on a regular basis. These fees, as well as various special funds such as parking surcharges for the "free" campus shuttle, are often known as designated funds. Designated funds originate as unrestricted funds, but the Board or President/Chancellor will designate them such that in practice they become restricted for most campus accounting purposes.

One further clarification on restricted endowment income versus unrestricted investment interest: the investments that produce unrestricted interest income originate from unrestricted institutional funds (e.g., money in the university's bank accounts) and quasi-endowments (Board-designated institutional funds for investment) as well as undesignated gifts. At institutions with exceptionally large endowments, the unrestricted investment interest can be a major source of operating revenue. For example, unrestricted funds account for about 30% of Harvard's total endowment (Harvard University 2018).

Box 2.2. Complicated Fund Sources and Pitfalls

Restricted, unrestricted, and designated funds complement each other within the overall university budget. It can get complicated, though. Professor Overachiever might be paid a base nine-month academic year salary from unrestricted funds (tuition and state allocation), a stipend as the prestigious Eminent Alumnus Chair from restricted funds (endowment proceeds from a gift), plus a summer salary from both restricted funds (a research grant) and unrestricted funds (administrative stipend as department chair). Often these are just technical details that the department business manager can handle easily. But academic work is often more complex and intertwined than this tidy accounting world, which can trip up unsuspecting academics.

One example is spending on research grants where early results change the approach so that the project needs equipment that wasn't listed or the population under study is changed to a more logical one that wasn't anticipated in the grant. These shifts make perfect academic sense, but they are an accounting no-no unless formally approved by the granting agency. Another example might be a student awards committee that expands eligibility for a donor-endowed award because the rules have become outdated, but the chair forgets to first get the OK from the development office and donor.

2.12 Why worry about state appropriations and investment income if tuition dominates?

Despite the leading role of tuition revenue at essentially all US institutions nowadays, the two signature revenue sources of publics and privates—state appropriations and investment income respectively—are nonetheless each critical because of what we can spend them on. As unrestricted funds they are sizable sources of primary operating income. In many institutions, together with tuition, these revenues associated with the primary educational mission are the main way that we cover payroll and operations outside of the auxiliaries.

There are further implications: these two sources are linked to the psychology and culture of the institution. At the publics, decades ago (in the 1970s and 1980s), state appropriations averaged around 45% of institutional revenues and in some cases over 75% (National Center for Education Statistics 1991; IPEDS 2020). Even at their present diminished levels, however, state appropriations represent (through taxes) the investment of society at large in public higher education. At the privates, funds from the founder and other major donors literally made the origin and ongoing independence of the college possible. Faculty, staff, students, alumni and the community are often closely connected to the institutional philosophy that is exercised through these funds and changes to them are invariably newsworthy.

Another implication is leverage—as part of the primary activity revenue, these funds are necessary for the institution to obtain additional funding from other key revenue sources, such as gifts, or funding the research mission through grants and contracts (Figure 2.16). It is exceedingly difficult to succeed in sustaining a research enterprise on grant funds (so-called "soft" money) alone, and thus the primary funding for faculty and administrative staff furnished by tuition and signature revenues is key in enabling sustained external research support (and the associated quality and prestige). This primary activity revenue is a critical part of the research university's business model (see Section 14.2) and a fundamental element in the unparalleled success of the US in research and graduate education since the mid-twentieth century (see Section 8.2).

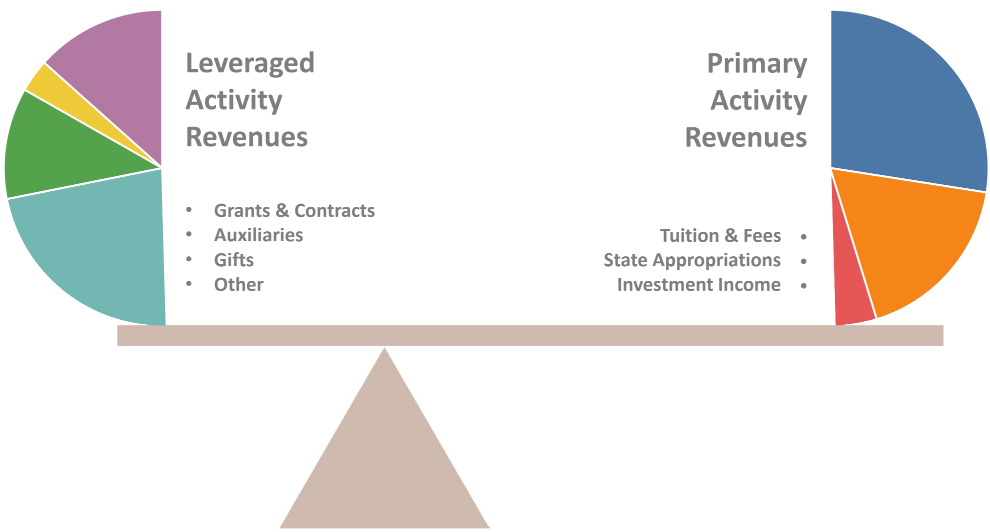


Figure 2.16. Revenues broadly associated with primary activity (the educational mission) provide necessary leverage to enable other activities and their associated revenues. Revenue segments are for R1 public institutions illustrated in Figure 2.7.

2.13 What is the revenue significance of out-of-state and international students?

At private institutions the distinction between in-state and out-of-state students doesn't apply, at least in the revenue sense, and there is a uniform sticker price for all students. At public institutions, which are supported in part by tax proceeds, substantially lower pricing for in-state students is built into the pricing structure, often by statute or charter. These are known as resident students for tuition purposes, while out-of-state and international students are known as non-resident students. International students are typically billed at the non-resident rate although they pay slightly more at a few institutions (for more on international students, see Section 6.12).

As state funding for public higher education has diminished, non-resident students have come to play a role in tuition revenue at the publics that is far greater than their relative headcount. Detailed comparative data showing net tuition revenue from in-state and out-of-state students is not readily available, but we can easily examine enrollment data and show the revenue impact of non-resident students by inference. Figure 2.17 illustrates the relative proportions of in-state, out-of-state and international students across the types of schools in our set for first-time undergraduates. All types of private schools except the smaller regionals draw over half their incoming students from outside their home states, while at all types of public university the non-resident portion averages substantially lower with 15–27% being non-residents. As an individual counterexample, the University of Vermont has only 21% in-state first-timers, the lowest of all public universities (Vermont is among the public universities with the highest out-of-state tuition and fees, comparable to the University of California campuses)—clearly Vermont's situation is atypical for the mix of tuition revenue (Despart 2015).

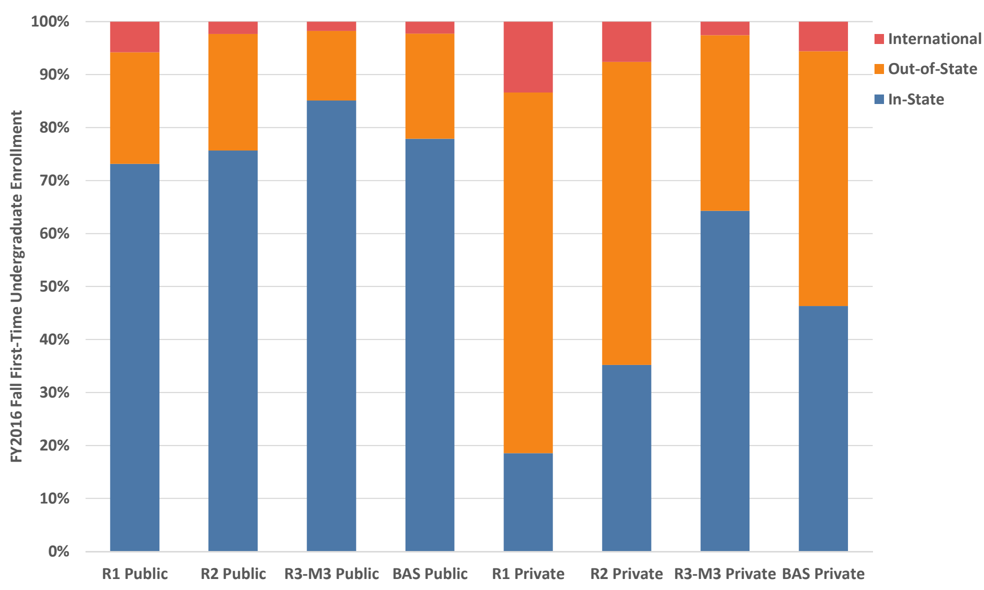


Figure 2.17. Fall 2016 first-time undergraduate enrollment percentage mix of in-state, out-of-state and international students at institutions, averaged by control and Carnegie classification. Source: IPEDS (2020).

With some simple assumptions, we can calculate a back-of-the-envelope estimate of the net tuition revenue impact of out-of-state students at a public university, as summarized in Table 2.1. In line A we use the average in-state and out-of-state FY2018 published tuition and fees for the public universities in our example set. In line B we assume an average 30% tuition discount across all students (in practice, in-state students often receive a higher percentage discount relative to out-of-state students, but we'll keep it simple here and use an equal discount, just to be conservative). In line C we list the required fees, and in line D we obtain the tuition and fee revenue per student as the total of lines B and C. We assume an overall enrollment of 14,000 in line E (this number doesn't matter in the end, but it helps keep the example understandable) with 75% as in-state students (this proportion does make a difference). We multiply the average revenue per student (line D) by enrollment (line E) to get the total net tuition and fee revenue for the institution in line F. Finally, in line G, we convert the two revenue totals into their percentages of the combined total.

Table 2.1. An illustrative estimate of the net tuition and fee revenue impact of in-state versus out-of-state students. See text for explanation.

Line	Item	In-State	Out-of-State
A.	Tuition	$8,092	$21,195
B.	Less 30% discount	$5,664	$14,837
C.	Fees	$1,998	$2,329
D.	Revenue per student	$7,662	$17,166
E.	Enrollment	10,500	3,500
F.	Net Tuition & Fee Revenue	$80,455,200	$60,079,250
G.	Percent	57%	43%

In this model, at 43%, the net tuition and fee revenue from out-of-state students is approaching half the total revenue although these students only comprise 25% of the total by headcount. If we vary the proportion of out-of-state students in the model, we can get a sense of their impact across typical public institutions: with 10% out-of-state students they generate 20% of the revenue, and with 30% out-of-state students we get close to a 50:50 revenue split. Thus, as a rough guide for a typical public institution, we can say that the net tuition and fee revenue portion from out-of-state students is 1.7 to 2 times their headcount proportion. On a per-student basis in our model, as line D shows, an out-of-state student pays more than double that of an in-state student. These numbers are clearly significant in the business model of public institutions, and like the discount rate this is also a key metric for these institutions to monitor and manage in tandem with recruiting as part of enrollment management (see Chapter 7). Note that we've also simply included undergraduate and graduate students together for data reasons, although the undergraduate numbers will dominate the calculation at almost every institution. See Section 3.6 for the flip-side of the in-state/out-of-state issue in expenditures.

3. Institutional Expenditures

3.1 Where does all the money go?

Higher education is a labor-intensive industry, so it's no surprise that people, in the budgetary form of salaries, wages and benefits, are the single biggest category of expense for universities and colleges. More prosaically, meeting payroll is the biggest institutional bill each month.

Figure 3.1 shows the average mix of expenditures by nature of expense, one of two views of expenditures that we'll examine. In this view, the proportions are remarkably similar across all types and sizes of our example institutions. It is easy to see that salaries and benefits combined make up over half of all expenditures. The remaining major natural expense categories are all under 10% of the total. Operation and maintenance of the physical plant (permanent built infrastructure), also known as O&M, is easy to cut in lean years but it inevitably accumulates into much larger costs over time,

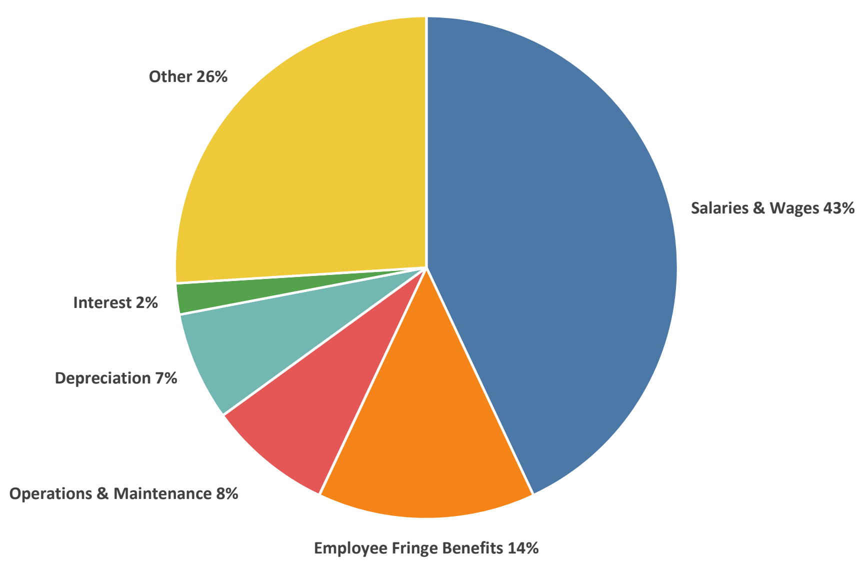


Figure 3.1. Percentages of FY2017 non-hospital expenditures averaged across institution types, by nature of expense. Source: IPEDS (2020).

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which become even tougher to afford. Major equipment is accounted for through depreciation, spreading its cost over the expected useful lifespan rather than incurring it all in a single year. To use two everyday analogies, O&M is like maintenance on your house, while depreciation is like the annually decreasing value of your car. And, to complete the house analogy, interest in this case is what the institution pays on its debt (often in the form of bond financing to build buildings, see Section 10.3), which is like the mortgage payment on your house.

The other view of expenditures is by function of the expense, as illustrated in Figure 3.2, where the same dollars are instead tagged to the core mission and supporting activities of the university. On average across our example institutions, instruction is the single largest functional expenditure and it includes faculty salaries and benefits, office supplies, and the administration of academic departments. Research here includes the cost of research centers and institutes as well as restricted funds (see Section 2.11) for sponsored research projects. Accounting of public service includes separately budgeted activities such as cooperative extension services, public broadcasting, and public information offices. Following the three core mission areas are four vital categories that support and supplement the core missions, and which together play a sizable role in the expenditure budget. Academic support covers activities that support all three mission areas such as libraries, computing, museums, and deans' offices. Student services incorporates recruitment, admissions, the registrar's office, career center, financial aid administration, and student clubs. Institutional support consists of general administration, executive leadership, the legal office, financial services, public relations, and facility operations. Auxiliary

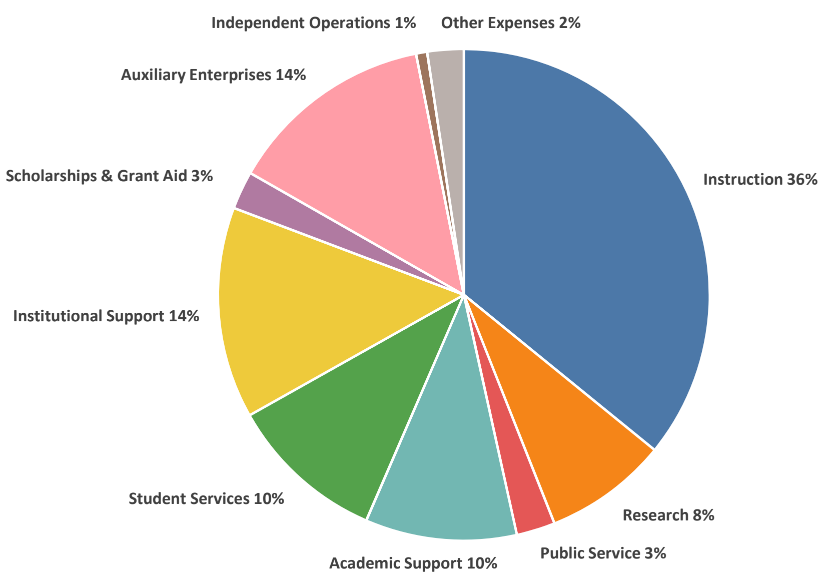

Figure 3.2. Percentages of FY2017 non-hospital expenditures averaged across institution types, by function of expense. Source: IPEDS (2020).

enterprises include residence halls, bookstores, and dining services (we've omitted hospitals to enable equivalent comparisons, as explained earlier). The remaining small categories comprise scholarship and grant aid expenses, independent operations, and other expenses.

These functional expenditure data highlight a point I made in Chapter 1, which is that universities are complicated institutions. Investing in the multiple interlocking and interdependent activities listed above is necessary for a thriving institution that carries out its mission well, and that's why managing a university is a form of matrix management (cross-functional management, to be more precise, but that's a story for another book). The university's expenditure budget reflects this reality because in effect it is a matrix of the natural and functional views above (e.g., salaries, O&M, etc. within instruction, research and so on), only with hundreds of fine-scaled categories.

3.2 How does investment in major functions differ by type of institution?

There are some interesting patterns in the proportion of budget that types of institutions spend on major functional areas, the most notable being instruction and research. In Figure 3.3, perhaps the most remarkable pattern is the consistency in the proportion of budget invested in instruction—just over one third across all types of institutions. We can see that research expenditures shrink relative to instruction and other areas as one moves from the R1 schools to smaller institutions that do less research, just as one would expect. Expenditures on public service are, again as expected, a much larger portion of the budget at public institutions, especially the R1 & R2 publics (the groups that includes most of the land-grant institutions).

Academic support is a similar proportion across all types of school, but the portions of budget invested in student services show a relative increase at smaller schools with slightly greater portions at the privates. Private institutions expend relatively more on administration (institutional support) than do their public counterparts, with relatively higher portions at smaller public and private schools. Scholarships and grant aid are primarily a feature of public universities (as we've seen, private schools tend to discount relatively more instead). The portion of expenditures on auxiliaries is similar across all institutions. There are some notable differences in independent operations, with R1 private institutions far outweighing all others.

In Section 2.3 we saw that overall expenditures (and revenues) have trended upwards for years. Seeing the public-private differences in expenditures above and knowing that not only financial resources, but also enrollments differ across these schools, the logical comparison across institutions is to look at expenditures per student, which we cover in the next section.

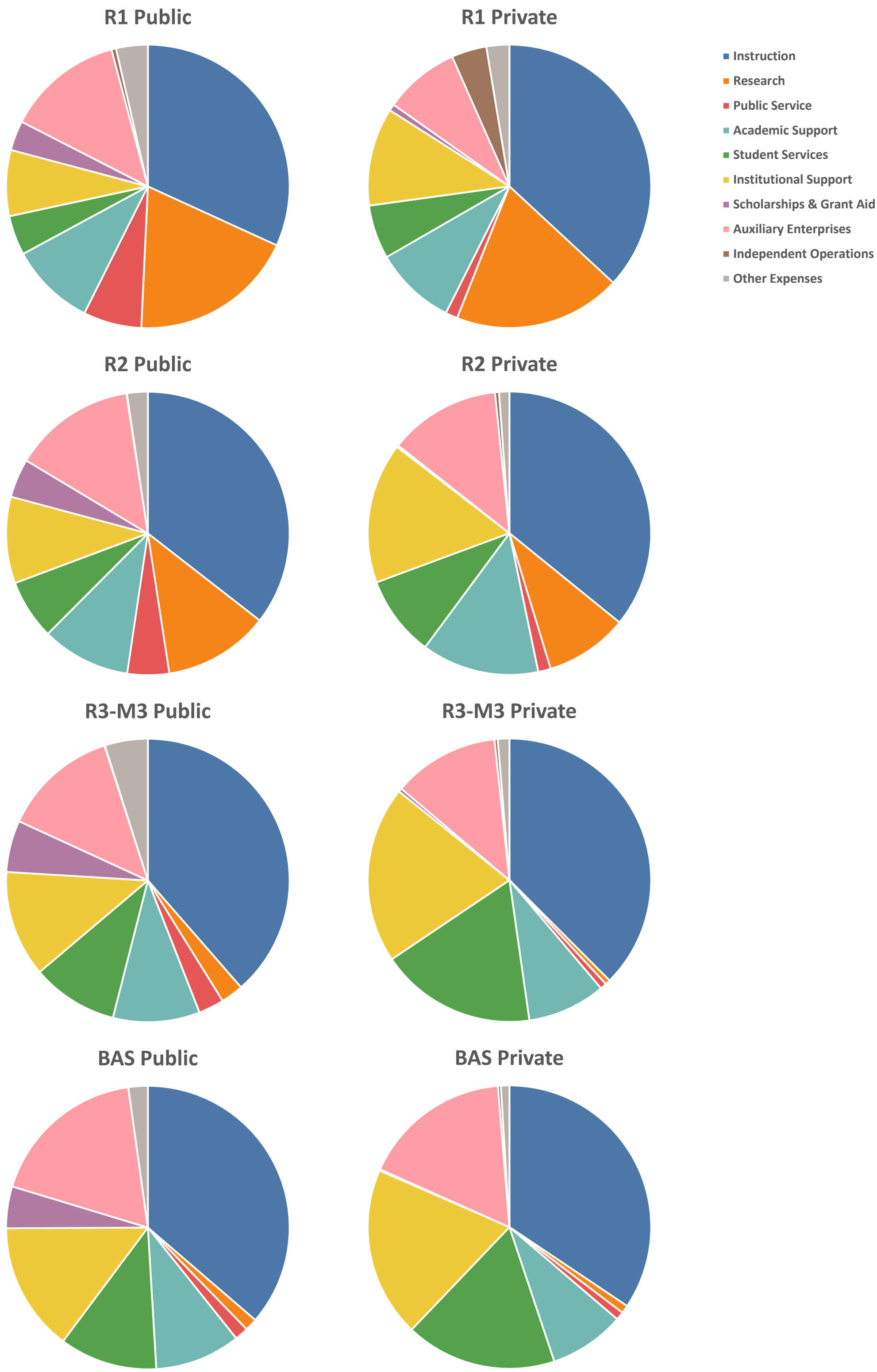

Figure 3.3. Percentages of FY2017 non-hospital functional expenditures averaged by Carnegie classification and control. Source: IPEDS (2020).

3.3 What do institutions spend per student?

There are several ways to answer this question, and none of them is perfect because it is virtually impossible to untangle strictly student-related expenditures from other kinds, and because purposes often overlap. The simplest and least satisfactory approach is to take the entire budget of the institution and divide by the number of students, but at large research universities that would overestimate what was allocated to supporting students versus other activities. We could omit auxiliaries, independent operations, etc. and keep only the first six categories in Figure 3.2 and Figure 3.3, which is a version of the so-called Educational and General (E&G, or sometimes G&E) budget, but that still includes research and public service that could skew the comparisons. So, to focus in on educational and related spending only, we compute a version of the Education and Related (E&R) budget,[1] which includes only expenditures on instruction, academic support, student services and institutional support.

As Figure 3.4 illustrates, the differences in E&R spending per FTE student across types of institutions appear to be dramatic, but (some) appearances can be deceiving. Starting with the publics, R1 universities appear to spend about one third to one half more per student than the medium and smaller publics. Recall from Section 3.1, however, that all faculty costs are accounted for under instruction expenditures, and yet at research universities faculty time is split between teaching, research and service (often 40:40:20 or similar at an R1) with a higher research expectation than elsewhere. There is no precise way to adjust for this in national data, but as a (very) rough estimate we can simply deduct 40% from the instruction column for the R1 universities to get a sense of more comparable numbers (given that this is a crude estimate, I have not shown a prorated adjustment for R2 or R3 schools, keeping with the simplest approach for now; we'll return to this issue when we deal with research in Chapter 8). With the adjustment, instructional spending per student across the publics is around $10,000, with a little more spending per capita on support services at the bigger schools. After the R1 adjustment, all publics in our examples average in the $15,000 to $20,000 annual dollars per student range. Moving on to the privates, even after the adjustment the R1 private universities spend almost three times more per student than their public counterparts (over $60,000 per year). The R2 privates and baccalaureate colleges spend about double their public counterparts (about $37,000 per student per year). Interestingly, the R3-M3 privates spend about the same as their public counterparts (about $20,000)—this may be because this category includes some of the most financially-stressed and tuition-dependent institutions.

Overall, the main take-home point from this section is that many private institutions spend about twice as much or more per student than public institutions do (parallel

1 This is a simplified version of the Education and Related (E&R) budget suitable for calculation directly from IPEDS data. It is close, but not identical, to a detailed per-institution E&R calculation that accounts more precisely for small portions of some support costs.

with their tuition which is also roughly double, see Section 2.8). We've known for several decades (Getz and Siegfried 1991) that the two principal reasons why spending per student differs across institutions are, first, differences in student to faculty ratios and, second, differences in part-time faculty and other instructional resources (see Chapters 5 and 6).

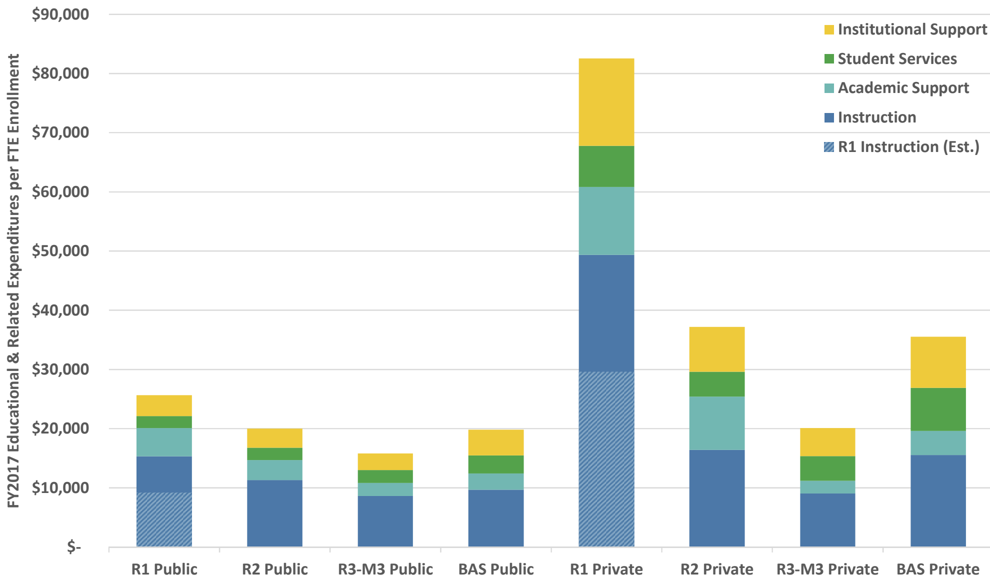

Figure 3.4. FY2017 Educational and Related (E&R) expenditures per full-time equivalent student averaged by control and Carnegie classification. See text for estimate of R1 instructional spending without faculty research time. Source: IPEDS (2020).

3.4 What are the trends in per-student spending?

The trends in E&R and non-E&R expenditures as well as total expenditures are illustrated in Figure 3.5. I've only shown the overall averages across publics and privates because the patterns are broadly consistent by size of institution within those groups. At the publics the immediate adjustment to the recession and subsequent recovery involved a $3,000 (30%) drop in non-E&R spending per FTE, $2,000 of which was shifted to E&R spending with the remainder being cut, while at the privates the shifts were relatively subtle. At all institutions, since the recession, essentially all new expenditures have been invested into the educational mission (E&R). Over the dozen years following FY2004, inflation-adjusted E&R spending per student at public institutions shifted from 59% to 72% of the total, with most of that jump in FY2010 right after the start of the recession; the shift at the privates was relatively flat from 76% to 79%.

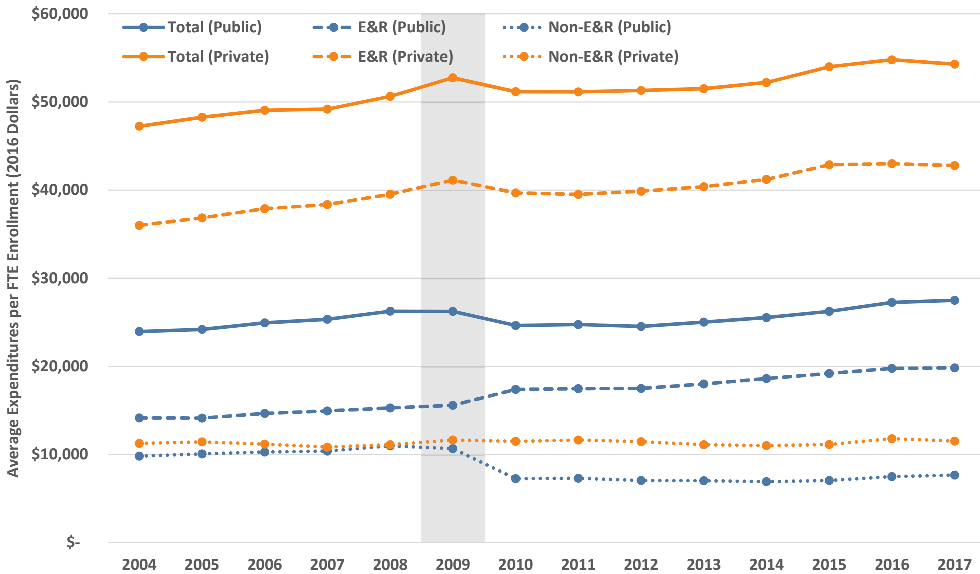

Figure 3.5. Trends in Educational and Related (E&R), non-E&R and total expenditures per FTE of student enrollment (2016 dollars) averaged across public and private institutions. The vertical bar indicates the onset of the Great Recession. Source: IPEDS (2020).

Following the recession onset, both publics and privates took six years to again equal or exceed 2009 amounts in their overall spending per FTE (Figure 3.5). Given the rhetoric of runaway expenses in higher education, and as I similarly noted for revenues, this is an immensely significant point to emphasize: when examined on a per-student basis and adjusted for inflation, from FY2004–2017 the average rate of increase in total institutional spending was 0.7% annually at the publics and 1% annually at the privates (see Section 3.7 for details on underlying cost increases).

3.5 What share of costs are covered by tuition versus subsidy?

How much of what universities invest in E&R spending is paid for by tuition revenue? Or, phrased the other way around, what portion of educational costs are subsidized by the institution? As we saw in Section 2.5, net tuition is the biggest slice of the revenue pie at all types of institutions. We can compare that revenue to expenditure on E&R costs to see what share it covers. Whatever is not covered by tuition is considered the institutional subsidy, which largely comes from state appropriations at the publics and from investment and other revenues at the privates.

Figure 3.6 illustrates the tuition/institutional subsidy split. Given what we know about tuition revenues, it isn't surprising that the publics generally cover a smaller portion of E&R costs with tuition than do the privates, which rely more on tuition. There are noteworthy distinctions in the details that relate closely to their tuition revenue dependency (roughly following the tuition portion of revenue in Section

2.5). The R1 publics receive a higher tuition portion than do the R1 privates, but the other smaller publics have a lower tuition portion and thus greater subsidy than their private counterparts. The tuition dependency (and therefore enrollment dependency) of the R3-M3 privates is stark, with over 87% of E&R costs being covered by tuition. These data reveal how types of institutions have varying capacities to subsidize the cost of education on a percentage basis, but it is worth keeping in mind that the per-student amounts in dollars are still substantially larger at private institutions (see Section 3.3).

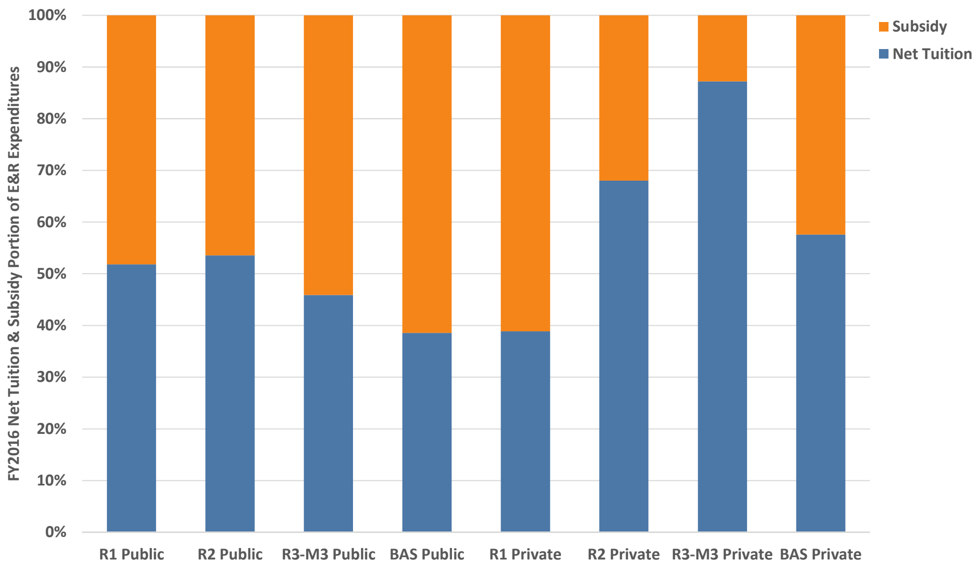

Figure 3.6. FY2016 Net tuition and fee revenue and remaining subsidy portions of Educational and Related (E&R) expenditures averaged by control and Carnegie classification. Source: IPEDS (2020).

The trends in the portion of E&R costs covered by tuition were significantly upward for the publics pre-recession and have been more-or-less flat since then, while the trend for the privates has been relatively flat with a slight increase post-recession (Figure 3.7). At the publics, over the five years from FY2002–2006 the tuition portion of the split went from just over one third to almost half. There is a range by type of public institution: R1 publics have seen a steady increase continuing beyond the recession through FY2016, while public baccalaureate colleges experienced a decrease back to about 40%. The wavy shape of the overall curve for the publics results from the interplay between tuition and state revenues as economic conditions shift. Tuition can rise in good economic times (market forces) and bad (replacing losses in state funding) and state funding can rise in good times and fall in bad (tracking state tax revenue and often lagging by a year or more due to the budget cycle). While these forces induce year-to-year variability, the macro effect is unmistakable—a massive shift to less state funding and more reliance on tuition to cover the cost of public higher education. We delve further into public funding for higher education in Chapter 4.

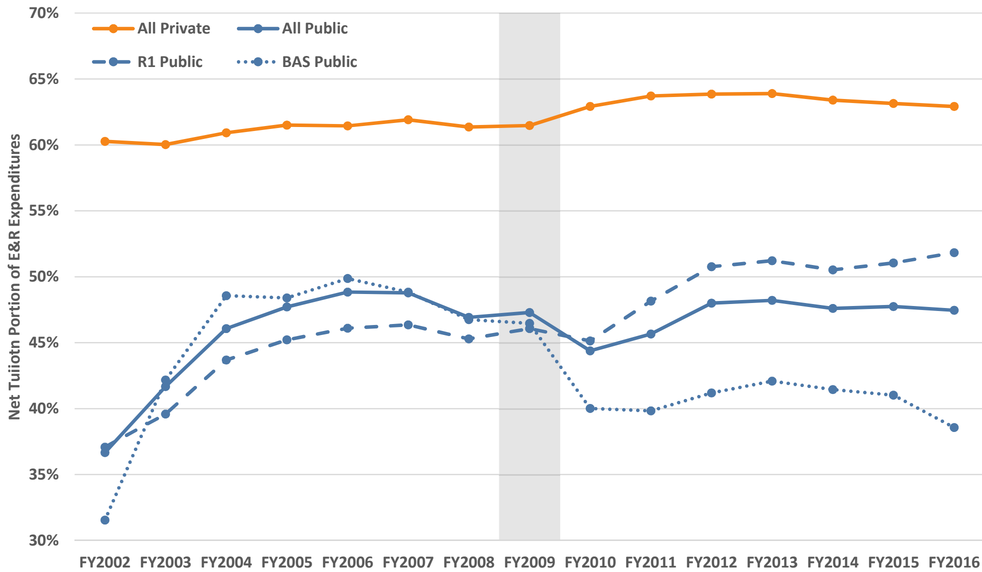

Figure 3.7. Trends in the net tuition and fee revenue portion of Educational and Related (E&R) expenditures averaged for public and private institutions (including the R1 and baccalaureate publics). The vertical bar indicates the onset of the Great Recession. Source: IPEDS (2020).

3.6 Do out-of-state students subsidize in-state students?

Yes and no. We can combine some of our earlier analyses to explain why. First, as we saw in Section 2.13, out-of-state students can contribute as much as twice the per capita share of overall net tuition revenue compared to in-state students. So, in a narrow sense, yes, they contribute a higher proportion of net tuition revenue and that revenue is essential. Nonetheless, in the broader sense, the apparent subsidy is significantly diminished, because net tuition revenue covers only about half the full cost of providing a student's education (see Section 3.5) at public universities. This is clear in Figure 3.8 where the tuition and subsidy portions of E&R costs are broken out. We can see that out-of-state students don't "pay for" in-state students but their greater revenue contributions are an important partial offset that nonetheless still doesn't cover the entire cost of education. Government aid, institutional aid and additional institutional subsidies cover a sizable portion of the costs for all students, both in-state and out-of-state.

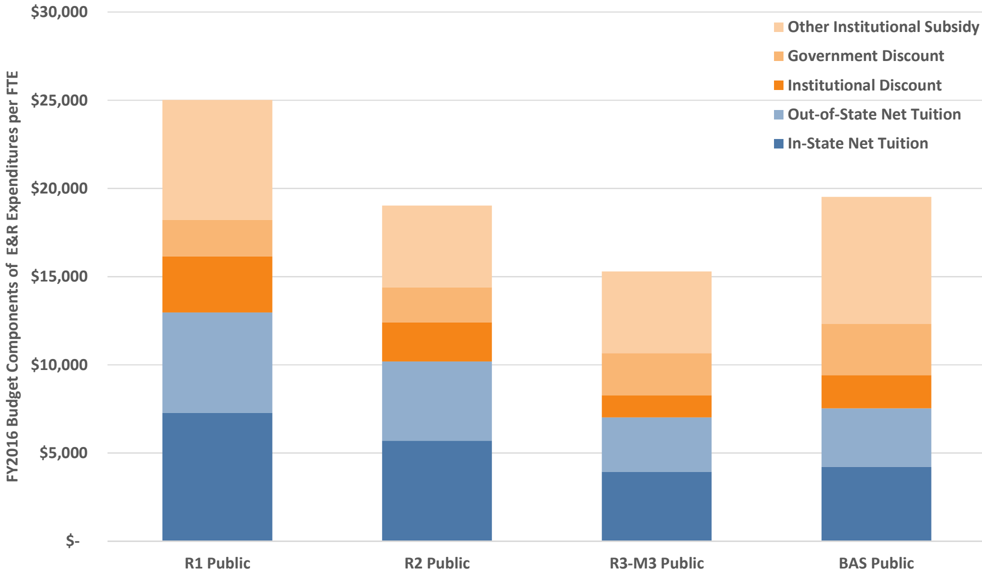

Figure 3.8. FY2016 breakout of net tuition and fee revenue (in-state and out-of-state) and subsidy portions (institutional and government aid plus other institutional subsidy) of Educational and Related (E&R) expenditures per FTE enrollment for public institutions averaged by Carnegie classification. Source: IPEDS (2020).

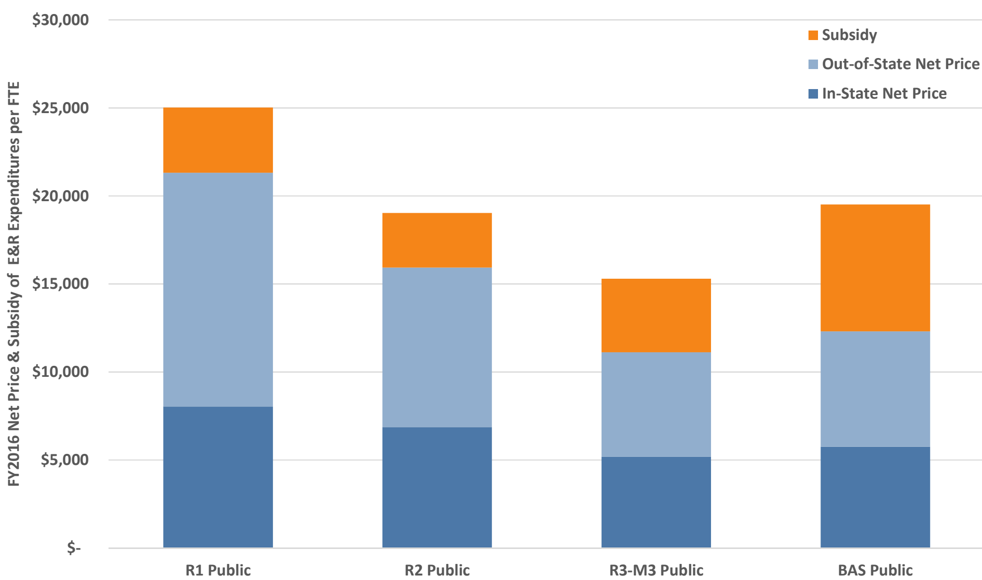

Figure 3.9. Student-oriented net price view of contribution to FY2016 total Educational and Related (E&R) costs per FTE enrollment for public institutions averaged by Carnegie classification. Net price is calculated using the assumptions of the model described in the text, including the same aid rate for in and out of state students. Source: IPEDS (2020).

Instead of using the institutional budget picture we can also look at this from an individual student's budgetary point of view. Figure 3.9 uses the assumptions of our simple out-of-state model (Table 2.1 in Section 2.13) to illustrate how the average tuition paid, even by out-of-state students, still does not cover the full cost of education. For our example, the average out-of-state student with 30% discount off sticker price through all forms of aid still only pays between 63% and 85% of the actual cost of education depending on the type of school. Likewise, in our model the average in-state student only pays 30% to 36% of the actual cost of education—this is by far the highest value for money in US university education. At about $8,000 per year to attend an R1 public (ranked among the best universities in the world) and just over $5,000 per year for a small public (that also provides an excellent education), over four years this investment is about the same as the cost of a new car and yet it will pay out many times that amount over the career of the graduate (see Section 14.1). Needless to say, in years and decades past, when state support for higher education was relatively higher and tuition lower in real terms, the value was even greater (see Chapter 4).

From the two figures referenced above one could infer, correctly, that institutions lose money on in-state students. It's reasonable for states to want "their" in-state students to benefit from the state support relative to out-of-state students. However, in most states the per-FTE state appropriation falls well short of the cost of a degree (Chapter 4). So, between stipulated low in-state tuition rates and low state appropriations, there is indeed a marginal cost to a typical public institution taking on additional in-state students. As we've seen above, there is also a compensating marginal benefit to taking on additional out-of-state students.

Therefore, it is shortsighted for states to automatically assume that out-of-state students somehow "exclude" in-state students from attending—on the contrary, the extra margin from additional out-of-state students helps offset the greater unrecovered costs of in-state students. So long as the total number of in-state students served is greater than it would be without increasing out-of-state students, and so long as state allocations and in-state tuition underfund the cost of educating in-state students, for financial (and academic) reasons it is therefore good policy to expand the number of out-of-state students at a public institution if states want to serve more in-state students. Certainly, it is incumbent on the institution to maintain academic standards while doing so—doing this simply for budgetary reasons at the expense of institutional quality is financial (and academic) folly in the long run.

In deciding on the right mix of out-of-state to in-state students, institutional leaders must balance a commitment to educate in-state students with the reality that out-of-state students help to lower costs for in-state students. Even if absolute numbers of in-state students increase, a declining share of in-state students can be politically difficult. In practice, we see larger increases in out-of-state students in states with small populations, while states with larger college-bound populations are more easily able to achieve a balance between the two (Mitchell 2018).

3.7 Why do higher education costs rise so much?

We saw in Section 3.4 that higher education spending trends, when adjusted for inflation and considered on a per-student basis, have averaged under 1% annually for over a decade (while revenues remained flat or decreased). Yet, there are countless media articles about the soaring costs of college, and they're not wrong either. The difference is in the definitions of price versus cost: to students and families, the "sticker price" as well as the net price paid after aid have indeed been increasing, while to institutions the underlying costs of doing business also rise relentlessly. We covered published tuition trends (price) in Section 2.7. We'll focus on the underlying institutional costs in this section, and we'll examine price and total cost of attendance from the student perspective in Chapter 7.

There are two overarching economic theories of cost in higher education: Baumol's "cost disease" and Bowen's "revenue theory" (Martin and Hill 2014).[2] Baumol's cost disease[3] recognizes that labor-intensive personal services industries don't increase their productivity with scale (Baumol and Bowen 1966; Baumol 2012; Helland and Tabarrok 2019). In performing arts, you need more string quartets doing more concerts to reach a bigger live audience, in healthcare, you need more nurses and doctors to serve more patients, and in higher education, you need more instructors to teach increasing numbers of students. These fixed proportions constrain productivity to remain constant and, with regular pressures to increase wages to cover growth and inflation in the broader economy, the result is a bias towards ever-increasing production costs. Contrast this to other industries such as manufacturing and agriculture, where the effects of automation, scale and going digital have increased productivity and kept costs down.[4] At the beginning of this chapter we saw that labor and related expenses account for the largest portion of institutional expenditures, so Baumol's cost disease is an important driver of overall costs in higher education.

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2 Interestingly, Baumol and a different Bowen introduced both ideas together in a 1965 essay (Baumol and Bowen 1965). William Baumol was a leading economist who taught at NYU and Princeton. His co-author was one of his doctoral students, William Bowen, who went on to become president of Princeton and later of the Mellon Foundation. The Bowen in Bowen's Law is Howard Bowen, also an economist, and he too served as a president, at Grinnell College, the University of Iowa, and Claremont Graduate University.

3 Baumol outlined the theory but credits his economist colleague Alice Vandermeulen from UCLA with coining the term "Baumol's cost disease" (Baumol 2012).

4 One of the most accessible explanations of the Baumol effect, with data, is a recent report by Helland and Tabarrok (2019).

Bowen's Law extends to all nonprofits, and it explains how marginal revenues are invested in excellence in a never-ending cycle. His revenue theory of cost is summarized as follows (Bowen 1980):

1. *The dominant goals of institutions are educational excellence, prestige, and influence;*
2. *In quest of excellence, prestige, and influence, there is virtually no limit to the amount of money an institution could spend for seemingly fruitful educational ends;*
3. *Each institution raises all the money it can;*
4. *Each institution spends all it raises.*

Taken together, these four rules lead toward ever increasing expenditures as universities compete for students and pursue prestige, such that higher prices lead to greater value that can lead again to higher prices in a circular process (Massy 2003). Also, a consequence familiar to many on campus is that when budget cuts or academic cost efficiency initiatives come along, they are almost invariably opposed because they are "cutting quality"—the precise product of Bowen's Law.

Both theories operate simultaneously to drive higher education costs upwards. Empirical studies to test which one has the greater effect have come to differing conclusions. Although earlier analyses showed that cost disease dominates (Archibald and Feldman 2008), more recent work shows that Bowen effects are relatively larger than Baumol effects, and combined they explain 74% of cost changes at public institutions and 63% at private institutions (Martin and Hill 2014). I imagine that in practice the balance changes over time, but either way it's clear that both forces lead to relatively higher costs for nonprofits that have constant productivity, such as colleges and universities.

The Baumol and Bowen theories have some corollary effects. One has been the evolution of increased production costs owing to a half-century shift in expectations by students and parents along with changing demographics and social policy (Thelin 2018). Decades ago, a smaller proportion of high-school graduates went on to college, and those that did were largely from middle- and upper-income families. Efforts to increase gender and ethnic diversity were in their infancy. While tuition was low compared to today, other costs such as books, board and lodging hindered access. There was little in the way of financial aid and banks would not issue loans to students without collateral. Later, the availability of Pell grants and federal loans greatly broadened access. Their portability also provided students with choice, leading to greater competition among colleges (Thelin 2018). Antiquated approaches to academic success were wasteful in human and financial terms: the infamous student orientation warning—look to your left, look to your right, only one of you will be here in four years—was not apocryphal. Institutions began to invest in retention and student success through academic advising, co-curricular activities, recreation centers, mental-health care and career services. Support services such as these, along with necessary but unfunded compliance mandates, form the bulk of what is pejoratively called administrative bloat (see Section 5.9 for more on that topic). The expansion of academic and student services has led to relatively larger increases in the number of employees and associated costs in this part of the higher education workforce (see Section 7.1), an unintended but nonetheless classic Baumol effect.

A further noteworthy effect is called the principal-agent problem, which results from asymmetric information and differential interests in the outcome between two contracted parties. For example, when you need to take your car for repairs you (a) don't have proper information on successful outcomes (repair success rates) so you rely on reputation, and (b) the mechanic has an incentive to charge you for things you don't need rather than acting in your best interests. We see examples of this problem every day, including between voters and politicians, shareholders and company management, and clients and lawyers (Wikipedia 2018). In higher education the principal-agent problem is related to Bowen's Law in that, without explicit data and meaningful metrics of output quality, spending on quality is effectively spending on reputation that thereby contributes to the cost spiral (Martin 2009).

So, how big is the net effect of these factors on higher education costs? The Higher Education Price Index (HEPI) tracks inflation in key higher education costs going back to 1961, and it includes salaries and benefits for faculty, administrators, clerical and service staff, as well as utilities, supplies and materials, and miscellaneous services (Commonfund Institute 2017a). Not surprisingly, it mirrors university budgets and is dominated by labor costs. One can think of HEPI as the inflation rate for the goods and services that higher education institutions purchase, much as the CPI is the general inflation rate for those that consumers purchase. Both are shown in Figure 3.10, in their index form with a common base year for comparative purposes and in terms of their annual inflation rates. Over a bit more than a half-century, the two rates are highly correlated ($r = 0.99$) with the underlying costs of higher education clearly rising faster than general inflation. Looking at the annual inflation in each index, there have been alternating periods in which one exceeds the other, and over the entire period the HEPI inflation rate averages 0.65% above the CPI inflation rate. For the last decade this difference has been about 0.5%, which, as one might hypothesize, approaches the overall higher education spending per FTE growth rate mentioned at the beginning of this section. Finally, remember that we've been talking about costs. Price is covered in the sections on tuition (2.7) and discounting (7.5).

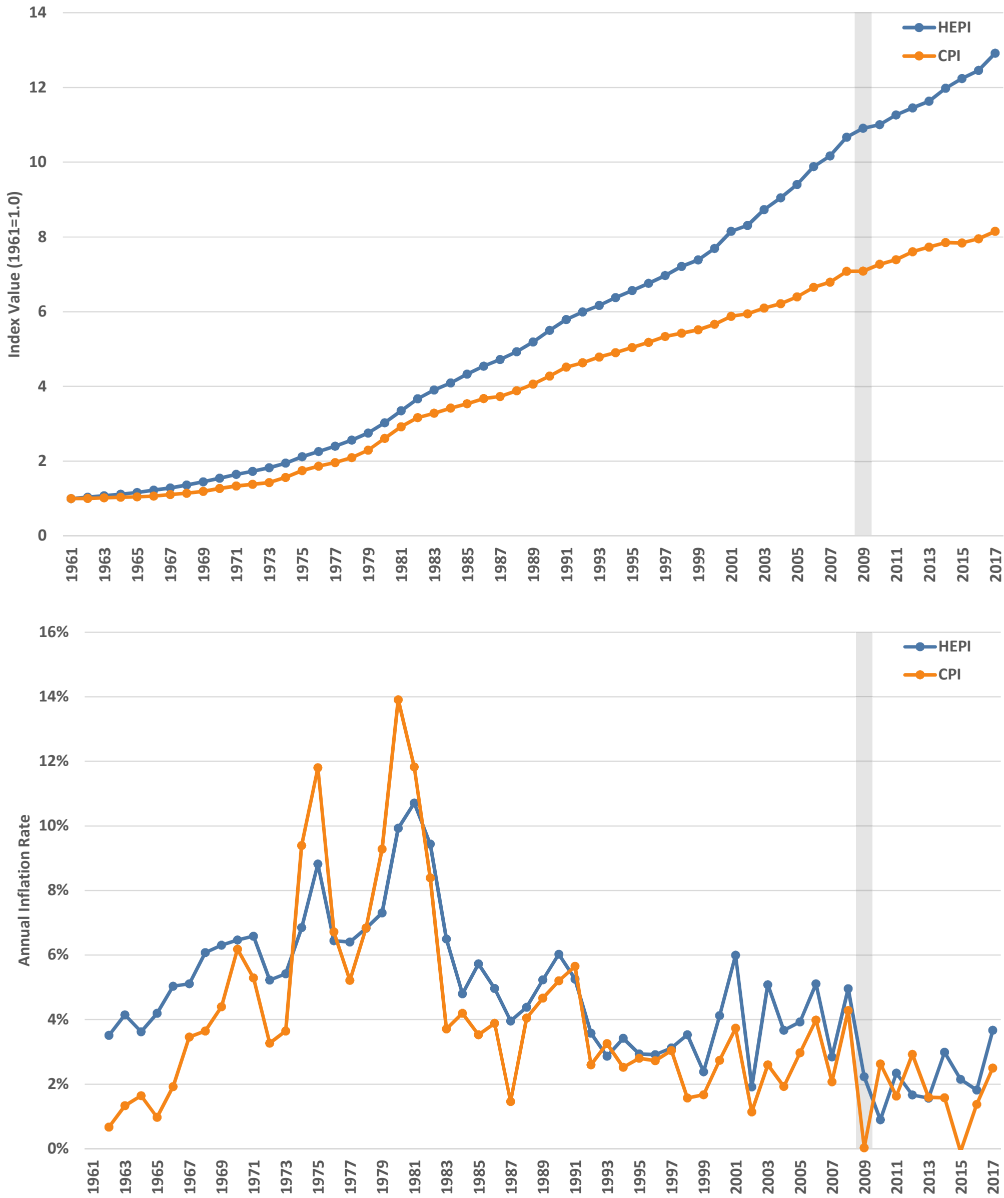

Figure 3.10. Trends in the Higher Education Price Index (HEPI) and Consumer Price Index (CPI) set equal to 1.0 in 1961 (upper panel) and trends in the annual inflation rate for each index (lower panel). Sources: Commonfund Institute (2017a) and BLS (US Bureau of Labor Statistics 2018b).

Box 3.1. Higher Education vs. Healthcare Cost Increases

Higher education and healthcare both suffer from Baumol's cost disease (see Section 3.7) in that they are labor-intensive sectors that don't gain production efficiencies with increased scale. Decade-averaged indices of cost increases in each sector have been similar for the last three decades (Figure B3), 3% to 4% in the 1990s and 2000s and about 2% in the most recent decade.

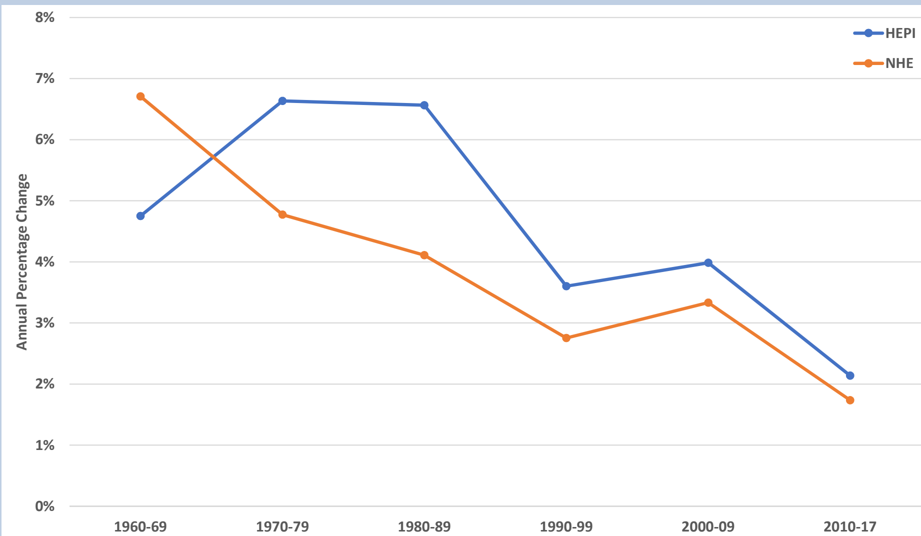

Figure B3. Decade averages of annual percentage change in the Higher Education Price Index (HEPI) and inflation-adjusted National Healthcare Expenditures (NHE) per capita. Sources: Commonfund Institute (2017a) and CMS (US Centers for Medicare & Medicaid Services 2018).

3.8 What can be done to control costs in higher education?

Many remedies have been suggested to counter the seemingly inexorable cost spiral in higher education. The ones most likely to be effective in the long run are those that address the root causes outlined in Section 3.7 rather than the symptoms (i.e., price), so policies to deal with the escalating costs of college should avoid price controls and focus on cost controls instead (National Commission on the Cost of Higher Education 1998).

Some examples of cost-reduction approaches are shown in Figure 3.11. Suggestions for operational efficiency that target Baumol's cost disease range from prosaic cost-cutting to provocative change, such as outsourcing food services or rethinking athletics participation (Adams and Shannon 2006). Ideas for competing on outcomes aimed at minimizing the effects of Bowen's Law focus on minimizing emphasis on reputation and prestige and instead providing meaningful data on instructional outcomes and incentivizing measured teaching quality and productivity (Martin and Gillen 2009).

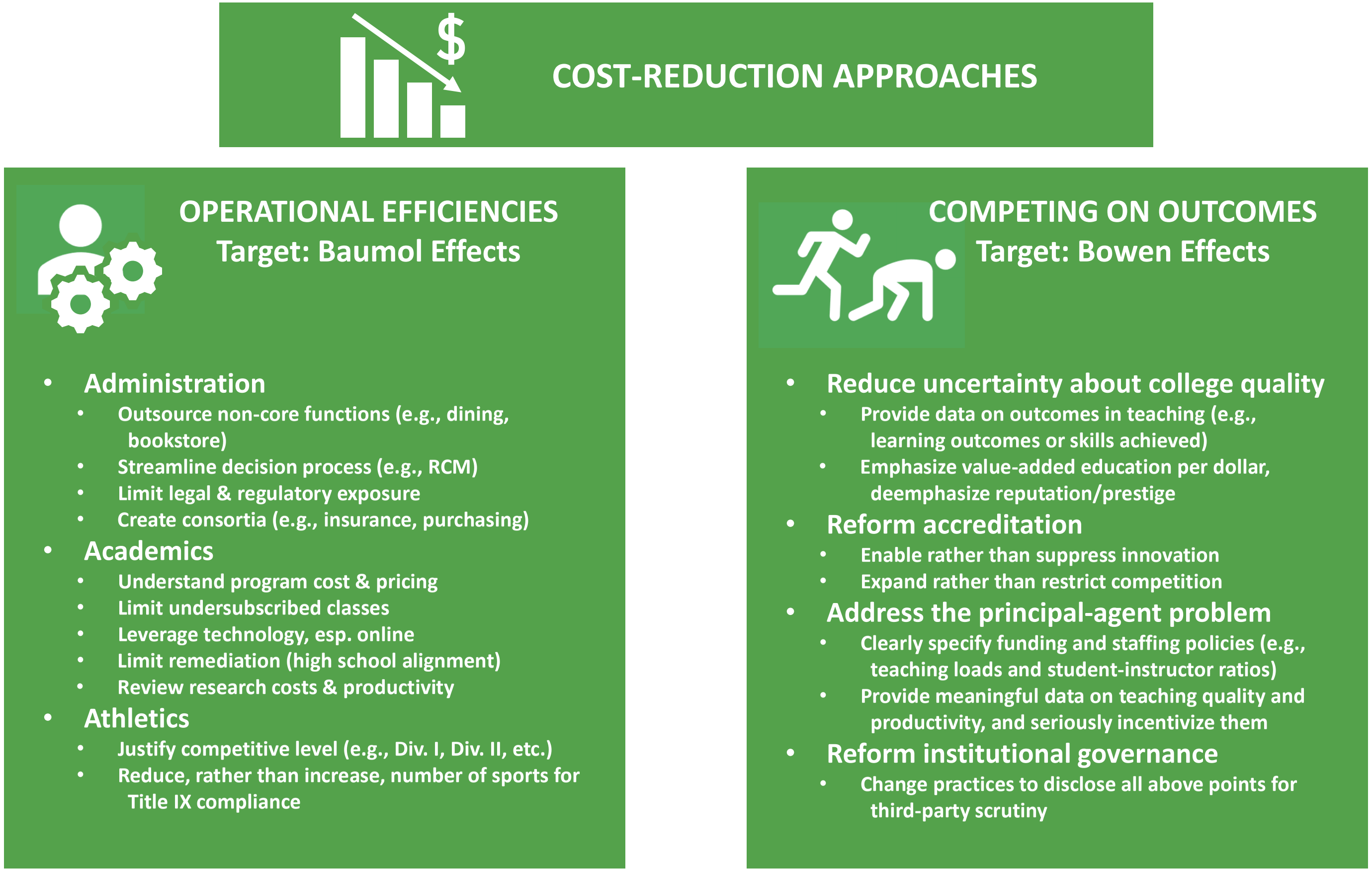

Figure 3.11. Examples of cost-reduction approaches for higher education targeted at Baumol effects (Adams and Shannon 2006) and Bowen effects (Martin and Gillen 2009).

Most institutions strive to be more productive and efficient in providing a quality education at a low price. There are few if any campuses that haven't implemented operational efficiencies in recent decades, especially since the Great Recession, and one of the most widely-established trends has been the greater use of faculty not on the tenure-track to deliver instruction at lower cost (see Chapter 5). Many campuses have achieved some success in improving retention and graduation rates because of a focus on data, but progress in managing and marketing by outcomes metrics is generally far less advanced than for operational efficiencies. Overall, the most thoughtful suggestions for reducing costs, and those most likely to be adopted in practice, are those that improve quality and enhance competitiveness by creating higher value.

3.9 Does the university make a profit?

No. As nonprofit entities, it would seem self-evident that universities and colleges don't make a profit (remember, I've specifically excluded for-profit institutions from our scope in this book and they are obviously set up to make a profit as their primary goal). And yet, with the myriad activities across a campus, there are inevitably unit-level or institutional surplus funds (or deficits) from year to year, often on purpose, although there are pitfalls if the surplus is too large (Bauman 2019). Informally, in a verbal shorthand, some might refer to such a surplus as a profit, but fortunately we have a precise and more appropriate term for use in the nonprofit sector: margin.

Why is a margin not a profit? They both have the connotation of "extra money left over" after subtracting costs from revenues, but if it isn't saved for the next year then profit goes to shareholders as cash or to employees as a bonus. A nonprofit has no shareholders and its employees don't get bonuses in a good year. Instead, nonprofits like universities have a social mission to benefit the public. Whether saved for later use or spent right away, at a nonprofit the margin is invested in the mission.

"No margin, no mission" is an adage that encapsulates the imperative for sound financial management of a nonprofit along with the necessity to grow funds for investing in improving and expanding the social mission. A university that is stagnant or under financial stress cannot do a decent job of serving its students or community. To do those things well, it must generate sufficient resources to deliver quality programs in addition to investing in adaptions and innovations to ensure its future success. In a nutshell, you can do more social good if you have a well-run institution with a margin that can help it continue to achieve and expand its mission (but beware of Bowen's Law, see Section 3.7).

Box 3.2. The University's Bottom Line(s)

The so-called "bottom line" for a company is primarily to make a profit, whereas for a university the bottom line is social benefit in the form of educating students, discovering new knowledge, and serving the public. Profit is simple enough to define and measure in dollars. However, the three social bottom lines for universities are harder to define and measure, so we tend to use multiple metrics to monitor and manage them. Figure B4 illustrates the upward trends in two key examples of these non-monetary bottom lines, graduates and scholarly publications for the US. These are imperfect output metrics so, for example, the number of degrees conferred does not necessarily equate with quality of education and the number of scholarly articles published is a proxy for knowledge discovered. Universities can monitor their own versions of these and related metrics to track and manage outputs. More important perhaps, but often harder to track, are outcomes; for example, job placement and career path of graduates, or most influential publications and long-term benefits of basic discoveries.

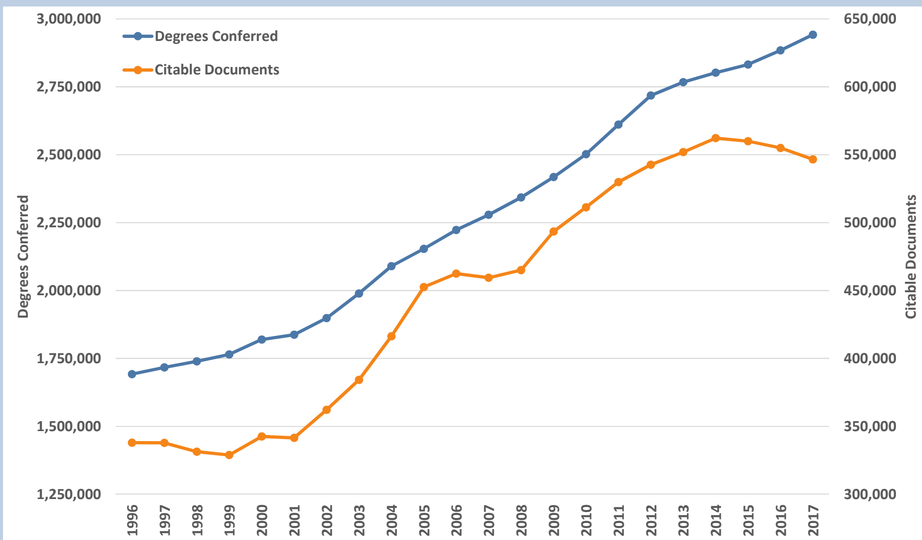

Figure B4. Degrees conferred (bachelor's, master's and doctor's) by postsecondary institutions per academic year and citable documents published in all subject areas in the SCOPUS database per calendar year, both for the United States. Sources: IPEDS (2020) and SCImago (2018).

4. Public Funding

Grant Aid, Loans and Appropriations

4.1 How does public funding for higher education work?

Public funding for higher education in the US, even just for public institutions, is relatively complicated as compared to many other countries where the national education ministry is the principal funder and overseer (see Section 4.14 later in this chapter). In the US, the states and some local governments fill most of this role (except for accreditation) for the public universities via appropriations. The Federal Government, rather than funding institutional budgets directly, supplies financial aid to students (depending on family income) who can use it to attend public or private institutions.[1] Students and their families combine that aid with their own sometimes sizable contributions, and a portion of the combined amount flows to the institution as tuition, with the remainder used for living expenses. Many of these students will also receive substantial institutional aid from the university, as we saw in Chapter 3.

Figure 4.1 illustrates the four main players and the relative sizes of the flows between them for US public higher education. The two big public funding arrows are federal aid and state appropriations. The relative contributions of the Federal Government and the states have become more equal in recent decades, especially since the Great Recession. State spending used to dominate federal spending on higher education, but state funding declines occurred while the Federal Pell Grant Program expanded considerably (The Pew Charitable Trusts 2015). We'll examine these two major funding sources below and in subsequent sections, but before doing that, let's look briefly at the other arrows in the diagram.

The institutional aid arrow looks narrower here than you might think from the pie charts of school types in Chapter 3—that's because there are thousands of small four-year and two-year colleges in the overall higher education sector that sway the average to look more like their profile. Government grants and contracts made directly to the institutions are the other main flows in the diagram, and we'll cover

1 The last decade saw a widening student aid scandal at for-profit colleges, where in many cases federal grants and loans accounted for over 90% of revenue, repeating a pattern that was seen in the past, such as with the GI Bill (Shireman 2017).

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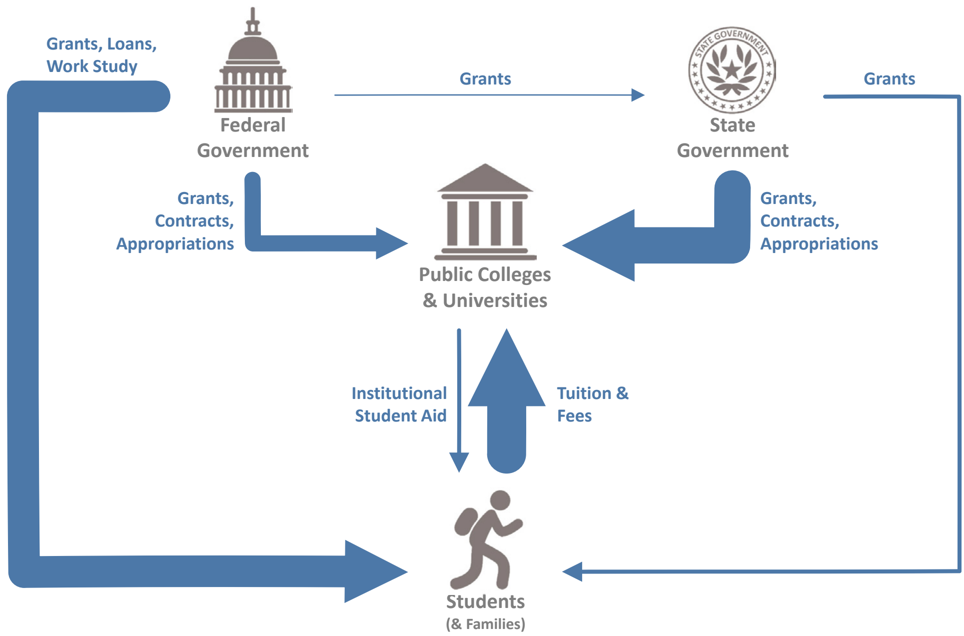

Figure 4.1. Public higher education funding flows with arrow thickness scaled to FY2012. State funding includes appropriations as well as grants and contracts for research. Federal and state flows represent aid to undergraduates. Federal grants to states include only higher education programs related to affordability. Land-grant appropriations and federally funded research projects are included as part of the funding from the Federal Government. Benefits from tax credits and deductions for higher education are not included. Source: redrafted from GAO (US Government Accountability Office 2014), Public domain, https://www.gao.gov/products/GAO-15-151.

those in more detail when we discuss Research in Chapter 8. For the private institution version of Figure 4.1, one could simply omit state appropriations to universities (keeping grants and contracts), thereby switching that arrow from broad to narrow, and the overall result would be approximately correct. It would be even closer to correct if one made the federal arrow to students somewhat narrower to reflect the smaller proportion of Pell Grant students attending private institutions. In terms of the budgets from which these expenditures come, federal spending on higher education is about 2% of all federal spending, while higher education averages about 9% of state spending (The Pew Charitable Trusts 2015).

To provide a relative sense of the public funding numbers, Figure 4.2 illustrates the major categories of aid and loan amounts for all undergraduate and graduate students. We see that federal grants exceed state and private grants while institutional grants top them all (as seen in Sections 2.8 and 3.6). In contrast, federal loans greatly exceed non-federal loans from banks, credit unions, private lenders, some states, and institutions. It is notable how small the Federal Work-Study Program is in comparison to the grant and loan programs, and at almost $1B (that's Billion with a "B") it also provides a scale reference for the staggeringly large numbers in the figure. All these federal funds are accessed by the student who must submit a FAFSA (Free Application for Federal Student Aid) form that includes information on student and family income. And, just so it's been said, grants do not need to be repaid and they lower the price paid, whereas loans do need to be repaid but they enable the costs to be spread out over time.

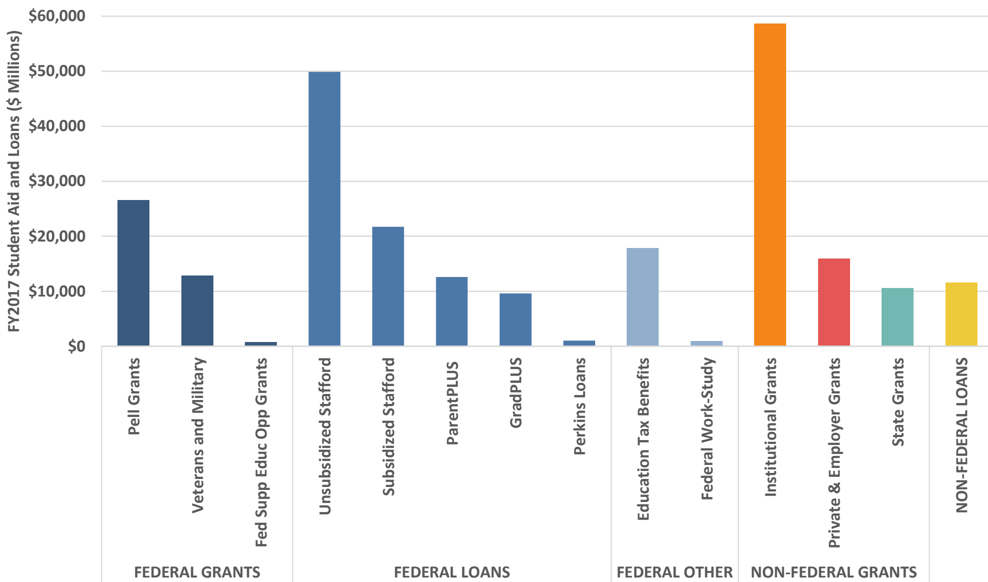

Figure 4.2. Student financial aid and loans for FY2017. Source: College Board (Baum et al. 2017).

4.2 How does aid add up on a per-student basis?

The total national investments in various forms of aid can be expressed in per-student FTE terms, making it easier to see the mix of aid for the average student. Figure 4.3 illustrates trends in aid mix separately for undergraduates and graduate students because their aid profiles are different. In the academic year 2016–17 (AY2017) undergraduates received an average of $14,400 mostly made up of federal grants and loans, proportionally about 2:1, with much smaller amounts from other federal sources and non-federal loans. In contrast, graduate students received about double that aid at $27,950 with the federal grant to loan proportion reversed at roughly 1:2. Put another way, federal grant aid per student was similar at roughly $9,000, but graduate students received almost four times more in loans than undergraduates ($17,710 versus $4,620). There are multiple reasons involved in that difference, including prior years as a student with loans and, in some cases, anticipated higher subsequent earnings from pricier professional programs potentially justifying a higher loan. We'll take a closer look at student indebtedness in Section 7.11.

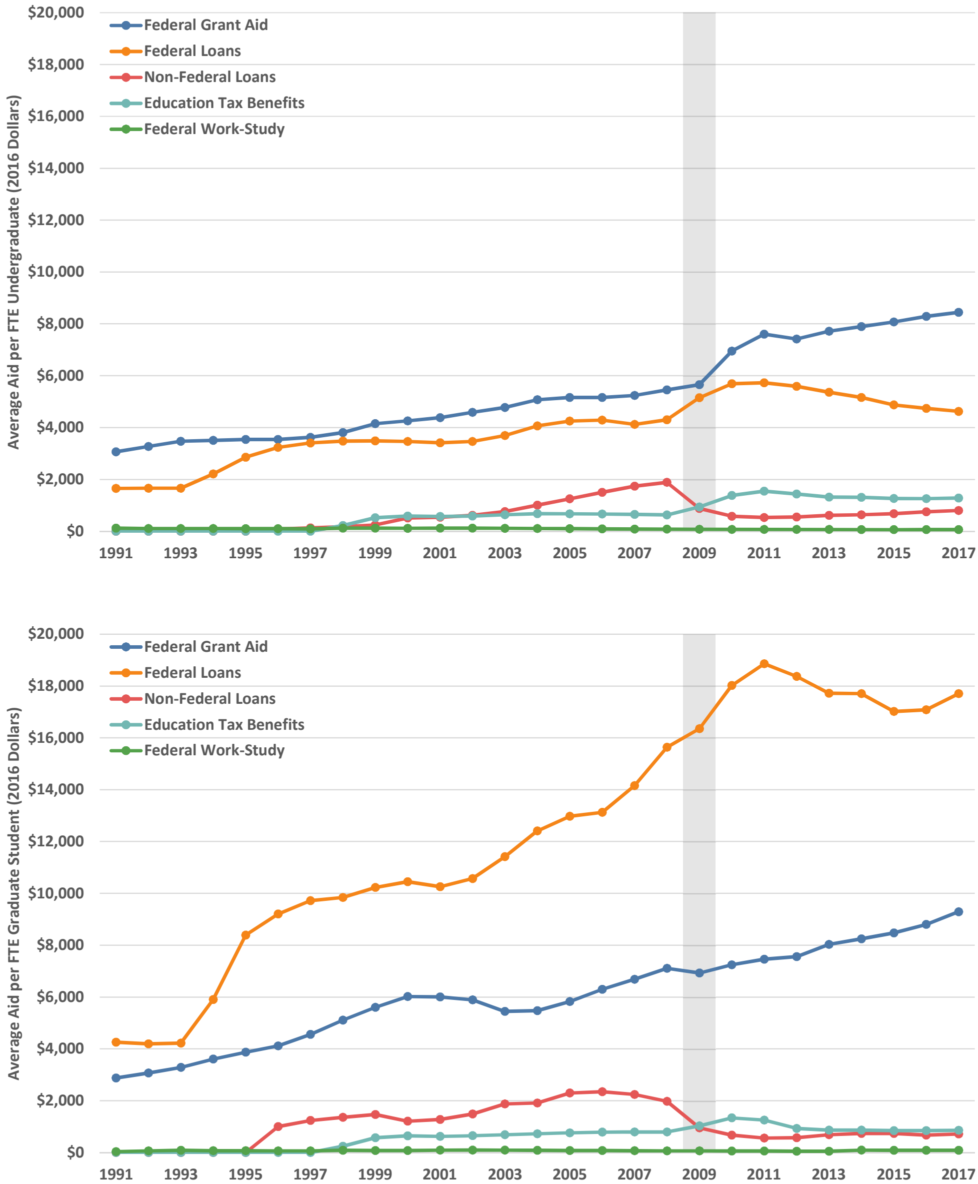

Figure 4.3. Average federal aid and non-federal loans per FTE undergraduate (upper panel) and graduate student (lower panel) in 2016 dollars by academic year. The shaded vertical bar indicates the onset of the Great Recession. Source: College Board (Baum et al. 2017).

Looking at trends in Figure 4.3, federal grant aid (mostly Pell Grants) has essentially tripled in nearly three decades, with a rapid post-recession acceleration for undergraduate aid. The growth in federal loans for undergraduates paralleled grant aid but has declined substantially (by about one third) since the recession. Graduate federal loans grew dramatically (almost five-fold) in the 1990s and 2000s, before dropping back a little. The grant to loan ratio for undergraduates was near 1:1 until after the Great Recession when federal and non-federal loans began a steady decrease. For graduate students, despite the overall upward trends and higher amounts, the 1:2 grant-to-loan ratio has been roughly consistent since the mid-1990s.

Virtually all states provide grant aid to selected students, although the average amounts per student FTE are a lot smaller, at about 10% of federal aid grants (but remember that states also make appropriations that are often large—we'll examine them in subsequent sections). Figure 4.4 shows the average amount of state aid per student over time for all states, averaging $790 per student in AY2016, with a range from $0 in New Hampshire to $2,100 in South Carolina (Baum et al. 2017). Just as for the federal data above, the denominator here for the state data is all students, to enable direct comparison. Note therefore that the denominator is not limited to eligible in-state students, and thus dollar amounts averaged across only in-state students would be a bit higher. However, the trends and proportions are unaffected by this quirk. Think of these numbers as aid for the average student across all students. We'll look at aid per awarded student in the next section.

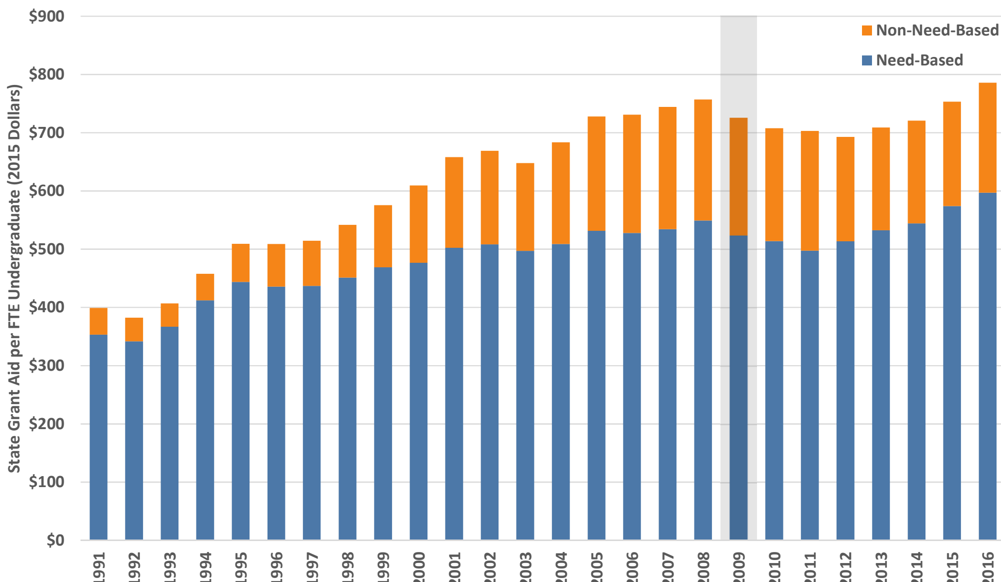

Figure 4.4. State grant aid per FTE (in-state and out-of-state) undergraduate in 2015 dollars by academic year. The wider shaded bar indicates the onset of the Great Recession. Source: College Board (Baum et al. 2017).

As with other aid and loans, a substantial part of these state aid amounts will flow to institutions via tuition (in addition to state appropriations for public universities). Be aware that, rather than using tax revenues, some states fund their aid programs through so-called tuition set-asides where all students contribute a small amount to the state aid pool. As we can see in Figure 4.4, the proportion of need-based awards has held at about 75% since the turn of the millennium. The relative role of state aid has shrunk over time, with the twenty-five-year trends in Figure 4.3 and Figure 4.4 exhibiting a 4% annual average increase in federal grant aid per student compared to the overall state aid trend, which exhibits about a 2.5% annual average increase per student. In this chapter we are focused on the macro supply of public funding—we'll examine the student perspective related to indebtedness and affordability in Chapter 7.

4.3 What proportion of students get state aid, and how much do they get?

Figure 4.5 is a scatterplot of FY2016 state grant aid by award amount and the percentage of students awarded, for all fifty states plus Puerto Rico and the District of Columbia, as well as the national averages. Figure 4.6 provides the matching percentages of need-based versus non-need-based aid. Note that graduate students are included in the data behind these figures, but their effect is negligible because over 98% of state aid goes to undergraduates (NASSGAP 2017). Overall, looking at both figures, the national average shows that just under 30% of students were awarded state aid of about $2,400

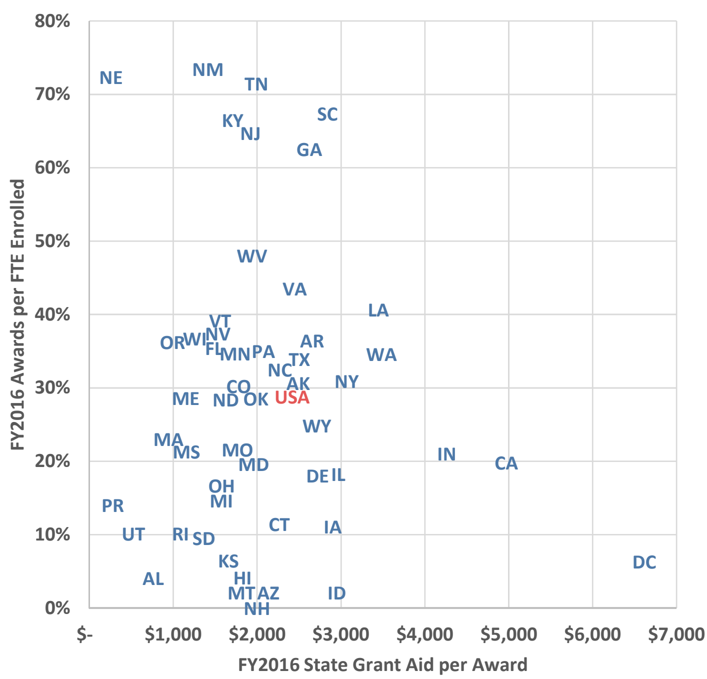

Figure 4.5. FY2016 average grant aid per award and percentage of enrolled FTE awarded by state, including the District of Columbia (DC), Puerto Rico (PR), and the national average (USA). Source: NASSGAP (2017).

in FY2016, about three-quarters of which was need-based. There are extremely wide ranges by state: Washington, DC awarded just 6% percent of students with large non-need-based grants of almost $7,000, Nebraska awarded over 70% of students an average award of just a few hundred dollars in mostly need-based aid, and Alabama awarded under 5% of students with less than $1,000 split about equally into need-based and non-need-based aid.

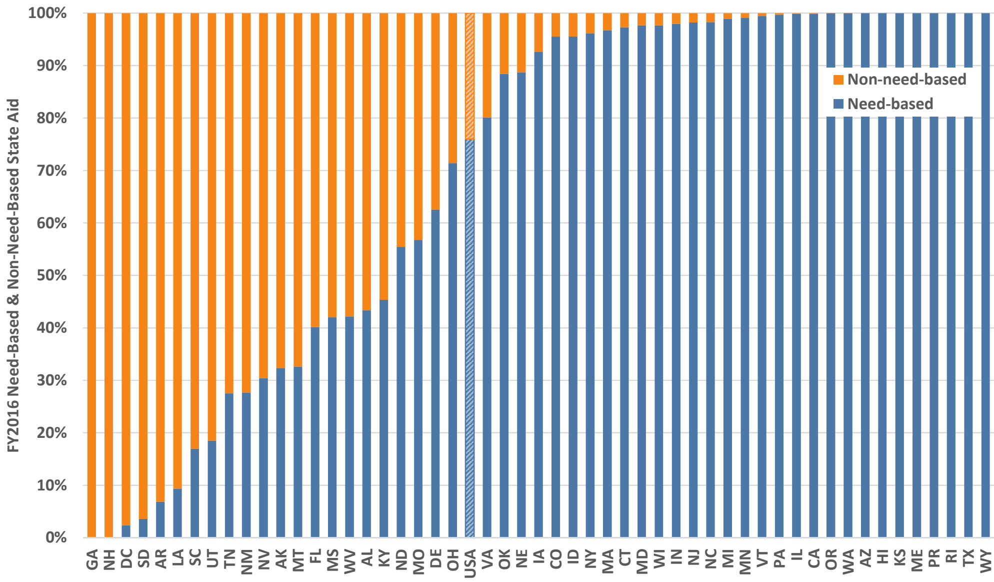

Figure 4.6. FY2016 average percentage of need-based and non-need-based state grant aid per award, including the District of Columbia (DC), Puerto Rico (PR), and the national average (USA). Source: NASSGAP (2017).

In addition to the obvious implications for students, there are consequences for institutions resulting from this broad range in state aid for students. Depending on their home state, and all else being equal, institutions will increase or decrease institutional aid to offset lower or higher state aid respectively, for total costs to the student to remain similar. This effect is amplified because in high-aid states, that aid effectively supplements institutional tuition revenue, whereas not only do institutions in low-aid states not receive that aid revenue, but they also must subtract the compensating institutional aid from their relatively lower revenue.

4.4 How does public financial aid vary by institution?

In the previous sections on public financial aid we have looked nationally and at the states and, sure enough, aid plays out differently across various types of institutions too. Figure 4.7 plots aid per award versus percentage of students receiving awards,

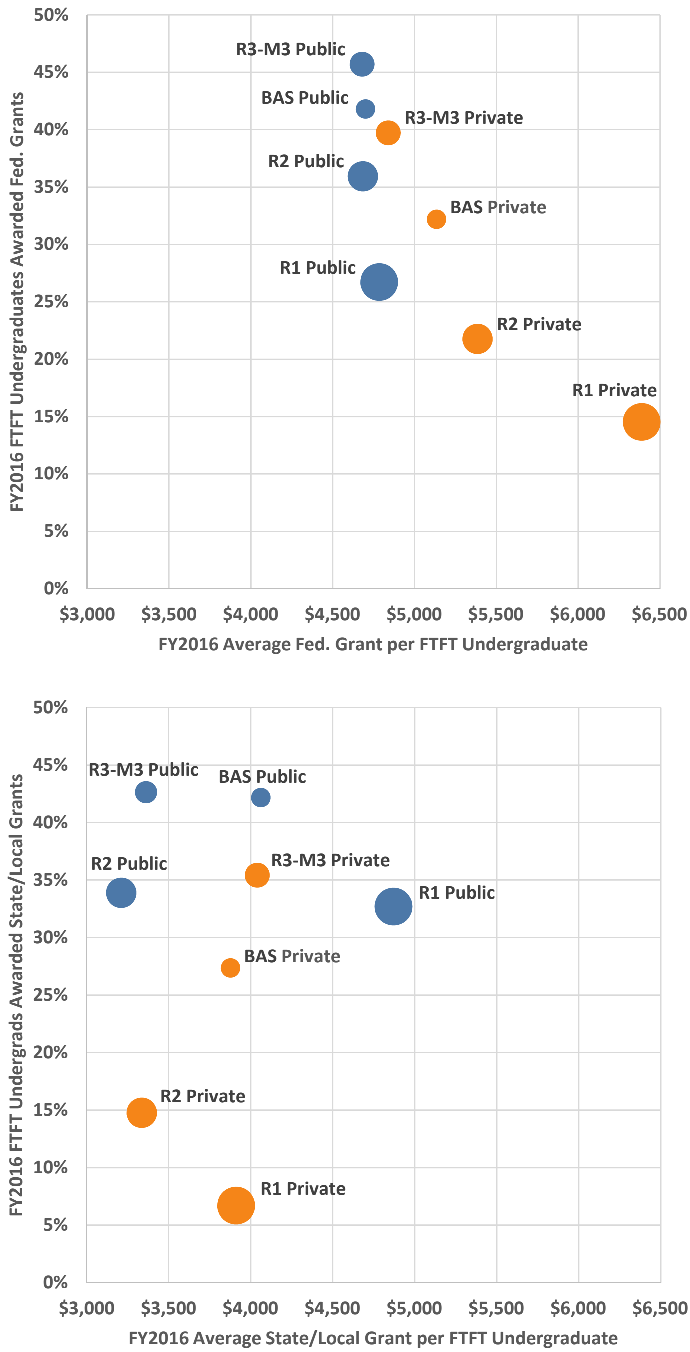

Figure 4.7. FY2016 government grant aid to first-time full-time (FTFT) undergraduates by average amount per student awarded and by percentage of students awarded from federal (upper panel) and state and local sources (lower panel), averaged by Carnegie classification and control. Categories are differentiated by circle size and color for easier comparison. Source: IPEDS (2020).

averaged by category of institution. Government financial aid is primarily based on need and, because the mix of students with need varies by type of institution, we see the effect of that pattern in these data. Generally, students with greater need tend to enroll in relatively higher proportions at smaller rather than larger schools, and at publics more than privates, even though many schools go to great lengths to broaden the financial diversity of their student body and promote accessibility.

The two key patterns in federal aid in Figure 4.7 are firstly that students at private institutions receive higher aid awards than at the publics (likely to cover higher tuition) with a narrow award range close to $4,700 at the publics and, secondly, that, as expected, there is a greater proportion of students receiving federal aid at smaller regional schools, public and private. The state and local panel in Figure 4.7 shows a completely different pattern: the public-private contrast is evident in the higher percentage of students receiving aid at the publics (this is partly because many states do not provide aid to private institutions), which in this case also have the broader award range across different institution types compared to the privates. Looking across both sources of government financial aid, a similar percentage of students are awarded federal and state/local aid. However, federal aid awards are greater than state/local aid awards: the amount of federal aid per award is about $1,000 more than the state/local award at the publics, and roughly $1,500 more at the privates.

Figure 4.8 illustrates the trends in government grant aid for public and private institutions (the Carnegie groups track similarly to their relative positions in Figure 4.7, so I've plotted just public and private summary data to show the key trends and keep the charts legible). At both types of school, the percentage of students awarded federal grant aid gradually declined from the late 1990s until the recession and then jumped immediately post-recession to about 1.3 times the pre-recession level, before again commencing a gradual decline. Looking at the amount of federal aid awarded per student, there was a similar post-recession jump with sizable increases in award amounts before they dropped back down to the longer upward trend. Yet, the steep drops of over $1,000 immediately post-recession did not occur without consequence (especially when federal loans were flat at the same time, as we'll see in the next section)—in partial compensation, institutional support rose during this period (as we saw in Chapter 3).

State aid trends are stark in their contrast, with the percentage of students receiving awards at the publics essentially flat since a period of rapid growth at the turn of the millennium, although state award amounts at those schools have steadily increased and almost doubled over the period in the chart. However, at the privates, the percentage of students receiving state aid awards has decreased steadily while award amounts have also decreased slightly. The net result, on an inflation-adjusted per student basis, has been a distinct shift in state aid dollars from private to public institutions over the last decade and a half.

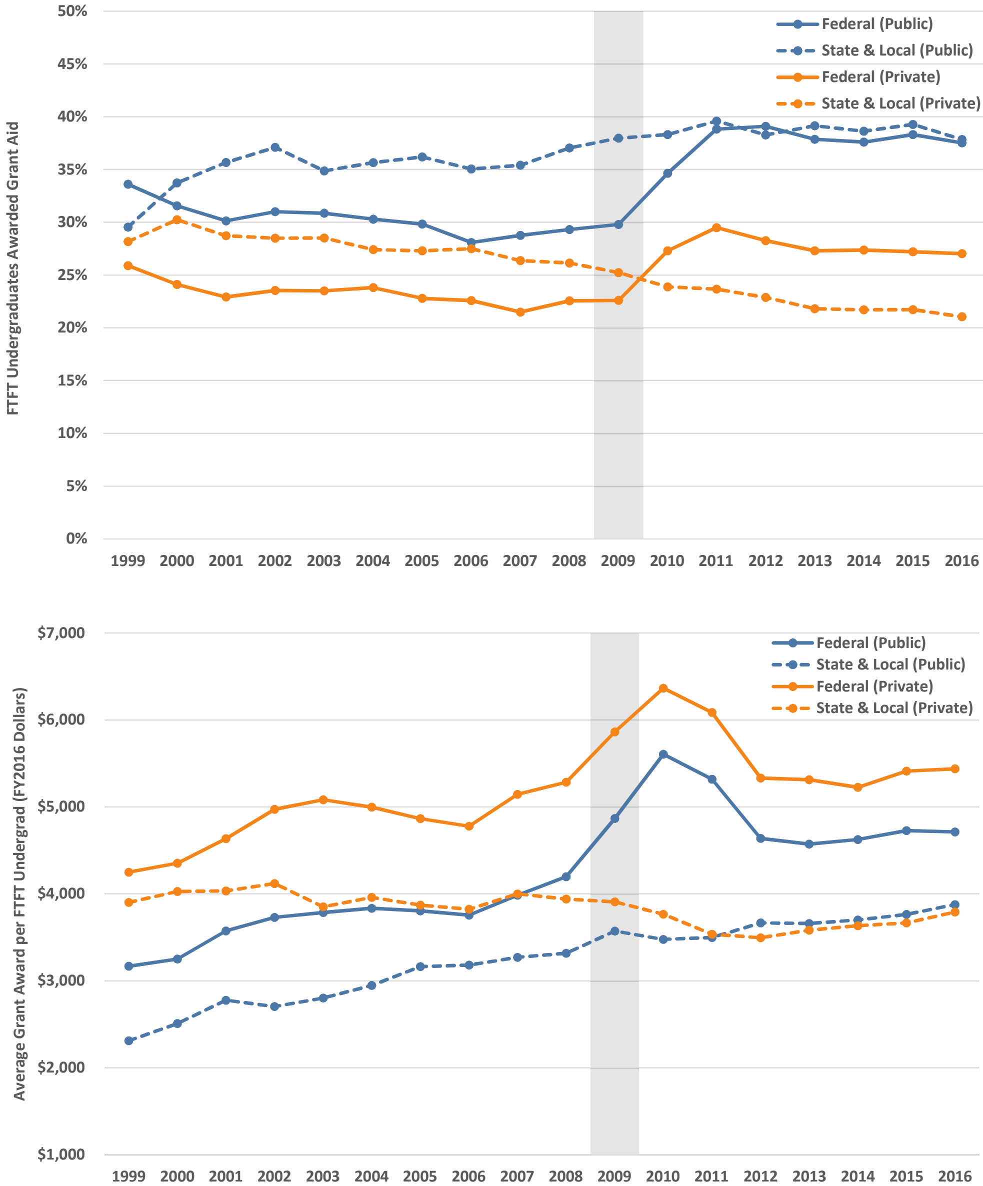

Figure 4.8. Trends in grant aid (by fiscal years in 2016 dollars) awarded to first-time full-time (FTFT) undergraduates by percentage of students awarded (upper panel) and by average amount per student receiving an award (lower panel) from federal and state and local sources, averaged for public and private universities. Source: IPEDS (2020).

4.5 What are the amounts and trends in student loans?

Previously, in Section 4.2, we saw how student loan aid compared to grant aid across all students. How do student loans look when we examine them on a per-awarded student basis as we've just done for financial aid? Figure 4.9 illustrates student loans by award amount and percentage of students awarded, for all loans and for federal

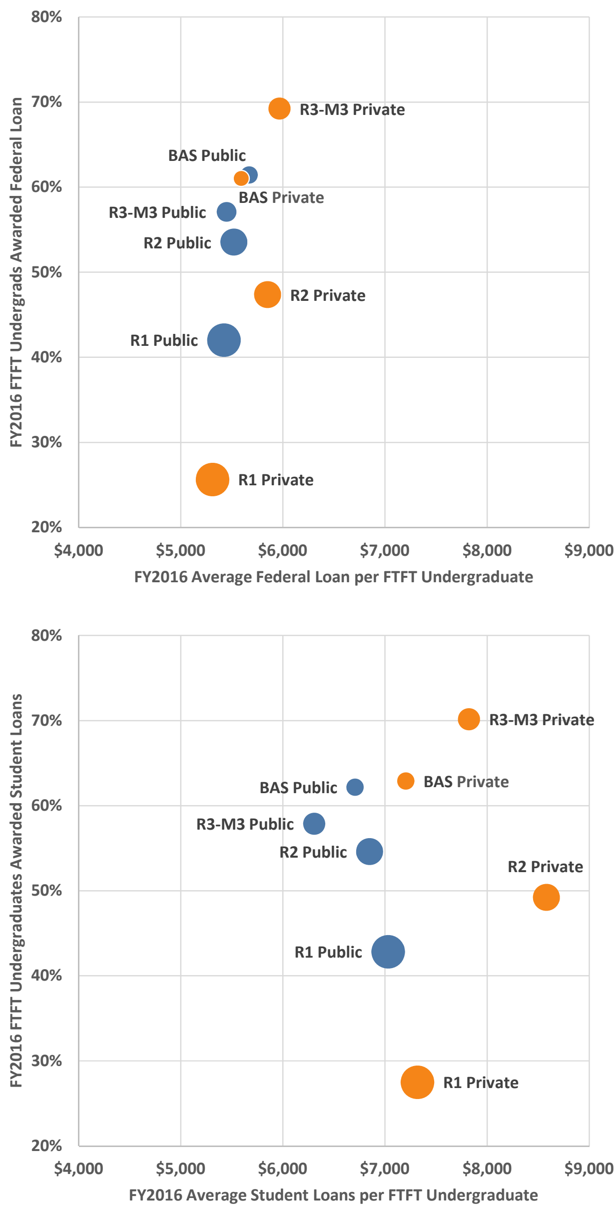

Figure 4.9. FY2016 loan aid to first-time full-time (FTFT) undergraduates by average amount per student awarded and by percentage of students awarded from federal (upper panel) and all sources (lower panel), averaged by Carnegie classification and control. Categories are differentiated by circle size and color for easier comparison. Source: IPEDS (2020).

loans (which account for the vast bulk of all loans) for first-time full-time students. The average federal loan amount is similar across all types of institutions, in a narrow range between $5,000 and $6,000 in FY2016. In contrast, the percentage of students with federal loans varies widely across types of institutions with roughly 40–60% across the publics and a remarkable range from about 25–70% across the privates. The R1 privates likely have low percentages of students with loans due to a high capacity to offer institutional aid and lower relative enrollments of financially needy students, as compared to the R3-M3 privates where most students are borrowing, likely because those institutions have a low capacity to offer institutional aid and have higher relative enrollments of financially needy students. As we saw in Chapter 2, these latter institutions are also those with the greatest tuition dependency—the student loan situation is yet another example of the serious challenges facing such schools.

There is an increment of about $1,000 to $3,000 above the federal amount when we consider all loans averaged across students with loans. Notice how carefully I phrased that—the data for remaining non-federal loans are distributed differently and these overall averages can be deceiving because "students with loans" includes those with just federal loans, those with just other loans, and those with both. The matching data for other non-federal loans are shown in Figure 4.10. Some first-time students are borrowing on average two to three times the amount of federal loans in other loans,

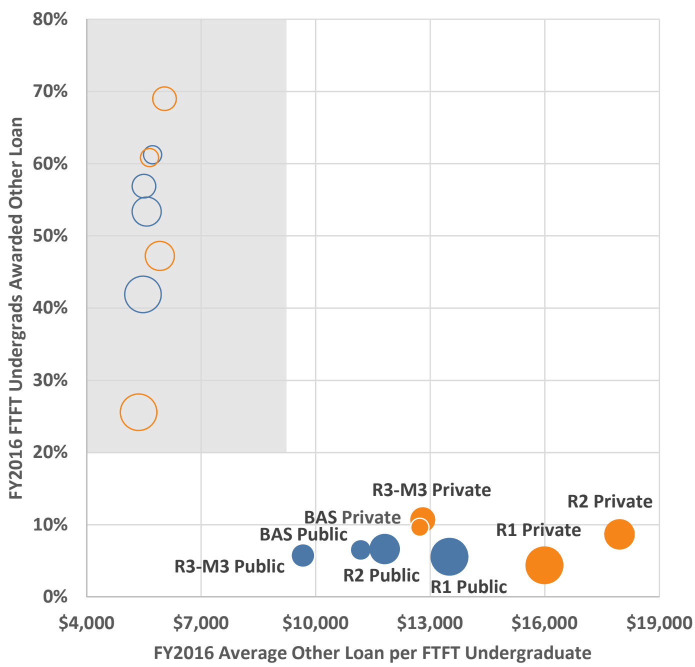

Figure 4.10. FY2016 other non-federal student loan aid to first-time full-time (FTFT) undergraduates by average amount per student awarded and by percentage of students awarded, averaged by Carnegie classification and control. Categories are differentiated by circle size and color for easier comparison. As a reference to highlight the different scales of these other loan data, the federal loan data from Figure 4.9 are plotted in the gray rectangle corresponding to the axis ranges used in that figure. Source: IPEDS (2020).

more at the privates than at the publics and as much as $18,000 at R2 private schools. Fortunately, only a small fraction of students takes out these large other loans, about 6% at the publics and about 10% at the privates (except R1 privates where it's 4%).

That takes us back to the lower panel in Figure 4.9—it's the small proportion of students with high other loans that raise the all-sources average above the federal amount. I've included the all-sources number because we have much longer trend data for this amount than for the subcategory amounts. Given the media hype about student loans (warranted hype when applied to the for-profit sector in particular), it is instructive to note that averaged across all types of institution, 53% of students have loans and for those who do, their loans average $7,228 in FY2016. For these students, that's about $30,000 over four years of study. If we average that number across all students for the "average student debt", it is about half: approximately $15,000. Unquestionably, we'd like that number to be as close to zero as possible, but this amount of debt for the average student compared to a lifetime of increased earnings is still an unbeatable deal. On the other hand, there is a tiny percentage of students who borrow immense amounts into the hundreds of thousands, many of whom will struggle with that debt for years or decades. We'll return to student indebtedness in Section 7.11.

Trends in student loans by institution type generally track their relative positions in Figure 4.9 and Figure 4.10, so I've plotted summaries of the trends by public and private institution in Figure 4.11 to keep the charts uncluttered as I did for financial aid. At the publics, we see a flat percentage of students with loans in the mid-40% range that rises in the pre- and post-recession years and then levels off in the mid-50% range. At the privates there has been variability in the mid-50% range for a long time, and this dropped slightly post-recession. In the shorter period we have for the breakout data, we see almost identical patterns in the federal loan percentages and a decrease in other non-federal loans by as much as one third at the privates. The one pattern that is masked in these summary trends is the dramatic decrease in the percentage of students with loans at R1 privates, from 48% in FY1999 down to 28% in FY2016—as mentioned before, these institutions are best-positioned to use institutional aid in offsetting costs to students.

Moving on to loan amounts, most of the jump of about $2,000 across all student loans occurred from FY2007–FY2009 and they have been essentially flat since then (in real dollars adjusted for inflation). The loan amounts of federal loans have decreased slightly in recent years, but other non-federal loan amounts have continued a steep, steady increase of almost $3,000 since the recession for that small percentage of students who take out these loans. Clearly, with the amounts for federal loans staying relatively flat over that period, the market has stepped in for a certain category of student.

A final point on trends in student borrowing: the share who borrow and the amounts borrowed also vary by income level. Comparing changes from FY1996 to FY2016, both shares and amounts have risen, especially in the upper two quintiles (income greater than $69,000) where the share of bachelor's degree completers borrowing doubled and the amounts more than doubled (Delisle 2019). High-income families borrow more than low-income families and they do so at rates that now approach those of low-income families. Importantly, though, for high-income families the loan amounts at graduation are a much smaller proportion of family income (less than half), while for the lower-income quintiles the amounts can be equivalent to double the annual income (Delisle 2019; Seltzer 2019a).

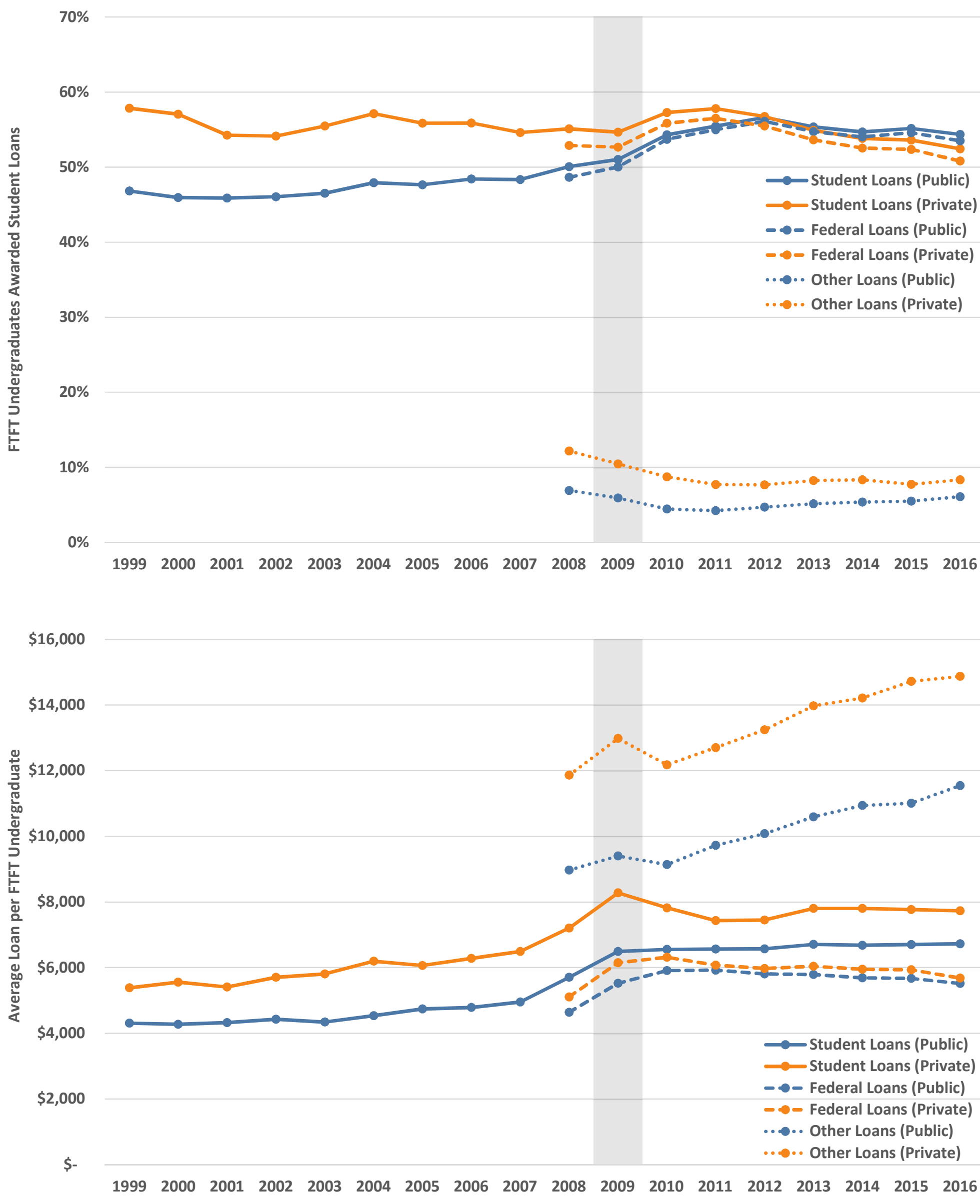

Figure 4.11. Trends in student loan aid (by fiscal years in 2016 dollars) awarded to first-time full-time (FTFT) undergraduates by percentage of students awarded (upper panel) and by average amount per student receiving an award (lower panel) from all, federal and other sources, averaged for public and private universities. Loan data broken out by category are only available from FY2008 onwards. Source: IPEDS (2020).

4.6 What is the history of state investment in higher education?

If there is a topic in higher education funding that gets as much press as tuition or student loans, it might be state appropriations. On public university campuses, state funding (or the lack thereof) has been the leading funding topic for decades. As a result, there is plenty of myth and misunderstanding on this subject. So, let's shed some light by looking at the numbers, starting with the long view. By combining data from multiple sources, I have managed to assemble a unique almost century-long data set on state funding and associated variables, which we'll examine in this section.

State investments in higher education take place in the context of broader economic conditions, illustrated in Figure 4.12. Important macroeconomic dynamics and policies undergird these trends—I'll briefly review the major features, but I'll leave further explanation to the economists. The classic national economic indicator is Gross Domestic Product (GDP), known as real GDP in its inflation-adjusted form. The historical trend in real GDP shows the Great Depression, a spending surge in World War II (WWII), the postwar expansion of the 1950s and 1960s, a slowdown in the 1970s followed by continued overall growth with expansion/recession every five to ten years through the 1980s, 1990s and early 2000s, and most recently the Great Recession that began in 2008–09 and lasted several years.

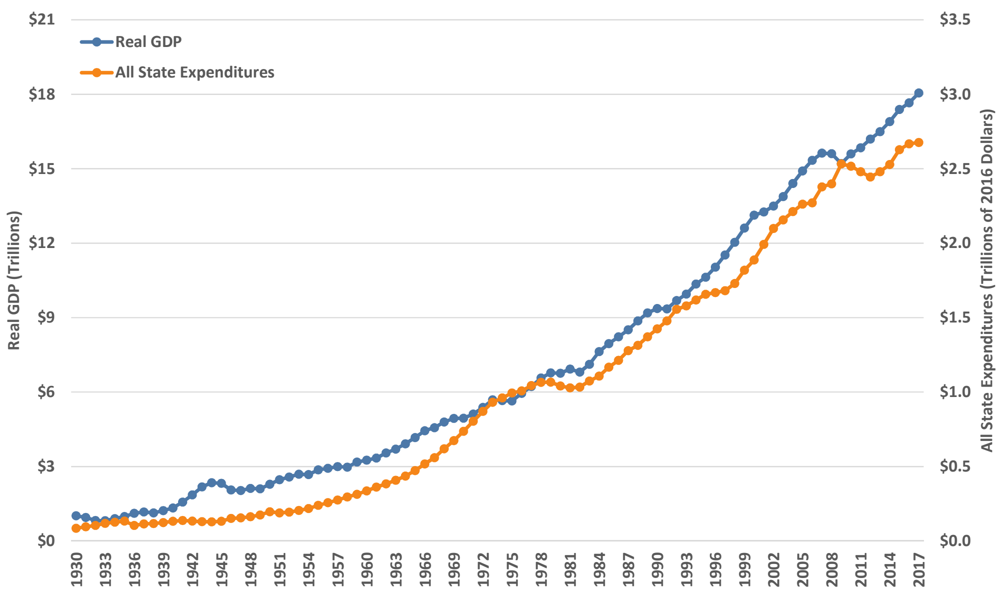

Figure 4.12. Historic trends in real (inflation-adjusted) GDP (calendar years) and all state expenditures (fiscal years, 2016 dollars). Sources: Bureau of Economic Analysis (2018a; 2018b).

Looking at the total expenditures of all the states (i.e., on everything, not just higher education, and adjusted for inflation) in Figure 4.12, not surprisingly we see the same broad growth over the century, but with some notable variations. State spending expanded dramatically during the 1960s, slowed down in the 1970s and then decreased into the early 1980s recession. State budgets grew modestly in the late 1980s, slowed in the 1990s, and as they accelerated again in the early 2000s they also became more volatile. The Great Recession saw the largest and longest decrease in state spending and has been followed by a modest recovery with slower growth than in GDP.

State appropriations for public higher education (also inflation-adjusted and including four-year and two-year institutions) roughly track the general economic trends over the last century (Figure 4.13). Two broad eras are discernable: first, a relatively smooth and remarkably steep expansion that occurred without interruption from the postwar years until 1979 and, second, a subsequent period of great volatility through to the present, characterized by numerous surges and cuts in appropriations (the Great Recession being the largest). We'll compare these state higher education expenditures to all state spending below, but first let's include enrollment.

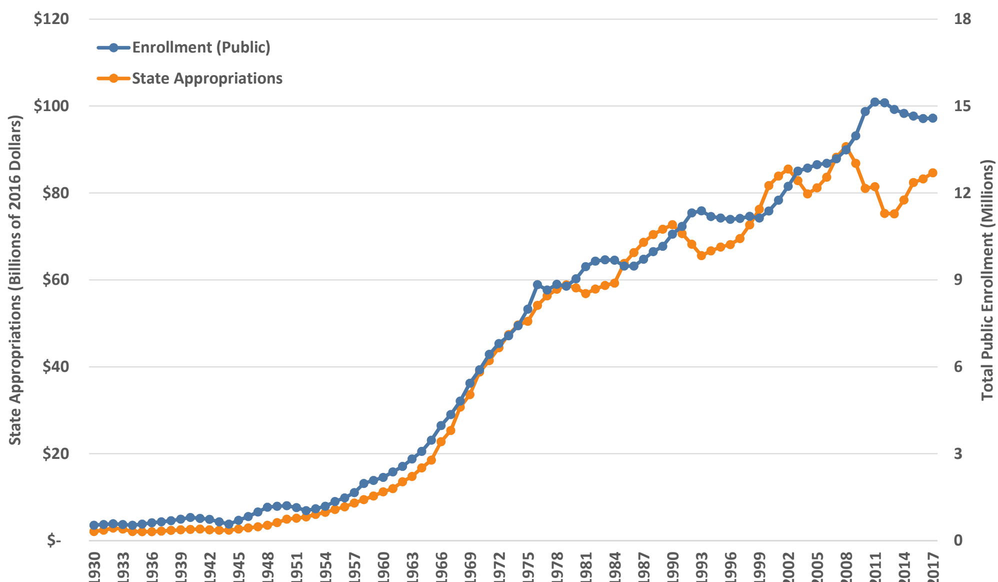

Figure 4.13. Historic trends in all state higher education appropriations (2016 dollars) and total enrollment in all public degree-granting postsecondary institutions (four-year and two-year). Sources for appropriations: Snyder (1993) for FY1930–1959, odd years interpolated from even years; Grapevine for FY1960–1999 (Illinois State University, Center for the Study of Education Policy 2018); SHEEO-SHEF (2017) for FY2000–2017. Sources for enrollment: Snyder (1993) for FY1930–1947, odd years interpolated from even years; NCES (National Center for Education Statistics 2017) for FY1948–2017.

It turns out that state appropriations have broadly tracked student enrollment in public institutions over the last century (Figure 4.13), although again the story is in the fluctuations. For the enrollment data, while FTE enrollment would be more precise, it has a much shorter data record than total enrollment, which I've shown instead—fortunately, their trend patterns are similar (and likewise, these enrollment data cover four-year and two-year institutions, matching the state funding). State funding variations don't align directly with enrollment fluctuations for at least a couple of reasons. The main reason is that annual state higher education budgets are strongly influenced by political and economic forces that shape the entire state budget. The needs of, and political attitudes towards, higher education are of consequence in some years, but at other times alternate factors will dominate such as changes in tax revenue and spending on other rising costs like health. We'll return to this topic in several ensuing sections. The other reason for state appropriation and enrollment fluctuations to be out of sync is that, while a little inconsistent, it's not uncommon for enrollments to increase during economic downturns when jobs are harder to come by and people return to school to upgrade their education credentials.

Returning to enrollment trends, we can see the decrease in WWII followed by the increase associated with the GI Bill. Enrollments increased steadily from the early 1950s onwards, increasing even more steeply during the 1960s. This was when the baby boomers went to college, as well as many more women and people of color. The ideas of equality and access slowly made their way into policy during this time, some reflected in the recommendations of the 1947 Truman Commission (Gilbert and Heller 2010). At the national level there was a substantial expansion of federal aid. At the state level, community colleges also underwent huge growth in this period, opening at a rate of one per week in the late 1960s. After peaking in 1976, enrollments entered an era of approximately decade-long variations around a slower overall growth trend, which has continued through to the present day.

So, now that we've reviewed the context, what *are* the historical trends in state appropriations per student? Figure 4.14 illustrates the history of state investment per student in public higher education, using the same data as above including all postsecondary institutions (four-year and two-year) and adjusted for inflation. After some volatility before and during WWII, we see the characteristic steep postwar rise in state appropriations per student through the 1950s and 1960s into the mid-1970s, from about $3,500 to about $6,500. From that point onwards through to the late 2000s, per-student state appropriations went through a volatile period with several quasi-cyclical periods of 5–10% variations. The Great Recession was a signal event, with average state investment per student dropping from $6,722 in 2008 to $4,981 in 2012 (a 26% cut). This recent drop mirrors the one in the Great Depression of the 1930s and is about half the size of the postwar rise. For the record, that 2012 number was last seen in 1959! It has bounced back a little in the last few years, but contemporary state investment per student is the same as in the 1960s.

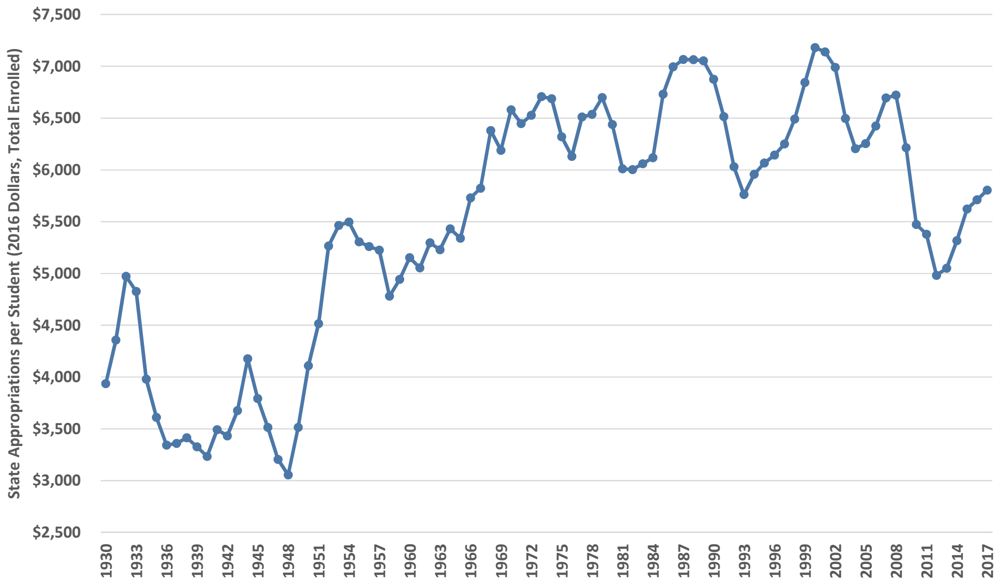

Figure 4.14. Historic trend in all state higher education appropriations per student in all degree-granting postsecondary institutions (four-year and two-year), in 2016 dollars using total enrollment. Sources for appropriations: Snyder (1993) for FY1930–1959, odd years interpolated from even years; Grapevine for FY1960–1999 (Illinois State University, Center for the Study of Education Policy 2018); SHEEO-SHEF (2017) for FY2000–2017. Sources for enrollment: Snyder (1993) for FY1930–1947, odd years interpolated from even years; NCES (National Center for Education Statistics 2017) for FY1948–2017.

Early in Chapter 2 we saw that our institutional budgets have doubled in the last fifteen years, and yet, as I mentioned, that fact didn't align with the lived experience on campus. Now we see why—those increases went to inflation, and especially to enrollment growth. If we calculate the year-to-year percentage changes in state appropriations per student, the result is a chart that illustrates how state appropriations were felt by institutional budgets (Figure 4.15). The long, uninterrupted period of state funding increases from 1945 to 1979 is clear, followed by almost four decades of alternating increases and decreases.

We can do a related calculation and express state higher education appropriations in relation to the economy, or more specifically to overall state budgets. Those values are illustrated in Figure 4.16 as a percentage of GDP and as a percentage of overall state expenditures. The two measures show similar patterns, with the recognizable postwar growth through to the highpoint in 1975 for the GDP curve and to the early 1980s for the state budget curve. The post-1980s plunge, however, is stark and dramatic. Relative to the overall economy and to state budgets, state appropriations to higher education have dropped by almost half over the last three decades. States have not invested this small a percentage of their budgets (slightly over 3%) in higher education since the late 1950s.

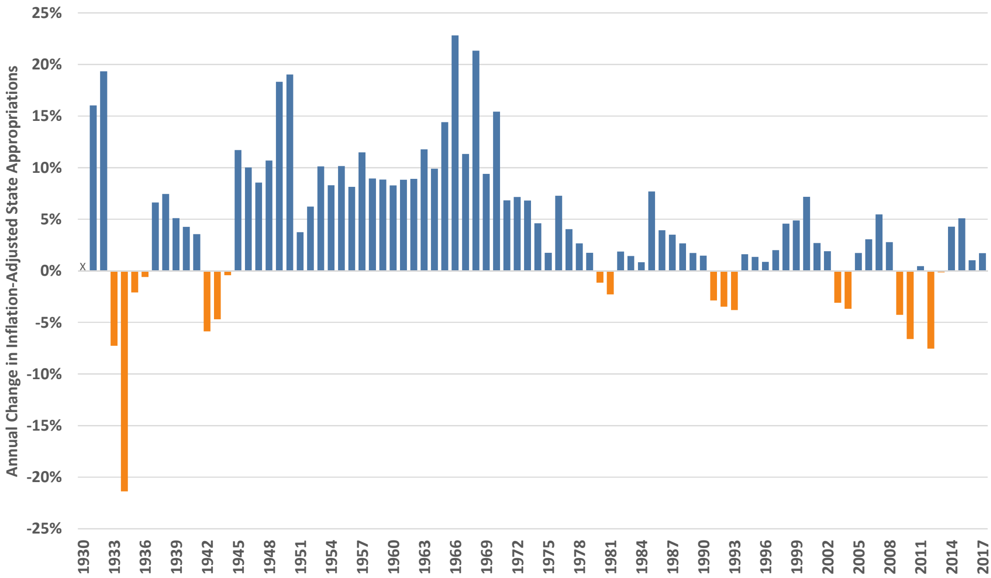

Figure 4.15. Historic annual percentage change in all state higher education appropriations (2016 dollars). Sources: Snyder (1993) for FY1930–1959, odd years interpolated from even years; Grapevine for FY1960–1999 (Illinois State University, Center for the Study of Education Policy 2018); SHEEO-SHEF (2017) for FY2000–2017.

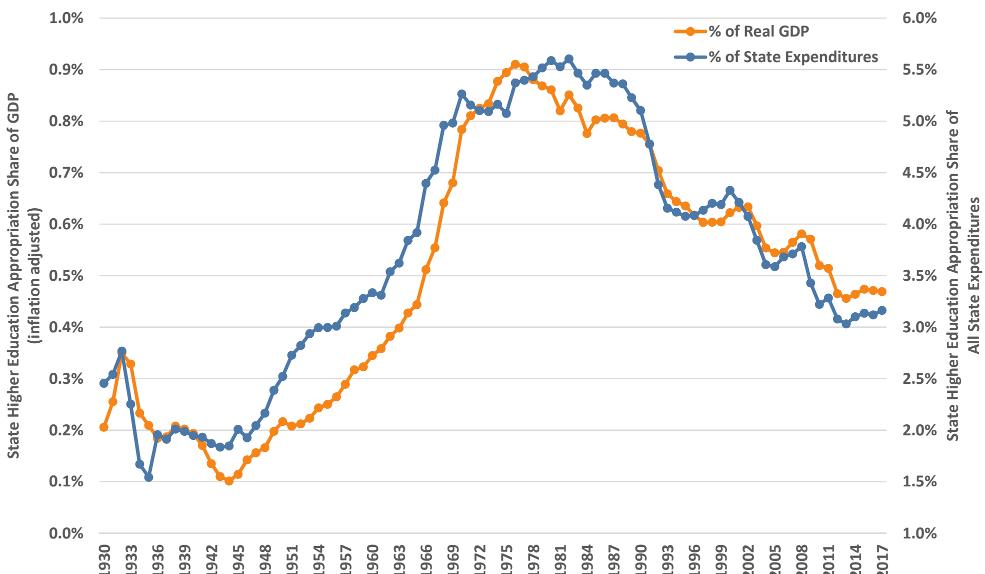

Figure 4.16. Historic trends in all state higher education appropriations as a percentage of real (inflation-adjusted) GDP and of all state expenditures (2016 dollars). Sources for appropriations: Snyder (1993) for FY1930–1959, odd years interpolated from even years; Grapevine for FY1960–1999 (Illinois State University, Center for the Study of Education Policy 2018); SHEEO-SHEF (2017) for FY2000–2017. Sources for state expenditures and GDP: Bureau of Economic Analysis (2018a; 2018b).

Not surprisingly, many in public higher education view this as a travesty. Despite being a fundamental shift that has been underway for decades, universities were in denial and throughout the 1990s and the early 2000s they (we!) clung to hopes of a return to the halcyon days of long ago. Looking at the swings of recent decades in Figure 4.14, such hopes weren't without reason, but the structural decline in state higher education spending seen in Figure 4.16 is the deeper trend. Only with the shock of the Great Recession did public higher education lift its head out of the sand and acknowledge that the old days of growth and high state investment were not coming back anytime soon.

There are plenty of questions about all of this. Depending on their political bent, policy advocates wring their hands about massive state defunding of higher education or about the upward spiraling costs of attending college. Others worry about the underlying shift in higher education from a public to a private good. Some believe that state legislatures "have it in" for higher education and will continue to cut, and yet others wonder where all those state expenditures have gone instead. We'll return to those questions, but first we will take a closer look to see how this plays out across types of institutions and states.

4.7 How have state appropriations changed by type of institution?

Using a shorter data record, we can disaggregate the nationwide trends of the previous section and examine them for four-year schools by type of institution. Figure 4.17 shows the average state appropriations and enrollment across all the four-year public institutions in our data set. State appropriations (in 2016 dollars) had some large swings of 5–10% during the last thirty years, but have ended up essentially flat over that time, about $115M at the average institution. In contrast, average enrollments over the same period have grown by about 40%, currently about 15,000 students at the average institution. The one exception in enrollment trends is the group of 20 small public baccalaureate colleges—their enrollments (not shown) were mostly flat over this period, averaging about 2,200 until after the Great Recession; since then they have declined by almost 10% and were down to about 2,000 students at the average college in 2017, a worrying trend for those schools.

Figure 4.18 illustrates state appropriations per student (now as FTE rather than total enrollment that was necessary for the historical trends in the previous section) for the four Carnegie groups of public institutions. We see the same overall patterns with several pre-recession cycles followed by the post-recession decrease in per-FTE state funding. The R1 schools saw the largest absolute and relative decreases, about $4,000 per student or roughly one third. The R2 and R3-M3 schools saw decreases of around $1,500 per student, about 15–20%. The baccalaureates have seen fluctuations in per-student funding but have trended flat overall because of their post-recession enrollment declines mentioned above, which occurred concurrently with the decrease in funding. A recent study found that a 10% decrease in state appropriations at public

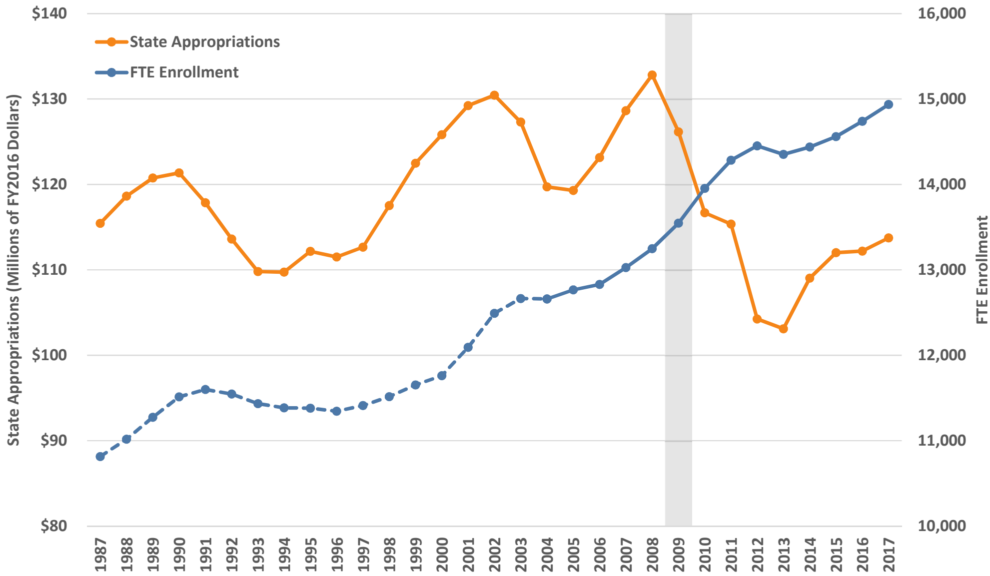

Figure 4.17. Trends in state appropriations and enrollment at public institutions, averaged within and then across the four Carnegie classification groups. Amounts are in 2016 dollars by fiscal year and twelve-month full-time equivalent enrollment by academic year. To provide long-term trends prior to 2004 (dashed line), twelve-month FTE enrollment is estimated from total Fall enrollment (full-time plus part-time) by using the average 2004–2006 ratio of the two for each Carnegie group. Source: IPEDS (2020).

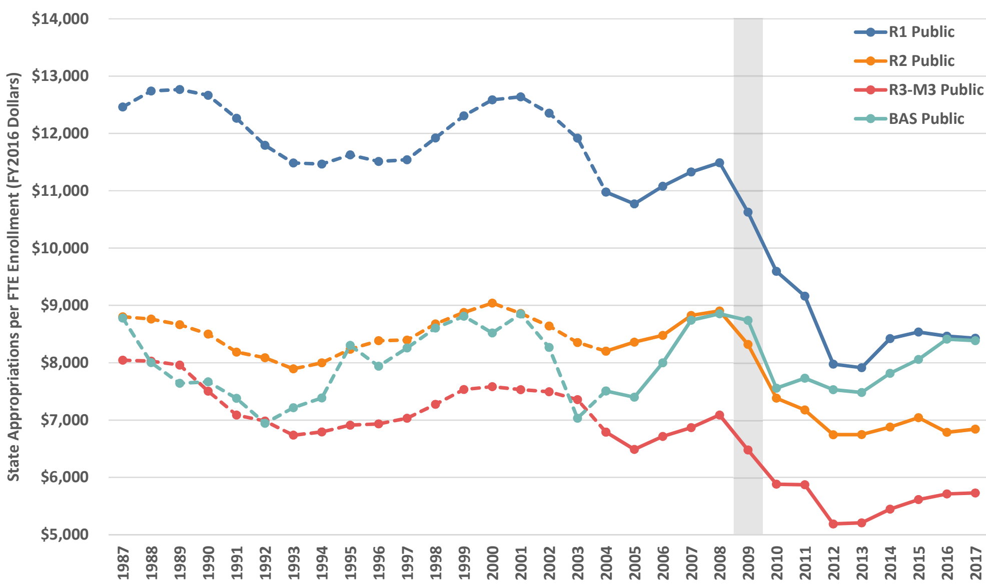

Figure 4.18. Trends in state appropriations per student at public institutions, averaged by Carnegie classification. Amounts are in 2016 dollars per twelve-month full-time equivalent enrollment by fiscal and academic year. To provide long-term trends prior to 2004 (dashed lines), twelve-month FTE enrollment is estimated from total Fall enrollment (full-time plus part-time) by using the average 2004–2006 ratio of the two for each Carnegie group. Source: IPEDS (2020).

research universities led to a 3.6% decrease in bachelor's degrees awarded and a 7.2% decrease in PhD degrees completed; non-research publics had fewer alternative revenue sources that necessitated lower spending and higher in-state tuition (Bound et al. 2019).

We can compare these changes in state investment per student to total institutional spending on each student, using the E&R expenditures per FTE we examined in Section 3.4. Figure 4.19 shows state appropriations per FTE as a percentage of E&R expenditures per FTE for FY2006–2016 by Carnegie group for public institutions. There was a post-recession plunge from covering about 60% of education-related spending down to about 35% at most institutions, with the baccalaureate colleges showing much the same pattern but shifted about 5% higher. These dramatic changes represent a fundamental shift in society's support of public higher education. More candidly, the states are no longer majority stakeholders in public higher education.

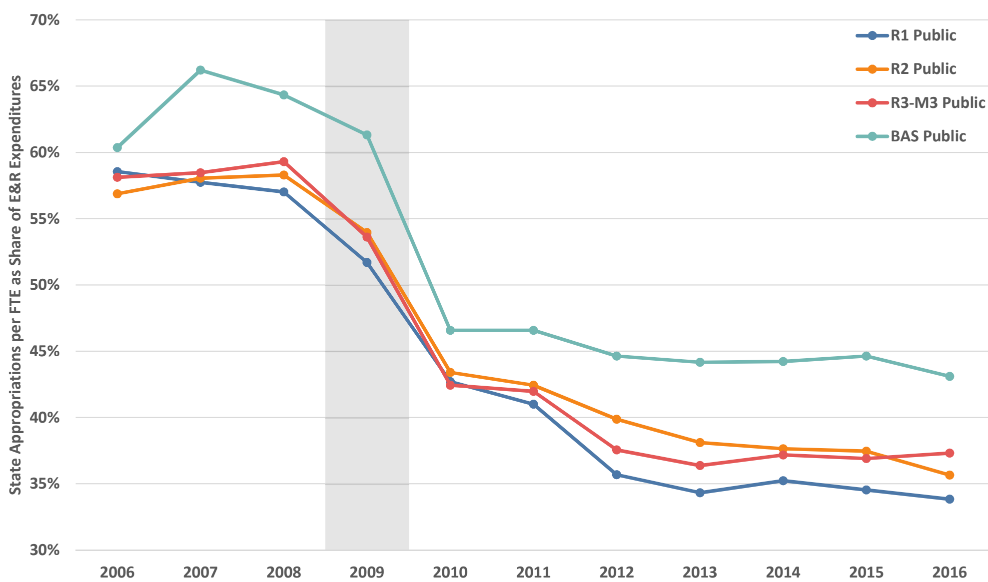

Figure 4.19. Recent trends in state appropriations per FTE enrolled at public institutions as a percentage of Education and Related (E&R) expenditures, averaged by Carnegie classification and based on amounts in 2016 dollars per twelve-month full-time equivalent enrollment by fiscal and academic year. Source: IPEDS (2020).

4.8 How much does each state spend per student?

There is an extensive range in annual spending per student across the 50 states (see Figure 4.20), from about $3,000 in Vermont and New Hampshire to over $15,000 in Alaska, Wyoming, Illinois and Hawaii, with the US average slightly over $7,600 and the median slightly over $6,500 in FY2017. The reasons for the varying amounts are as different as the states themselves, depending variously on their revenues, enrollments, policy environment, other demands on appropriations, etc. Note that these figures are for all postsecondary schools, two-year and four-year, and while the underlying data and analyses are similar to those in preceding sections, they are not identical.

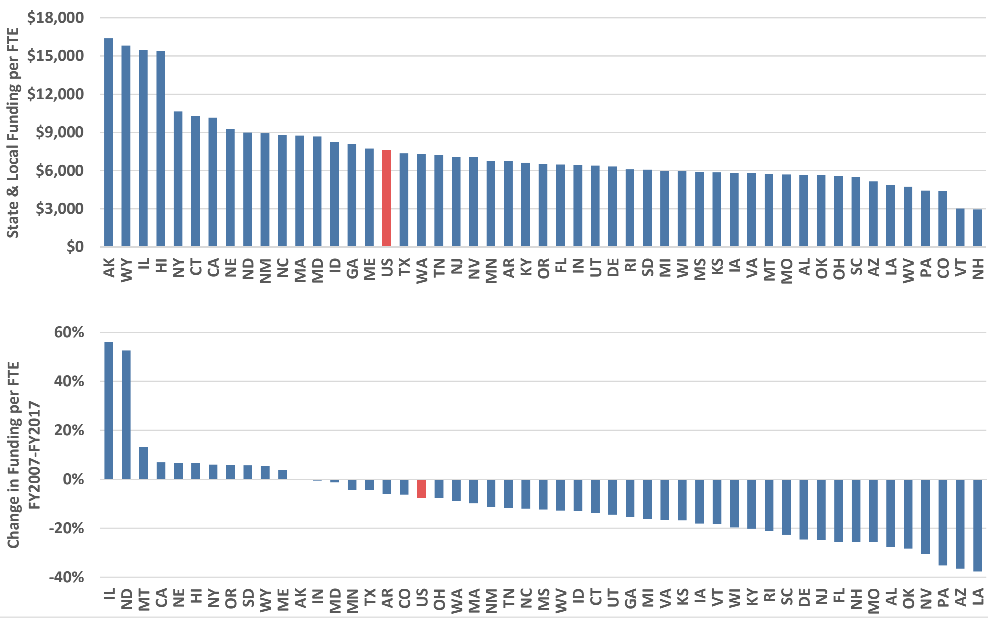

Figure 4.20. FY2017 state and local funding for post-secondary education per student (upper panel) and ten-year change (FY2007–FY2017) in funding per student (lower panel), by state, in 2017 dollars. Source: College Board (Ma et al. 2018).

The ten-year percentage change in state funding per student from FY2007–FY2017 spans the period preceding and following the recession (Figure 4.20). The percentages on the left axis are substantial—with a median of negative 12%, the majority of states are still considerably below their pre-recession investments in higher education, with Arizona (that also had increasing enrollments) and Louisiana down almost 40% over the decade. A handful of states' investments are up over the decade, by 5–10%, with Montana at 13% and North Dakota at 53% (both with high oil revenues and low enrollments). The 56% increase for Illinois was a dramatic change aimed mostly at under-funded pensions (Ma et al. 2018), in contrast to the negative 23% for the five years FY2008–2013 in the heart of the recession (Weisman 2013). These data provide yet more evidence of how state higher education spending per student was slashed during the recession, and how it has not yet recovered (Mitchell et al. 2017).

4.9 Where has state spending gone instead of higher education?

The largest expenditures in state budgets go to elementary and secondary education, followed by Medicaid, then higher education, and then corrections (Figure 4.21). Smaller amounts go to public assistance and transportation, with all other spending including, for example, budgets of state agencies. Higher education accounted for 9.7% of state general fund expenditures in FY2018—roughly one quarter of K-12 education spending and one half of Medicaid spending.

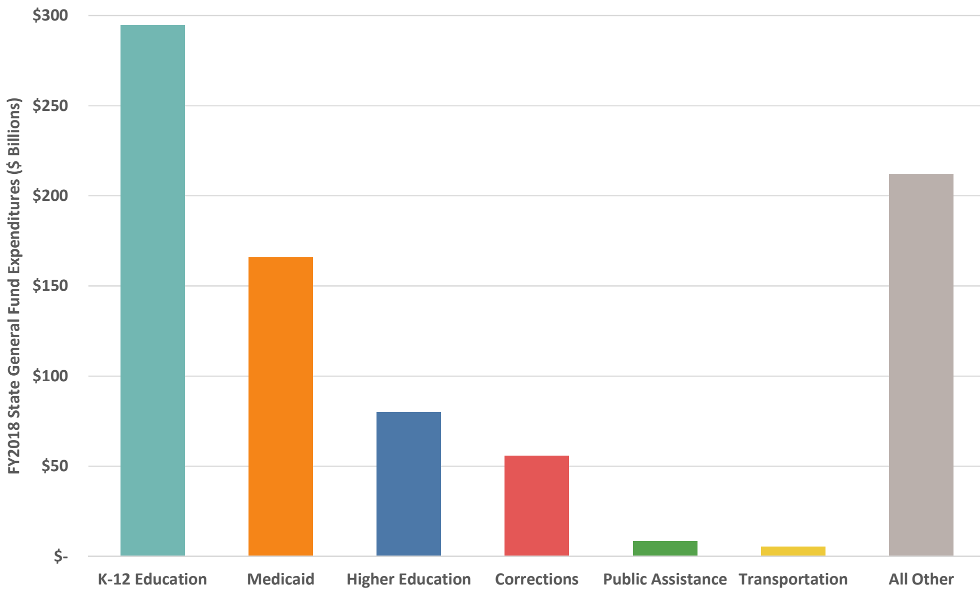

Figure 4.21. FY2018 general fund expenditures by category totaled for all states. Source: NASBO (2018).

With these proportions as context, the real story is in the trends (Figure 4.22). As we know from the preceding sections, state funding per FTE student has been in decline for some time, and we see that pattern when looking at higher education expenditures as a share of all state general fund expenditures, where it dropped from 15.5% in FY1987 to the 9.7% in FY2018 mentioned above. This systematic decrease can be viewed, perhaps simplistically, as part of a concerted policy to defund higher education. While there may be an argument to be made in that regard, the reality is more complicated: decreases in state support also reflect tough choices that states have had to make in reaction to compulsory Medicaid spending, escalating pension contributions, and wanting to sustain K–12 education (The Lincoln Project: Excellence and Access in Public Higher Education 2015). The main culprit is the rising cost of mandatory contributions to health services through Medicaid, which has increased 1.5 times since FY1987, from 8.1% to 20.2% of state general fund expenditures. Therefore, limiting the growth of healthcare costs is essential not only for healthcare reform but also for the public-higher-education landscape (Webber 2018). Interestingly, although corrections are sometimes blamed for "receiving" the higher education dollars, the share spent on corrections has been essentially flat since the mid-1990s.

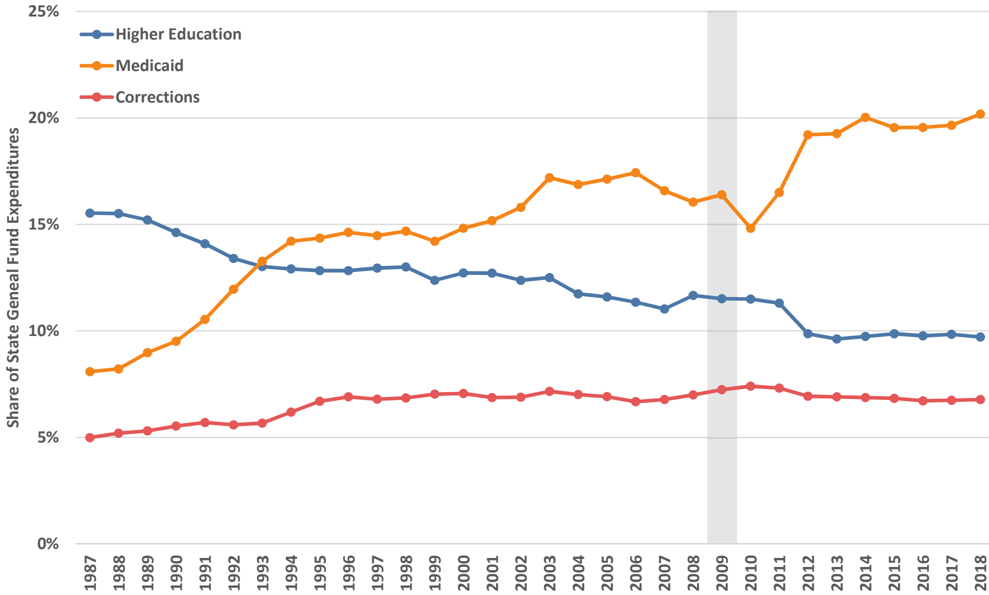

Figure 4.22. Trends in percentage share of state general fund expenditures for higher education, Medicaid and corrections, FY1987–2018. Source: NASBO (2018).

4.10 When did tuition revenue overtake state revenue?

In FY2010, for the first time, four-year public colleges and universities depended more on net tuition revenue than on state appropriations for funding support. We saw this in Section 4.7, where we broke out state appropriations as a share of E&R expenses by type of institution (Figure 4.19). Figure 4.23 illustrates state appropriations and net tuition revenue explicitly, where we can plainly see the FY2010 transition when the student share of educational cost first exceeded the state share. The two trends have diverged further since then, and in FY2016 the student share was almost 50% higher than the state share.

At the state level, for all postsecondary institutions (four-year and two-year), FY2017 marked the first time that over half of all states relied more on the student share than on the state share to fund public higher education (SHEEO-SHEF 2017). In other words, the median state share dropped below 50% for the first time in FY2017 (for the average it was FY2012). Figure 4.24 shows the FY2017 state share of public higher education funding relative to the student share on a state-by-state basis, with 28 states now below the 50% mark. As we've seen in related state comparisons, the states vary widely in per-FTE support of higher education, from 80% and more in California and Wyoming, to 21% and 13% respectively in New Hampshire and Vermont. Since the Great Recession, the state share has decreased in all but two

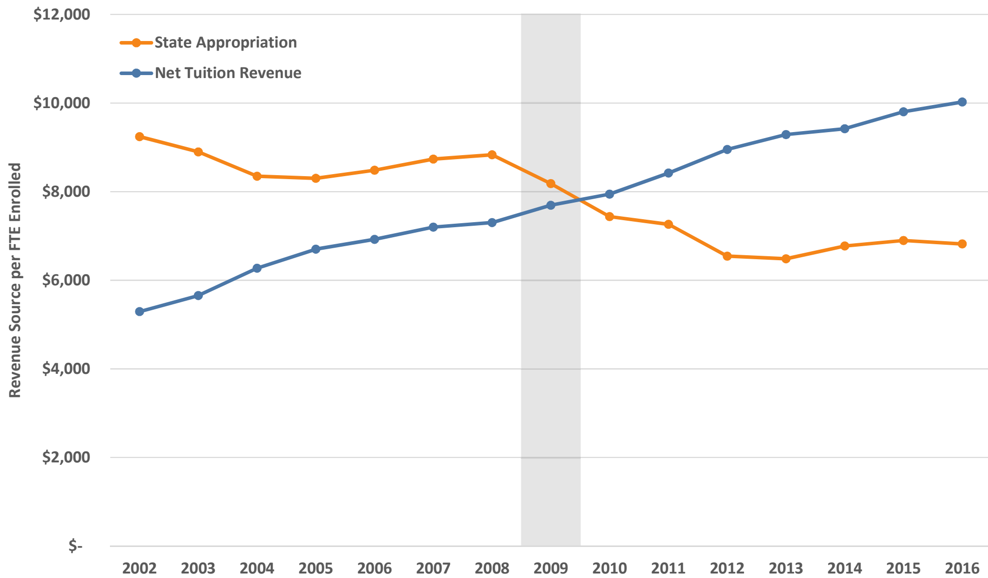

Figure 4.23. Recent trends in state appropriations and net tuition revenue in 2016 dollars per FTE student at public institutions. Source: IPEDS (2020).

states (North Dakota and Wyoming) although most states' relative ranking does not shift markedly from year to year (SHEEO-SHEF 2017).

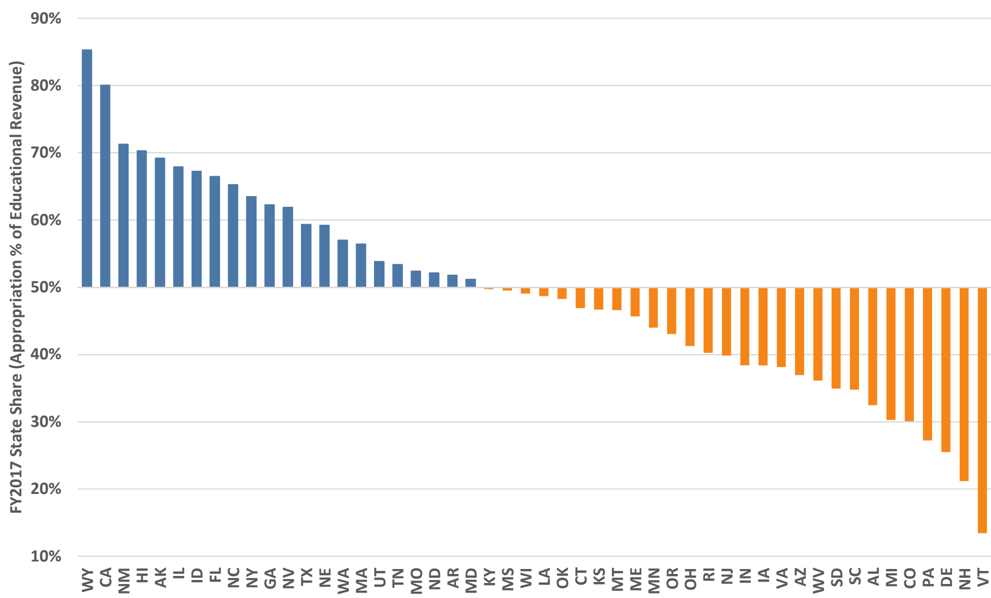

Figure 4.24. FY2017 state higher education appropriations as a percentage share of combined educational revenues (state higher education appropriation per FTE plus net tuition revenue per FTE). Source: SHEEO-SHEF (2017).

4.11 Do state funding cuts increase tuition?

Yes, cuts in state appropriations to public universities do increase tuition, but not in a 1:1 relationship. Figure 4.25 illustrates the relationship over three decades as annual percentage changes and, generally, tuition rises more when state appropriations fall and vice-versa (FYI, the correlation between these data series is a bit over 0.4). Given the analyses in previous sections this question may seem like a no-brainer, although in politically-tilted debates on state higher education funding the effect is claimed to range from near zero to 100% (Seltzer 2017). We know from previous sections that when state appropriations decrease, institutions take a variety of actions to decrease expenditures and increase other revenues (e.g., cutting labor costs, enrolling more out-of-state students if the institution has market access to them) while increasing tuition as a partial offset. Using advanced analyses to adjust for extraneous effects (e.g., state limitations on tuition increases, political bias in appropriations) rather than simple correlation, the pass-through rate has averaged about 26% since the late 1980s, although before 2000 it was about 10% and since then it has been 32% (Webber 2017). Multiple analyses have come to similar conclusions, that state funding cuts explain a significant and likely growing portion of tuition hikes and, furthermore, beyond the debate between advocates for greater support of higher education or advocates for restraint in government spending, the reactions of an institution to decreased state investment depend on its market position (Baum et al. 2018b).

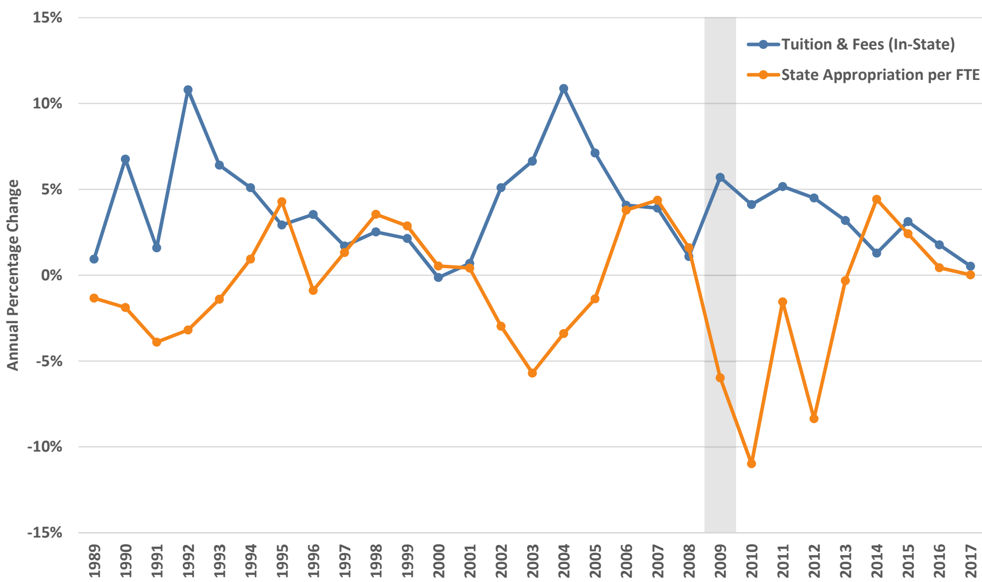

Figure 4.25. Annual percentage change in inflation-adjusted published tuition and fees (in-state) and state appropriations per FTE student enrolled at public institutions, by fiscal year. Source: IPEDS (2020).

4.12 Does performance funding work?

No, but that may be okay. Let's review some background before returning to this question. The appeal of performance funding, sometimes called performance-based funding or outcomes-based funding, is that it supposedly incentivizes public institutions to pursue improved student outcomes based on specified metrics (e.g., graduation rates). Historically, state higher education funding was made through block appropriations or based on enrollment. Tennessee adopted the first performance funding program in 1979, followed by several more states in the following years, growing to 21 states in 2001, but dropping to almost half that number in the subsequent decade before rising again (McLendon and Hearn 2013). The most recent total, which includes states with performance funding for both two-year and four-year schools, was as high as 35 states in 2015 and 29 states in FY2020, depending on how one counts (Li 2018; Rosinger et al. 2020). Many programs have been reformulated to add or subtract accountability measures and to address challenges such as year-to-year volatility and avoiding unintended consequences for student equity. Furthermore, designing these programs for mission-differentiated institutions and sustaining them over time has proven difficult in ever-changing fiscal and political environments (McLendon and Hearn 2013; Obergfell 2018). Beyond the inherent attractiveness of the targeted quality-assurance element, the accountability aspects of performance funding in the face of tight state budgets, rising tuition and greater attention to oversight would seem to ensure that it will be around for the foreseeable future (Obergfell 2018).

Performance funding programs vary a lot, even across the 21 states that currently have them for four-year institutions (Figure 4.26). In 5 states, 80% to 100% of the state appropriation is tied to performance funding while it is 10% or less of the state appropriation in about a dozen states. Depending on the state, these amounts are determined via 1 to 10 or more metrics that fall into typical categories, frequently including those related to degree completion as well as job placement, critical fields (e.g., STEM, health professions), equity and diversity measures, and other metrics such as financial efficiency (Li 2018). Thus in North Dakota, for example, 100% of the state allocation is determined solely by credits earned (a completion-related metric) versus, say, Florida, where metrics in all five categories (credits earned, undergraduate and graduate degrees awarded, time-to-degree, graduation rates, employment outcomes, critical fields, Pell Grant/low-income student rates, and instructional costs) determine 22% of the state appropriation (Li 2018).

Coming back to whether performance funding works as intended, most but not all empirical research studies have found that degree completions and graduation rates have not improved as a direct result of performance funding (Dougherty et al. 2014; Hillman 2016; Callahan et al. 2017; Hillman et al. 2018; Li 2018). There are several possible reasons for this: performance funding assumes that institutions will respond to the incentive, that the effect of performance dollars in the face of state divestment

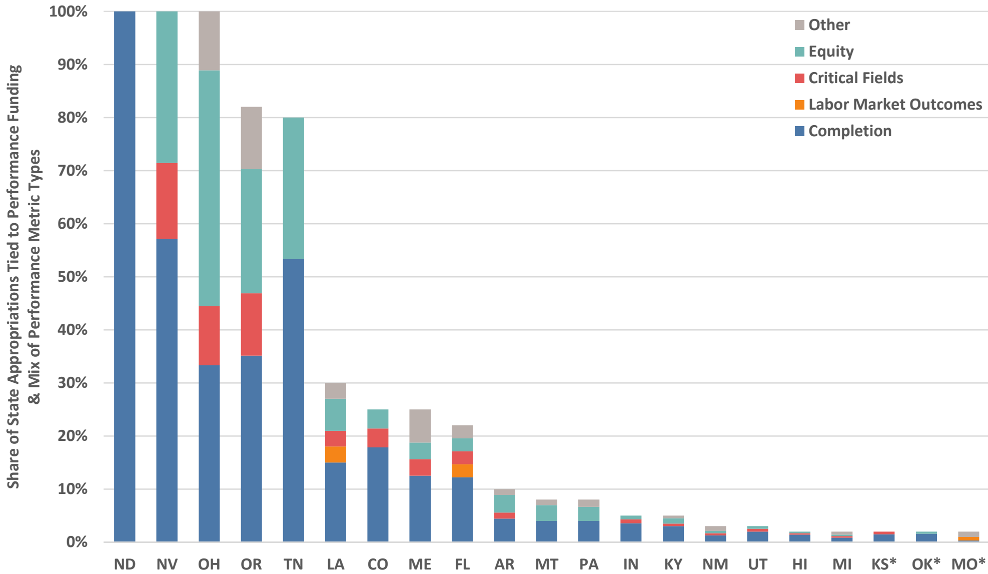

Figure 4.26. The 21 states with performance funding for four-year public colleges and universities in FY2018, showing percentage share of state appropriations tied to performance funding and the mix of performance metric types (unweighted proportional count) within each share. Performance funding in Kansas, Oklahoma and Missouri applies to new state appropriations only and no new funds were allocated in FY2018. Source: Li (2018).

in higher education will be felt, and that the institution has the capacity to implement completion strategies above and beyond those already in place before the incentive. Additional confounding effects include the inverse cyclical relationship between enrollments and economic conditions, and that attention to completion, diversity, and other measures in higher education has been increasing independently of performance funding. Even if the evidence for an empirical link is weak, performance funding policies continue to enjoy political and foundation support (Fain 2015). While outcomes haven't clearly shifted, some equity concerns such as shifts in low-income enrollment and funding disparities across different types of institutions have been raised (Rosinger et al. 2020). Performance funding has undoubtedly drawn campus and stakeholder attention to completion and other important outcome metrics, resulting in a silver lining of constructive changes in institutional practices such as developmental pre-college courses, accelerated programs, supplementary instruction, and tutoring (Li 2018).

4.13 Can't we simply privatize a public university?

From time to time, especially after reductions in state support such as during the Great Recession, and often in tandem with frustrations about regulatory constraints, public campus leaders and others raise the idea of "going private." Alas, the dream of complete autonomy with minimal budgetary impact doesn't stand up to the cold facts of reality. There is no question that state disinvestment, coupled with increased tuition dependence, the necessity for fundraising, and more private sector partnerships, have led public universities (the R1 flagships in particular) to appear more like private institutions in those respects. However, the leap from there to total privatization is sufficiently far that virtually no institutions have done so, apart from a few that were set up with a special situation or independent funding from the start (Ebersole 2014).

There are at least a half-dozen financial reasons, and numerous non-financial reasons, as to why total privatization is impracticable (Chapter 10 covers several of these topics in more breadth):

- *Annual Revenue Flow*: We saw in Chapter 2 and in several earlier sections of this chapter that in some states, especially those with the lowest shares of state revenue on the right of Figure 4.24 such as Vermont, the low levels of state appropriations mean that total elimination of those funds from an institution's budget could be a survivable event. For the average public institution, however, the state slice of the revenue pie is critical for at least two reasons: (i) it funds core activities that leverage others (see Section 2.12), thereby amplifying the loss, and (ii) the size of endowment necessary to replace it is out of reach in most cases. Consider a large university that receives $200M each year in state appropriations—it would need a new endowment of roughly $4B to supply a similar annual income stream. Yet, a smaller school that receives only $20M in annual state support could conceivably raise $400M to provide a similarly sized stream of annual endowment proceeds.
- *Facilities*: A major sticking point, buildings, grounds and other physical infrastructure are owned by the state and would have to be purchased, because states cannot give public property away to private entities. The biggest public campuses comprise hundreds of acres and hundreds of buildings that together would cost billions of dollars while smaller campuses would total in the hundreds of millions.
- *Employee Benefits*: Pensions, retirement plans, and healthcare contributions are handled differently across the states, and in those with large commitments to past or current employees the state is unlikely to assume those costs, so they would need to be covered by the privatized institution. These costs are hard to generalize but would likely be in the tens of millions of dollars annually at bigger institutions.
- *Bonds and Ratings*: Most campuses have debt payments on buildings, often funded directly or indirectly through bonds that were issued based on their being a public entity. Furthermore, the interest rate on any new bonds is

strongly influenced by the rating of the institution's perceived future ability to pay for them. Again, these costs are hard to generalize, but could total a few percent of the annual institutional budget.

- *Alumni and Donor Contributions*: with a major identity change, an institution will need to consider the implications for income from philanthropic gifts. There would without doubt be a concerted effort to rally support for the evolving new identity, and to use it as a fundraising opportunity. Still, the privatization move would minimally raise questions about past donations that were made based on the institution having a public mission, and there may be current donors who decide to withdraw their support.
- *Charter and Name*: Public universities receive their charter and public mission, as well as their name, by constitution or law. A privatized institution could finesse a modified public service mission, but if a name change was required by the state it would have significant implications for marketing and branding, and therefore enrollment, all else being equal. Universities and colleges are built on reputation and brand, so a name change would be a serious business risk and would need both a comprehensive rebranding plan and a long-term marketing investment to mitigate potential losses.

The upshot of these considerable impediments is that institutions contemplating significant privatization are likely to maintain their core public status and instead select hybrid solutions that enable them to partially address their challenge. The state with perhaps the most notable examples of hybrid shifts in recent years is Oregon, whose major universities have evolved towards greater autonomy with new regulatory and financial structures while retaining their public status (Wang 2013). Complete privatization was subsequently suggested by a state task force as one option to cut a huge shortfall in the public pension system, although implementation seems unlikely for all the reasons discussed above (Lehman 2017).

Privatization is more often seen in less dramatic but wider-reaching ways. There are countless public-private partnerships across the US higher education landscape and virtually every campus has something of that sort that fits under a wider banner of privatization: typical examples include spinning off or subcontracting dining services, bookstores, conference centers, and parking, as well as some non-auxiliary services like online enrollment recruiting and collaborative research space with companies (see Section 10.7). There is a lively discussion surrounding this broader notion of privatization, ranging from support to condemnation, and an accompanying set of structural dynamics related to declining public support and a neoliberal economic environment (Berdahl 2000; Morphew and Eckel 2009; Tierney 2012; Lambert 2014; Newfield 2018).

4.14 How are universities funded in other countries?

The higher education system in most countries is typically overseen by the national education ministry, often with substantial funding coming from the national government for public higher education. The US is unusual in having non-governmental regional accreditors provide oversight in place of the US Department of Education and, moreover, our public higher education institutions are funded and administrated primarily by the states with the Federal Government providing student aid and research investment. There is plenty of variation around the world and in some countries the states (or their equivalent) and cities may also fund public higher education. Many, but not all, countries also allow private institutions—globally, about 33% of higher education enrollment is at private institutions (Levy 2018). In some countries they are predominant, such as South Korea, Japan, and Brazil with between 70% and 80% enrollment in private higher education; India has the largest total private enrollments, with 58% of higher education enrollments being at private institutions (Levy 2018).

To understand public higher education funding internationally, it is useful to appreciate the other ways in which US higher education can be different. The tradition of going away to college is a part of US culture, but it is far less common in other countries where students typically attend an institution in their home city, which means that residence halls can have a decreased role. The whole concept of high-visibility college sports is American to the core—while there are club sports at many universities around the world, none of them have television contracts! Research is handled differently in some countries and may take place at government laboratories rather than on teaching-focused campuses. In most countries a smaller proportion of high school graduates goes on to university, and technical and vocational colleges play a relatively larger role. And, compared to the United States, tuition and fees at public institutions are generally lower (or even zero) in other countries.

It is hard to account for all these differences, but somewhat dated and limited national-level summary data enable some broad comparisons of investment in public higher education (combined for all levels of government in Figure 4.27). It is interesting that, in relative terms as a percentage of GDP, higher and lower income countries have similarly wide ranges in the amount they invest in higher education, and that the US ranks in the middle of high-income countries by this measure. The pattern changes when expressed in absolute dollars per student, and unsurprisingly it generally scales with the income level of the countries. Remarkably, the US also falls in the middle of the high-income countries by this measure of government spending on public higher education. Naturally, government spending is only part of the picture and it is worth noting that the US is among the countries with the highest household contribution to total higher education expenses (United Nations Children's Fund [UNICEF] 2015).

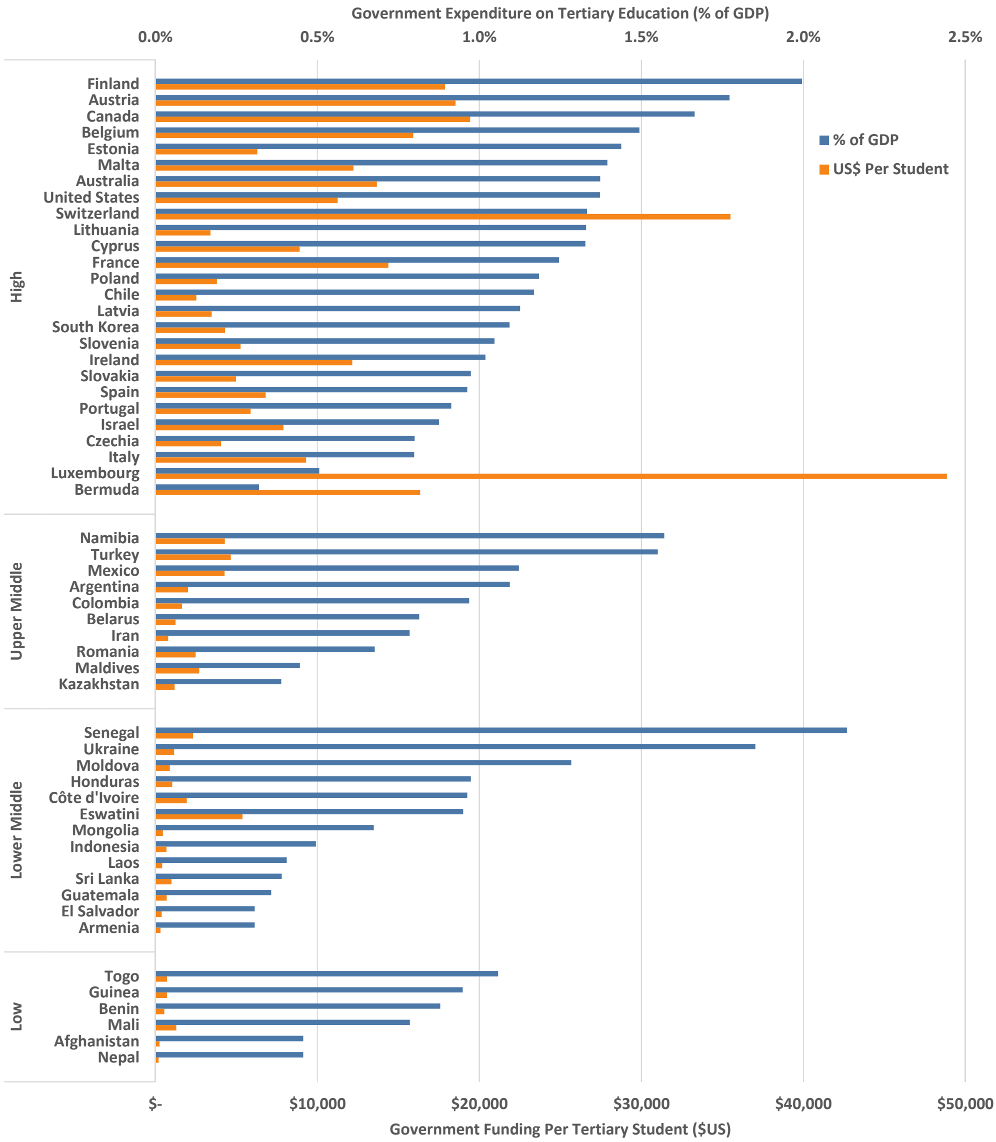

Figure 4.27. Government expenditures on public higher education as a percentage of GDP and per student in US$, both for 2014 and grouped by World Bank country income classification. Sources: UNESCO (2019) and The World Bank (2019)

5. Human Resources

5.1 What is the organizational structure?

Early in my career as a central administrator, I was chatting with a senior faculty member, excitedly describing the facilities, coordination and support services that my unit provided to campus. He wasn't buying it, and his inner curmudgeon kicked in as he said, "Humph, I don't need all this extra stuff that wastes money, I can teach my students with just a table and chairs on the lawn." At the time I bit my tongue and didn't retort that he might need a tree to provide shade and shelter, not to mention all the invisible background support required to enable his supposedly administration-free fantasy. I've thought about our conversation many times since then, and from it I've developed a useful visual metaphor of how the supporting services of a university (boringly known as administration) support the core activity of learning: I imagine a silhouette in the style of a Japanese woodblock print, containing a student and teacher at the focal point under a tree, with its branches reaching over them to provide shade and its roots extending below, invisible to them but vital nonetheless.

While that image may be sentimental (and probably more appealing to support staff than faculty members), there are indeed many visible and not-so-visible functions that are necessary to enable the effective operation of a contemporary university. In most universities, budgets and people are organized in a more-or-less standard structure of functional units, each one typically a vice-presidential division reporting to the president (Figure 5.1). Naturally, academic affairs are the raison d'être for the university and this area includes all the colleges, schools and departments from Anthropology to Zoology, as well as services directly supporting the faculty and academic programs such as libraries and online education. Student affairs include recruitment and admissions as well as many co-curricular aspects of student life such as clubs, health, and residence halls. The research office is well-known in many academic units because it is the source of startup funds to help faculty obtain external research support, but in addition to supporting research with funds and services it also has an extensive set of compliance functions (human subjects protection, data privacy, animal care, laboratory safety, financial conflict of interest management, and more). In many institutions the Provost oversees the academic, student and research areas. The finance and facilities division manages

 https://doi.org/10.11647/OBP.0240.05

the institution's money, major capital projects and physical facilities (buildings, grounds, utilities, etc.). If the university has a hospital or works closely with one, there is typically a division handling the health sciences and it may include academic health programs (e.g., medicine, nursing) if they are not under academic affairs. Large athletic programs can include a dozen or more men's and women's sports in addition to their staff overseeing operations. The advancement area typically includes alumni relations and the fundraising operation. Finally, there are numerous other smaller administrative offices—a few examples of those are included in Figure 5.1.

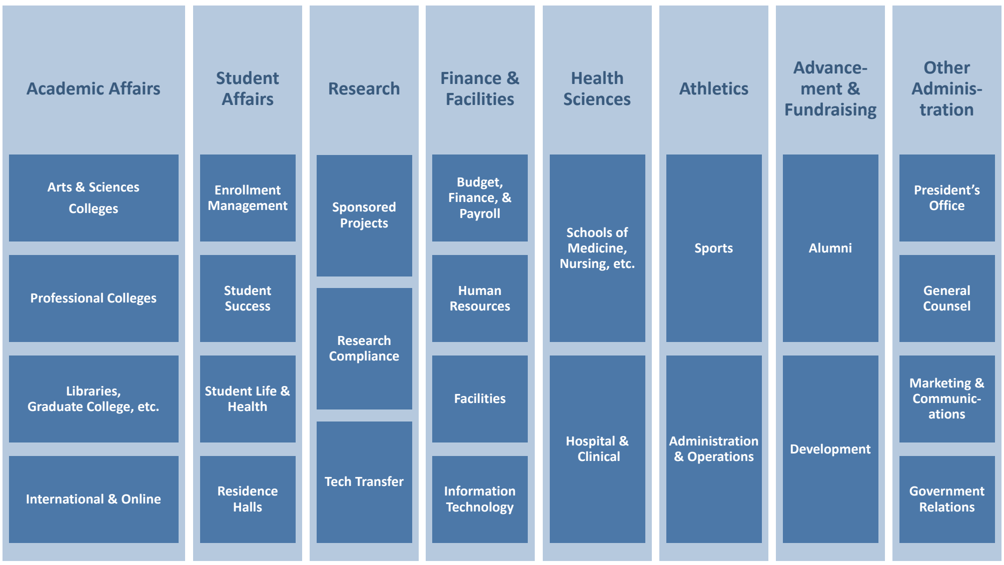

Figure 5.1. A generalized high-level functional organizational structure for a large research university, showing the major vice-presidential areas and selected subareas within each. These major divisions are the fundamental management, budget and employment units of the institution.

As we saw in Chapter 3, employees and their benefits are the largest investment that a university makes every year. The human resources division often resides in the area overseeing business and financial operations, and its functions include employee recruitment and hiring, onboarding, compensation, payroll, training and compliance, and organizational development and effectiveness. The remaining sections in this chapter review the basic financial elements of the university's human resources: the number and types of employees working on campus, their associated salaries and benefits, and related trends. In other words, in this chapter we'll cover people and then in all the subsequent chapters of the book we will cover what they do, mirroring the organizational structure.

5.2 How many employees are there?

The Carnegie classification is tied to institutional size, and thus it is no surprise to see a clear scaling by number of employees across those categories (Figure 5.2). At the broadest level it is useful to group staff into full-time and part-time, instructional (including faculty) and non-instructional, as well as medical and non-medical. Staff numbers and salaries in medical schools are sufficiently high that they can skew the summary data despite being present in less than 10% of institutions overall. Medical schools are clustered principally in R1 institutions, with R1 privates having a higher proportion and therefore more medical employees (almost one third of the total) on average than at R1 publics.

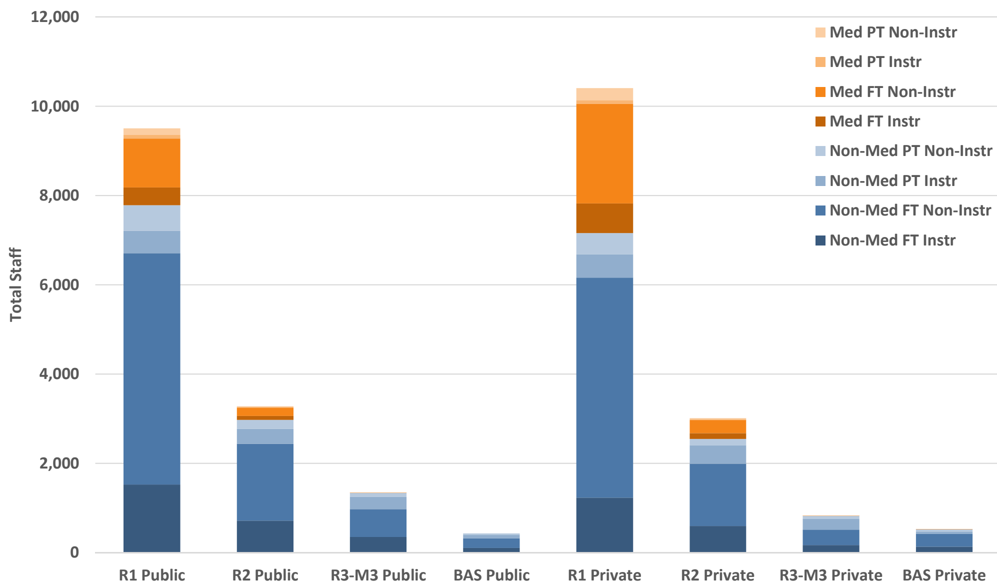

Figure 5.2. FY2018 employee headcount by full-time (FT) and part-time (PT) status as well as instructional and non-instructional position, for medical and non-medical staff, all averaged by Carnegie classification and control. Source: IPEDS (2020).

Looking further at Figure 5.2, full-time employees make up 80% or more of the total at R1 and R2 schools and at private baccalaureate colleges, while that percentage is in the lower 70s at the smaller publics, and a little over 60% at the R3-M3 privates (parallel to their challenging financial position). Across almost all types of institution, non-instructional staff are in the majority, around three quarters of the total at the bigger schools and closer to one half at the smaller schools. Furthermore, non-instructional staff are mostly full-time (84% to 91% across types of schools). Among the instructional staff, part-time employees are more common. While part-time lecturers and instructors form less than one quarter of all instructional staff at R1 schools, their representation approaches and even exceeds half of all instructional staff at smaller institutions (see Section 5.6).

The total number of campus employees has been growing steadily (Figure 5.3) and is up 22% over the last sixteen years, although the COVID-19 pandemic has led to employee reductions (Bauman 2020). Within that overall growth, the number of full-time and part-time faculty has increased, as has the number of full-time support staff, although the number of part-time support staff has decreased slightly. The share of instructional to non-instructional staff has remained almost flat, with all instructional staff increasing slightly from 29% to 30% of total employees over this period.

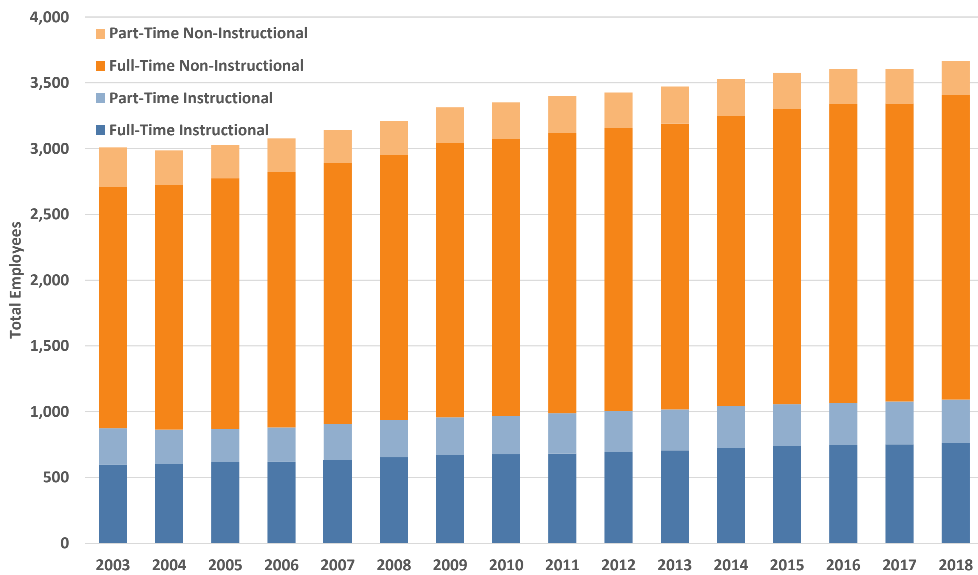

Figure 5.3. Unadjusted trends in employee headcount by full-time and part-time status as well as instructional and non-instructional staff, averaged across all eight types of institution by fiscal year. Source: IPEDS (2020).

To properly evaluate the trend in employee numbers, we must account for student enrollment growth. Once we make that adjustment, we see that the ratio of employees per 1000 students[1] has remained essentially unchanged over the data period (Figure 5.4) at about 200 on average for non-instructional staff, and increasing slightly from about 80 to 85 for instructional staff. Overall then, the number of employees has simply scaled with enrollment growth over time. However, within that essentially flat trend there are noteworthy patterns in employee trends among the various types of institutions, which we will explore in the rest of this chapter.

1 The astute reader will notice that employees per 1000 students is simply the inverse of students per employee, a common metric often focused on the faculty as students per faculty member. I've used the former configuration in this chapter to keep the focus on adjusted employee trends.

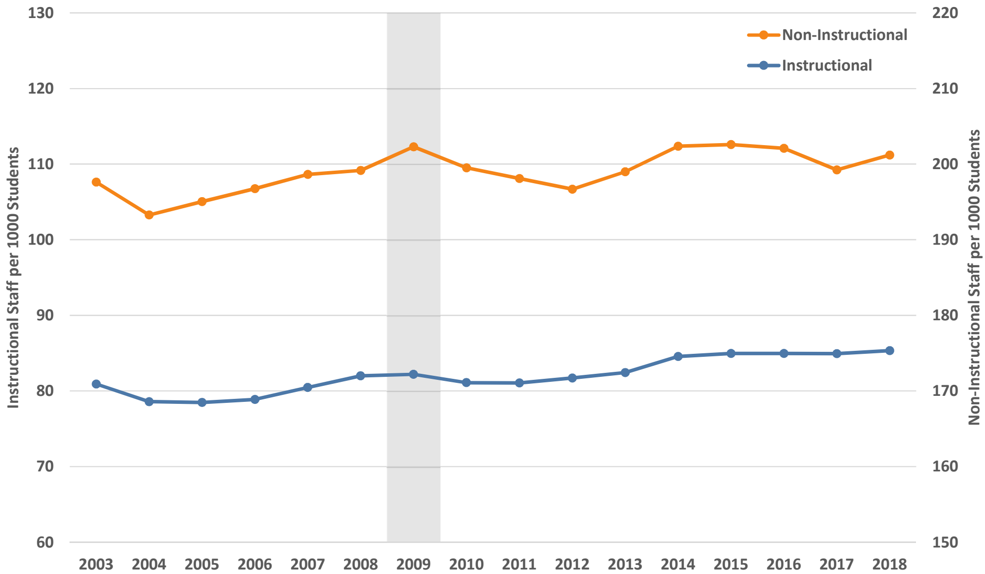

Figure 5.4. Trends in instructional and non-instructional staff adjusted by total fall student enrollment, expressed as staff per 1000 students, averaged across all eight types of institution by fiscal year. Source: IPEDS (2020).

5.3 How much are employees paid?

Average FY2018 salaries for full-time non-medical staff are illustrated in Figure 5.5 with a comparison of instructional versus non-instructional salaries by type of institution, using the typical contract lengths of nine months for academic appointments and twelve months for other staff. Instructional staff (which includes the professorial faculty ranks as well as lecturers and instructors) are paid more than non-instructional staff on average, presumably because of national market forces related to specialization and advanced degree requirements. Instructional staff members are also paid relatively more at the bigger publics and privates. In general, the pay at private institutions is higher at comparable sizes of schools across instructional and non-instructional staff, again except for the R3-M3 privates where the pay is about the same as at the corresponding publics. The salary premium at private institutions averages 17% more for instructional staff and 14% more for non-instructional staff. For the average instructional staff salary, there is a notable difference of more than $35,000 per year between R1 publics and privates. Further details on faculty salaries are covered in Section 5.7.

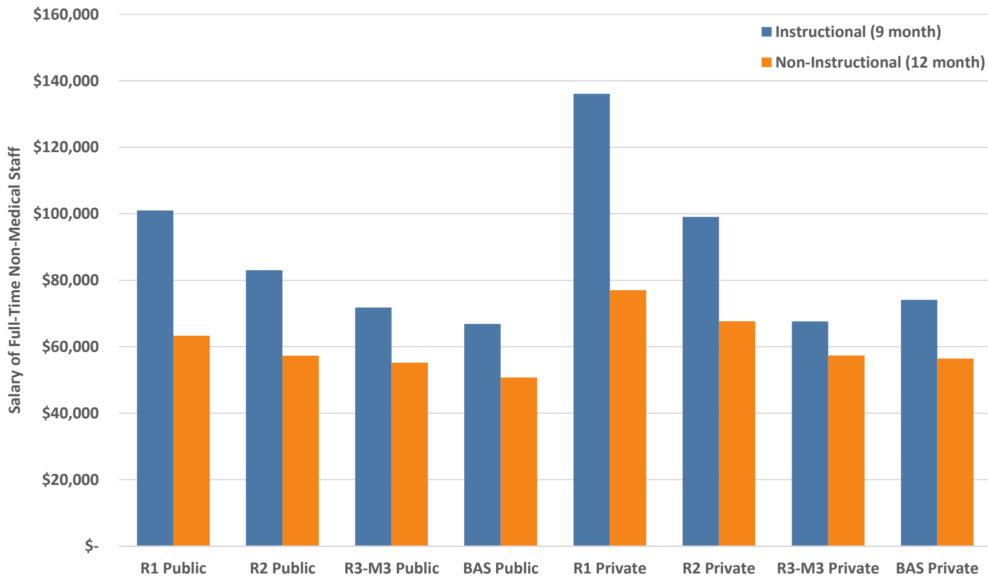

Figure 5.5. FY2018 salaries of full-time non-medical staff, averaged by Carnegie classification and control. Annual amounts are for the typical contract period with instructional staff salaries equated to nine months and non-instructional salaries for twelve months. Source: IPEDS (2020).

5.4 What is the size of the faculty?

As I noted previously, the Carnegie classification is closely related to overall institution size, and so we see the size of the instructional staff being largest at R1 universities and smallest at baccalaureate colleges (Figure 5.6). A quick technical note: the faculty can include non-instructional members (e.g., those focused on research), so the term instructional staff is more precise, although at the level we're examining there isn't much practical difference between the two and we can use the faculty as shorthand. Returning to Figure 5.6, at most types of institution there are roughly similar proportions of the three professorial ranks and fewer lecturers and instructors. However, at R1 schools there is a remarkable sliding proportion of headcounts by rank, with more full professors and successively fewer members of each lower rank. The reason for this stark difference is unclear but, given that this is an R1 phenomenon only, it is likely a function of higher research activity. The three professorial ranks total 78% of the total across all institutions, a remarkably consistent percentage that varies only by a few percentage points across institution types. Note that this observation is for full-time positions, and that there are higher proportions of part-time instructional positions at smaller schools as detailed in Section 5.6.

Box 5.1. Faculty Titles: A Primer for the Uninitiated

Faculty job titles can seem confusing to those unfamiliar with the practices of the academy. Ironically, for institutions that are such bastions of egalitarianism, the formal hierarchy of earned and ranked job titles and the implicit campus class structure they produce are remarkable. The basic structure is simple enough, with three faculty ranks for those who are tenured or on the tenure track (Figure B5). Professors are the most senior and, because "professor" is also a generic term for anyone teaching at a university, for precision we talk about Full Professors. Associate Professors are in the middle rank, and Assistant Professors are the most junior of these three. Typically, but not always, the upper two ranks have achieved tenure while Assistant Professors are working towards it (see Chapter 6 for more on tenure). Faculty members not on the tenure track, also known as the contingent faculty, have various job titles, the most common being lecturer and instructor for teaching, with various titles for researchers, librarians and other specialists. Their appointments may be multi-year, one-year, less than a year, by course or project, as well as full-time or part-time.

Where things get confusing is the plethora of modifiers. We have honorary titles such as Distinguished and Regents' Professor, and endowed chair titles such as the John Smith Professor of XYZ. There are Professors of Practice (often practitioners whose primary job is not on campus, but sometimes core faculty by another name), and Clinical, Research and Teaching Professors, who may be tenure-track or contingent depending on the institution. Visiting Professors of various ranks may indeed be visiting for a semester or a few weeks every year, paid or unpaid, or may be local contingent faculty. Some individuals may have split appointments across multiple departments and others may have courtesy titles in cognate fields that variously might be called Joint or Dual Appointments. We also have titles such as Adjunct Professor, a poorly-defined term that may or may not signal contingent and/or part-time or class-by-class status. To cap things off, titles can be combined to obtain inscrutable ostentations such as the Jane Doe Distinguished Clinical Research Professor of Underwater Basket Weaving!

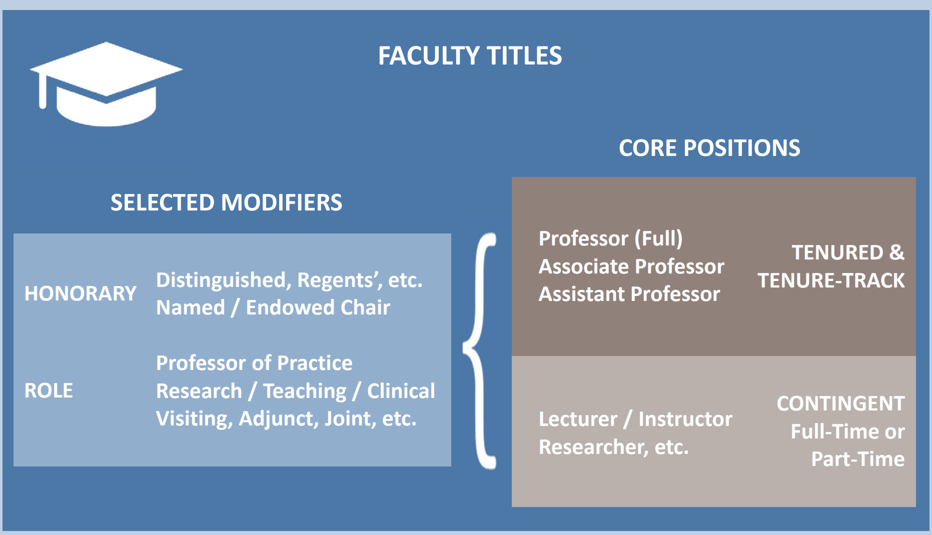

Figure B5. Simplified typology of faculty titles at US universities.

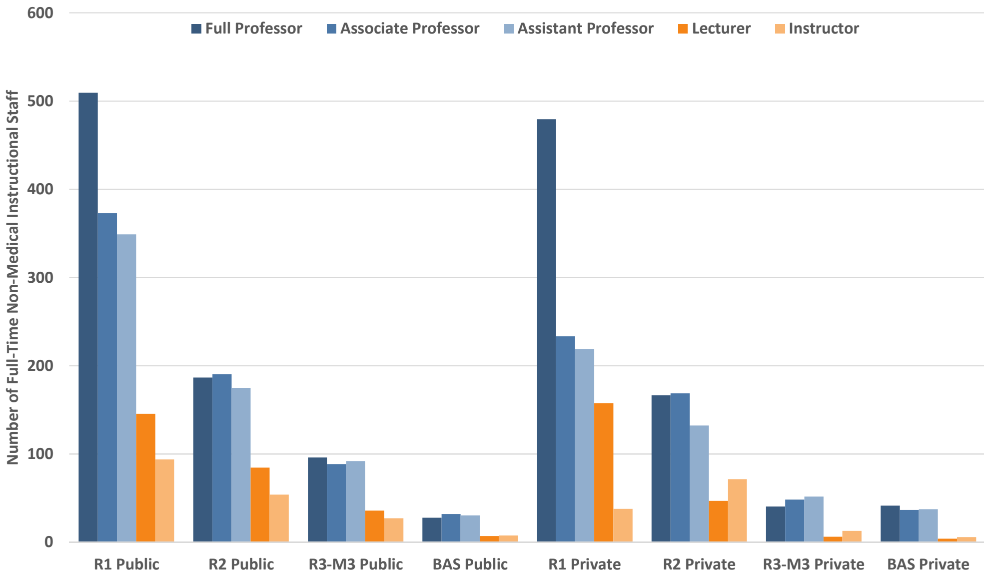

Figure 5.6. FY2018 counts of full-time non-medical instructional staff, averaged by Carnegie classification and control. Source: IPEDS (2020).

There are several key differences among the trends in instructional staff size when we break the data out by type of institution (Figure 5.7). The first pattern to note is that the number of full-time faculty members per 1000 students (i.e., adjusted for enrollment

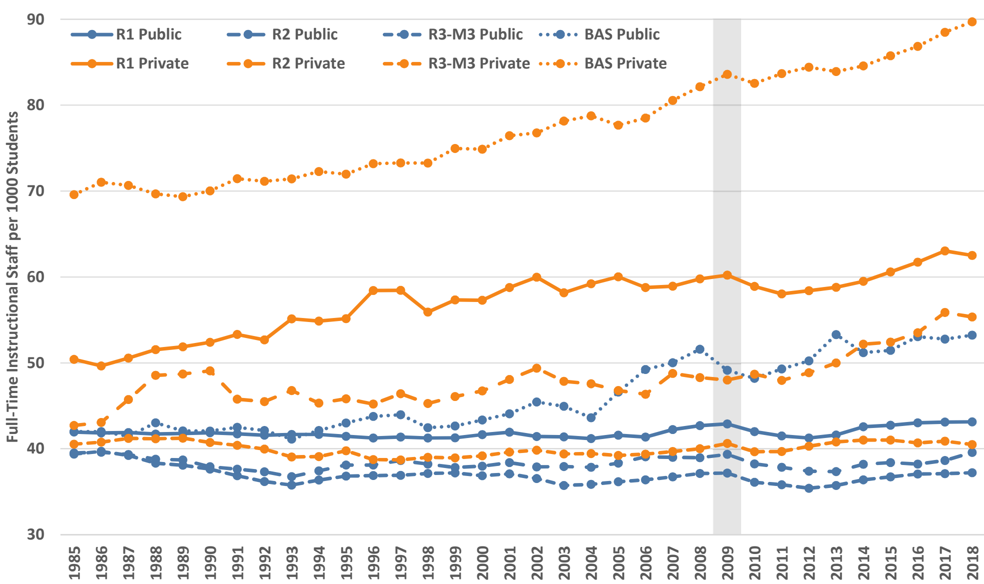

Figure 5.7. Trends in full-time instructional staff adjusted by total fall student enrollment per fiscal year, expressed as instructional staff per 1000 students, averaged by Carnegie classification and control. Source: IPEDS (2020).

growth over time) is generally lower at public institutions than privates. The second notable pattern is that the trend in adjusted faculty size has been flat for several decades at the larger publics and the R3-M3 privates, while it has been increasing relative to enrollment at the R1 and R2 privates, as well as both public and private baccalaureate colleges. Recall that at the latter small colleges, enrollments have been relatively flat and even decreasing, so some if not all of the increase in faculty ratio is attributable to a change in the denominator. Generally, though, after adjusting for enrollment growth the full-time faculty to student ratio at most publics has remained about the same size, while it has grown (albeit modestly) at an annualized rate of 0.5% to 0.8% at most privates.

5.5 How has faculty composition changed by rank?

The mix of faculty ranks relative to each other began shifting noticeably in the late 1990s (Figure 5.8). Looking across all institutions, the percentage of full professors declined from 35% two decades ago to 29% of the instructional faculty in recent years, while at the same time the percentage of lecturers and instructors rose from 5% to 13% and 9% respectively. The percentage of associate and assistant professors has remained relatively level by comparison, varying by a few percent at or above the 25% level. This is an interesting case in which the Great Recession that hit in FY2009 was not the initial force for change. Instead, the long economic expansion that had been underway since the postwar years ended with the recession of the early 1990s. This period saw increased unemployment and an extended real estate slump,

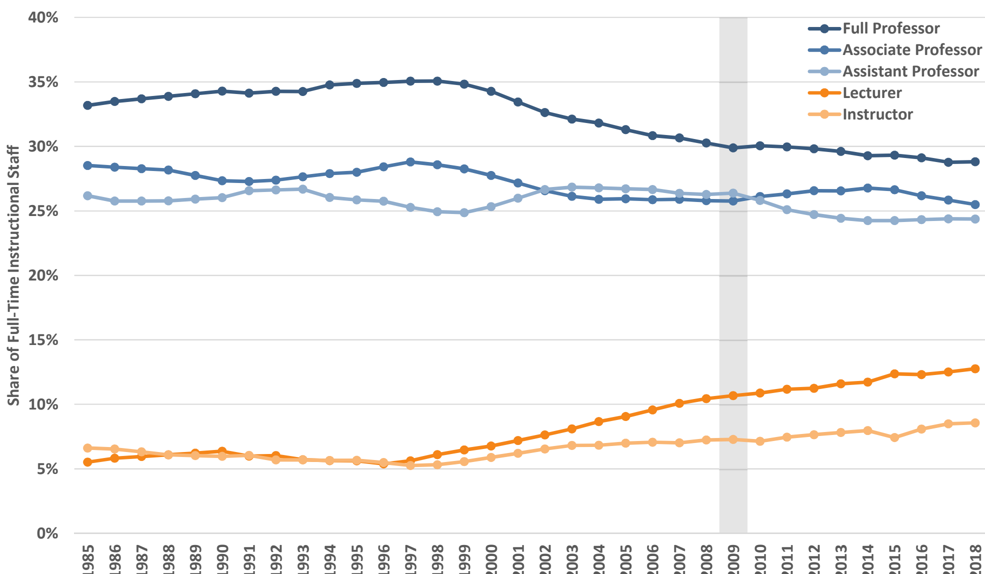

Figure 5.8. Trends in percentage share by rank of full-time instructional staff, averaged across all eight types of institution by fiscal year. Source: IPEDS (2020).

multiple years of state budget cuts at the publics and lower market returns for the privates, that together partly catalyzed universities to shift their hiring patterns. Two related elements were at play, the first simply being less money and the second being uncertainty about future funding, so that money freed up by retiring senior faculty members was more likely to be deployed in hiring non-tenure track faculty (i.e., those with shorter-term contracts and lower budgetary obligation) than in growing the junior ranks of the tenure-track faculty.

These broad patterns occurred in institutions of all types and sizes, but naturally there are some differences among them. The net change in percentage share of each rank is illustrated for our eight institution types in Figure 5.9. The decrease in the proportion of full professors occurred across all types of school, although it was less at the privates (except the R2 privates) and more at the publics (except the public baccalaureate colleges). Likewise, the growth in proportions of lecturers and instructors has been ubiquitous, although relatively more at larger universities and less at smaller schools where those proportions were slightly higher initially (except for private baccalaureate colleges, where the proportions of all ranks have shifted the least of any type over time). The overall trends of relatively fewer full professors and relatively more non-tenure track faculty do not appear to have ameliorated in recent years. Given that the relevant financial pressures on institutions have not diminished, these trends in the composition of the faculty will presumably continue for the foreseeable future.

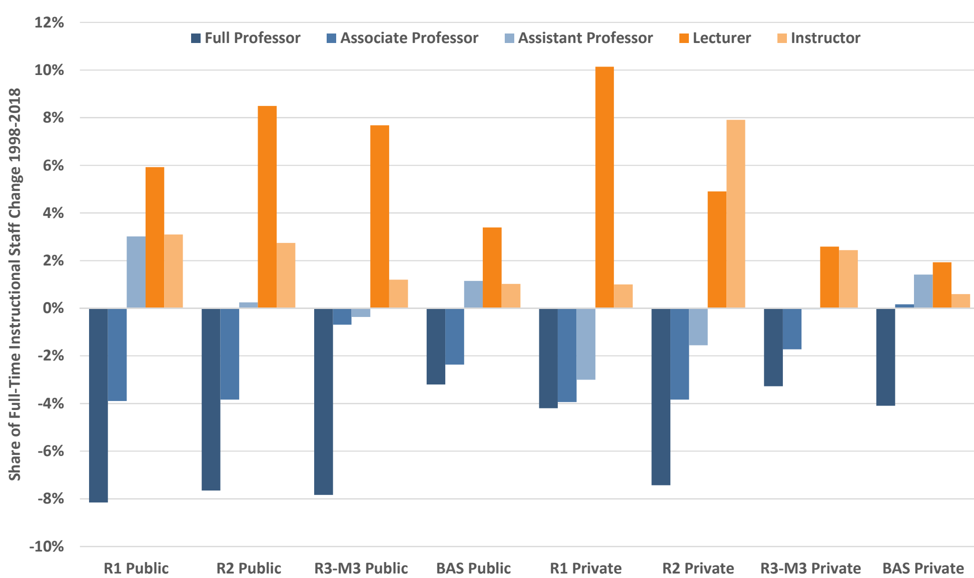

Figure 5.9. FY1998–FY2018 change in percentage share by rank of full-time instructional staff, averaged by Carnegie classification and control. Source: IPEDS (2020).

5.6 What is the proportion of part-time faculty members?

Part-time faculty members currently make up almost 60% of the faculty at private R3-M3 schools, a far greater proportion than at any other type of institution (Figure 5.10). The next largest percentage is 44% at the R3-M3 publics. These two categories together comprise almost two thirds of all institutions in our data set (see Figure 1.2 in Chapter 1) and thus part-time faculty form a substantial part of the overall faculty at most of the nation's universities. In contrast, however, the share of part-time faculty at public and private R1 universities is 22%. These dissimilarities relate to the tuition-dominated revenue portfolios of the smaller teaching-oriented schools versus the diverse revenue streams at large research universities. Importantly, and not in Figure 5.10, R1 and R2 schools have graduate teaching assistants that partially offset their lower part-time faculty numbers. By necessity, financial pressures at teaching and tuition-dominated institutions will incentivize lowering the cost of education, most of which is labor cost (including support-staff labor, not only instructional labor). A revealing indicator in this regard is the number of credit hours taught by various types of faculty members (Geiger 2011), with part-timers among the highest when pro-rated. It follows that cost savings in instructional salaries and benefits from part-time appointments have been found across all types of institutions and over time (Hurlburt and McGarrah 2016a).

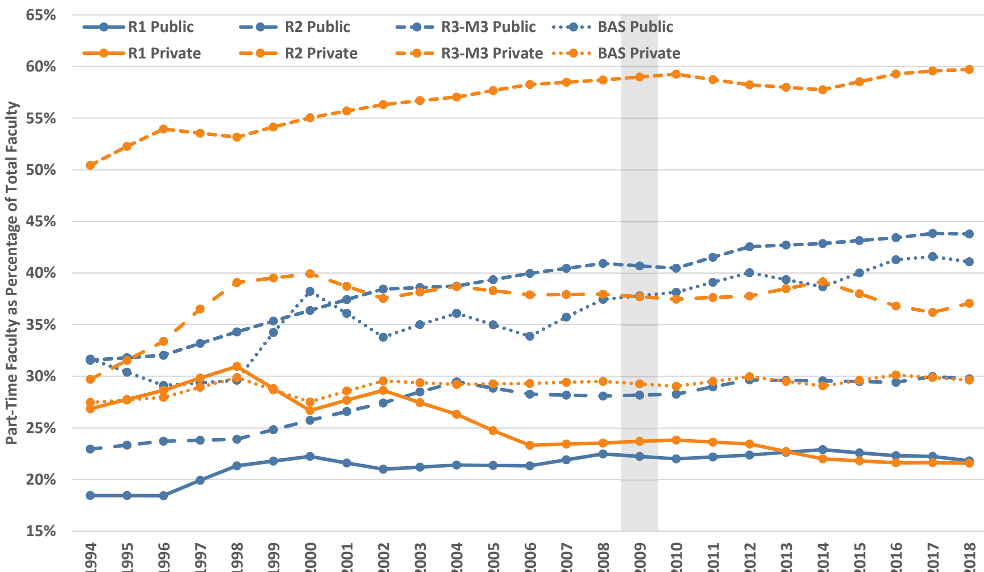

Figure 5.10. Trends in part-time instructional staff as a percentage share of total instructional staff, averaged by Carnegie classification and control per fiscal year. Complete data are unavailable for odd years FY1995–FY2015; those values are interpolated from neighboring even years. Source: IPEDS (2020).

There have been widespread increases in the share of contingent (non-tenure track) faculty more generally, and part-time appointments in particular, that have been widely commented upon and studied (American Association of University Professors 2019a; Hurlburt and McGarrah 2016b). As with the non-tenure track faculty (see Section 5.5), significant trends in the relative share of part-time faculty were underway in the 1990s at all types of institution and their growth rivaled that of lecturers and instructors until roughly the turn of the millennium (Figure 5.10). Over the two decades since then, the proportion of part-time faculty has been relatively flat at the larger universities and at private baccalaureate colleges (and has decreased at R1 privates), with ongoing slower growth at the smaller publics.

We can look further back in time using broader data for all four-year and two-year postsecondary institutions to gain some perspective (Figure 5.11). The growth in the percentage of part-time faculty has three distinct periods, a steep rise in the 1970s, followed by slower and mostly steady growth for three decades from the 1980s through the 2000s (with some variability in the early 1990s that may relate to a change in data collection), and most recently an unprecedented decline since the 50% peak in FY2012. What is driving these patterns, in general and by institution type? The 1970s saw record enrollment growth (see Figure 4.13), much of which was absorbed at two-year community colleges, while investment returns from the market shrunk for the privates and state spending per student flattened and became more volatile for the publics. Higher education's glory days of funding were over and one way that institutions coped was to hire an increasing share of part-time faculty members. The

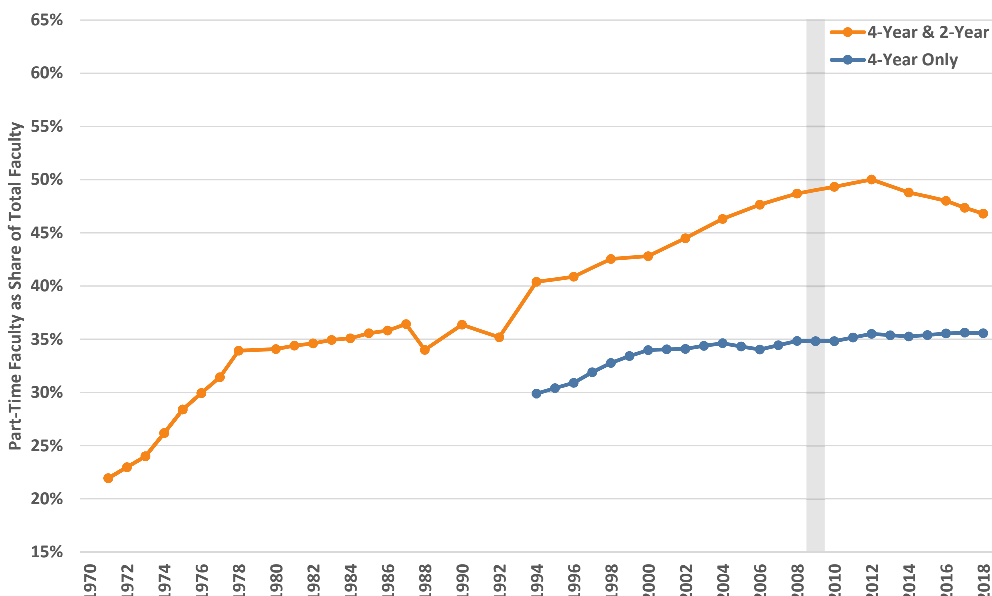

Figure 5.11. Trends in part-time faculty as a percentage of total faculty across all degree-granting postsecondary institutions (four-year and two-year) and averaged for all institutions in Figure 5.10. Sources: NCES Digest (National Center for Education Statistics 2018c) and IPEDS (2020).

financial pressure to keep costs down along with the year-to-year uncertainty have been present ever since, along with the further rise in part-time teaching positions. Those institutions that rely most heavily on tuition revenue have felt these forces the strongest, and they are the ones with the highest proportion of part-time faculty. We don't see the recent declining trend in our four-year only dataset (Figure 5.11); it represents a shift only at two-year colleges where the entire faculty has shrunk by 18% from FY2012 to FY2018 (National Center for Education Statistics 2018b)!

5.7 How much do the faculty earn?

Salaries across the academic ranks increase as expected from junior to senior positions, with assistant professor salaries averaging 60% to 70% of full professor salaries and instructors being paid about 50% of what full professors receive on average, depending on institution type (Figure 5.12). These average data obscure the considerable salary differences across disciplines; we'll cover those in Chapter 6. Overall, the highest salaries are paid at private institutions and pay across public institutions averages 14% below that at the privates. Private-public percentage differences in salary by rank and institution type are highlighted in Figure 5.13. The dichotomy between public and private salaries is strongest at R1 schools, especially for full professors at public R1 universities, who make 26% less that than their private counterparts. The private-public salary imbalance at the R1 and R2 institutions has worrying implications for the locus of top research talent and it fuels a brain-drain that could undermine the historic strength of the nation's public research universities (see Chapter 8 on research). The

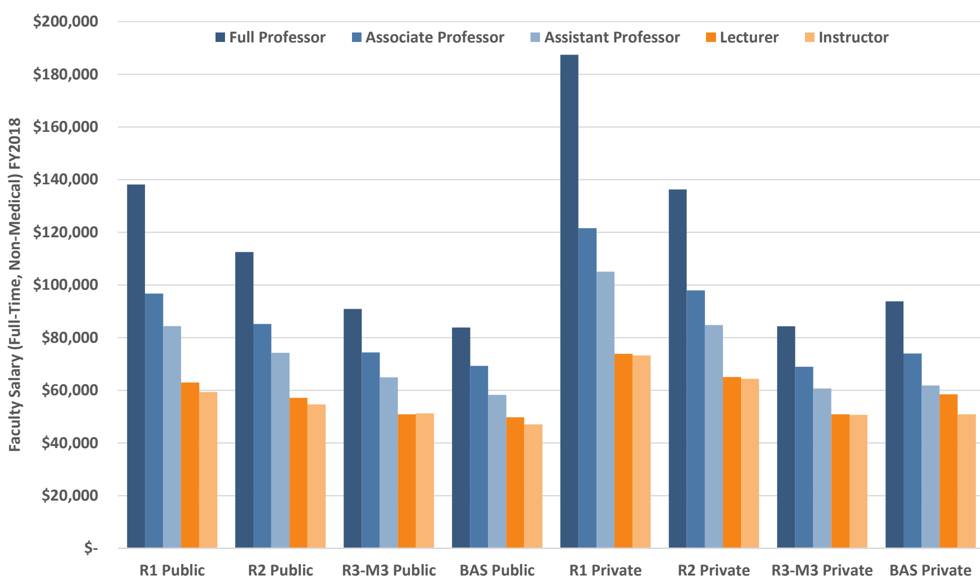

Figure 5.12. FY2018 nine-month equated salaries of full-time non-medical instructional staff, averaged by Carnegie classification and control. Source: IPEDS (2020).

interesting exception is again the set of R3-M3 private institutions, which pay their professors about 8% less than their public colleagues while paying lecturers and instructors about the same as at the publics.

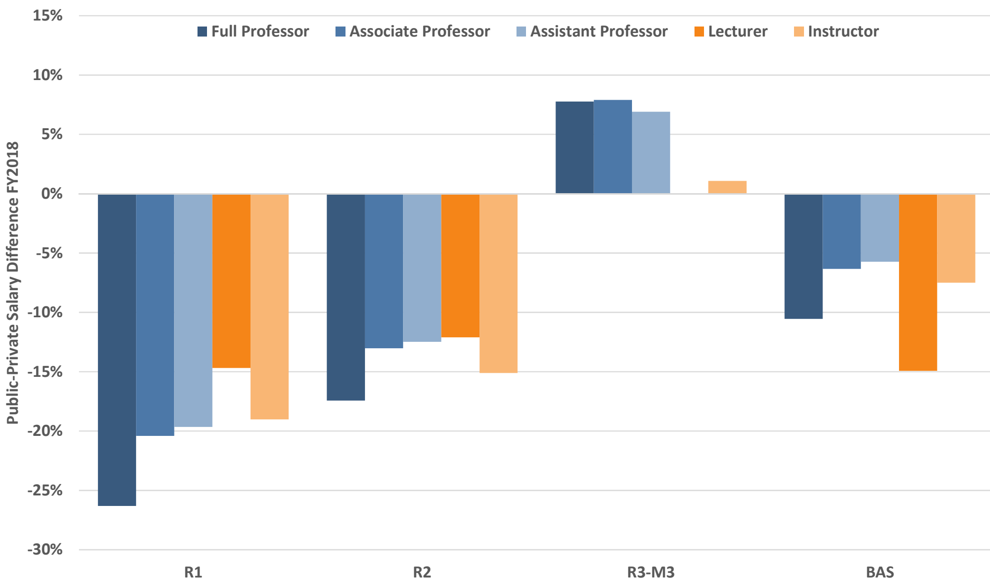

Figure 5.13. FY2018 percentage differences of nine-month equated salaries of full-time non-medical instructional staff at public institutions as compared to private institutions, averaged by Carnegie classification. Source: IPEDS (2020).

Overall, the increase in private university faculty salaries as compared to their public colleagues has been attributed to the relatively higher tuition increases at the privates (Ehrenberg 2002). The growing salary ranges as one moves from smaller to larger institutions is primarily tied to the growing spread of state appropriations per student across the publics and a counterpart expanding spread in endowment per student levels across the privates (Ehrenberg 2002). Also, the same work controlled for other factors and holding them constant found that universities with the most growth in inflation-adjusted research expenditures per faculty member from institutional funds had the largest increase in their student-faculty ratio (Ehrenberg 2002).

In the decades before the Great Recession, inflation-adjusted faculty salaries at all ranks rose steadily except for a flatter period of a half-dozen years during and after the early 1990s recession (Figure 5.14). In contrast to more than a quarter-century of general salary growth leading up to FY2009, faculty salaries averaged by rank across all institutions have been flat for the decade since then. However, within that average austerity are some remarkable salary trends by institution type and rank, illustrated in Figure 5.15 as percentage changes from FY2009 to FY2018. At smaller schools, both public and private, all ranks saw decreases of between 2% and 8% in their inflation-adjusted salaries. The opposite occurred at R1 and R2 private institutions, where all ranks received increases of 1.5% to 8%, while the trends were smaller and mixed across ranks at R1 and R2 publics.

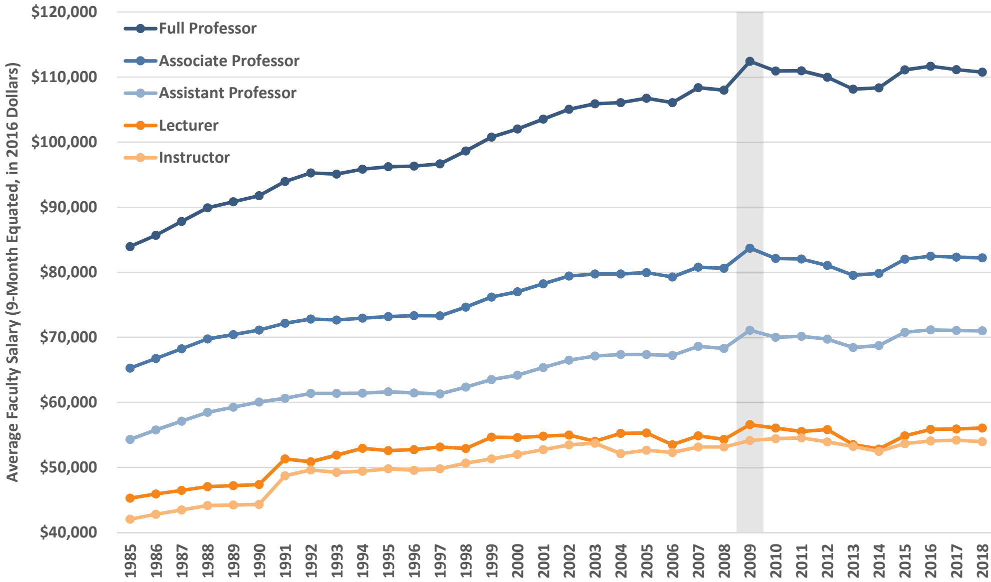

Figure 5.14. Trends in average inflation-adjusted faculty salaries by rank, equated to a nine-month contract, averaged across institution type by Carnegie classification and control. Source: IPEDS (2020).

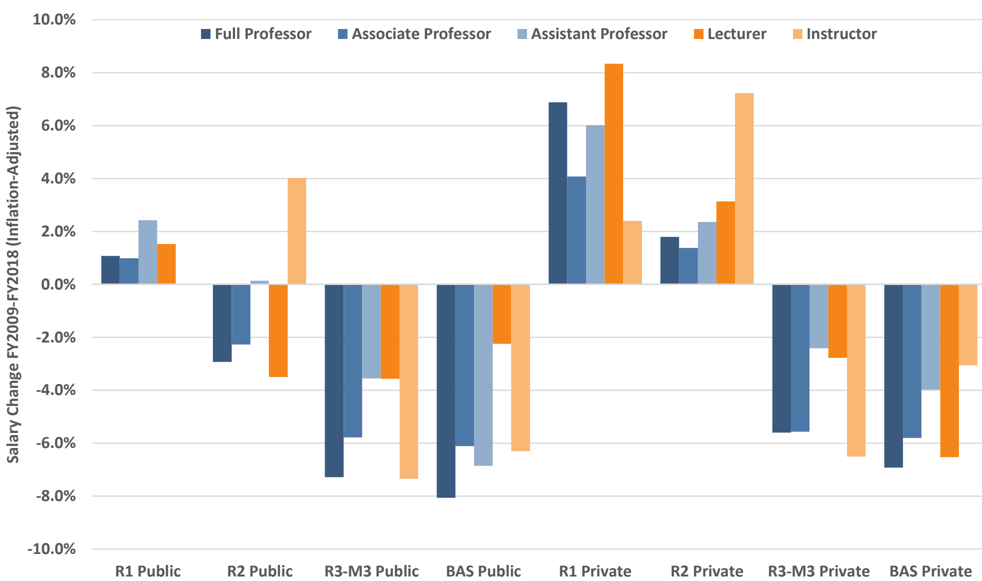

Figure 5.15. FY2009–FY2018 percentage change in average inflation-adjusted faculty salaries by rank, equated to a nine-month contract. Source: IPEDS (2020).

The growth in salaries from FY1985–FY2009 averaged 31% for tenure-track faculty (34%, 28% and 31% respectively for full, associate and assistant professors) while it was slightly lower at 27% for non-tenure track faculty (25% and 29% respectively for lecturers and instructors). On the other hand, average full and associate professor salaries declined by about 2.5% from FY2009 to FY2018, while salaries for assistant professors, lecturers and instructors decreased less. by roughly 0.5% to 1%.

5.8 What are the types of support staff and their salaries?

As we saw in Section 5.2, most university employees are not on the instructional staff, and instead they work in many kinds of support positions. To provide a sense of the wide range of support staff positions on campus, the IPEDS non-instructional staff categories and some example occupations in each are listed in Table 5.1.

Table 5.1. Non-instructional support staff categories and selected examples of occupations and fields. Sources: IPEDS (2020) and US Bureau of Labor Statistics (2010).

Category	Example Occupations & Fields
Research	Researchers (Non-Instructional) in all disciplines
Public Service	Agricultural Extension; Clinical Services; Continuing Education
Librarians, Curators & Academic Support	Librarians; Curators; Archivists; Academic Affairs & Other Education Support (Non-Instructional)
Management	Chief Executives; Vice Presidents; Executive Directors & Directors; Managers of Operations, Marketing, IT, Purchasing, Transportation, Human Resources, Food Service
Business & Finance	Accountants; Auditors; Budget Analysts; Benefits Specialists; Compliance Officers; Financial Analysts; Fundraisers; Meeting & Event Planners
IT & Technical	Computer Systems Analysts, Developers & Programmers; Architects; Engineers; Life, Physical & Social Scientists
Community, Legal, Arts & Sports	Community & Social Service; Legal; Arts, Design, Entertainment, Sports & Media
Healthcare Practice	Physicians, Nurses, Therapists, Counselors, Pathologists, Veterinarians, Laboratory Technicians
Service	Healthcare Support; Security; Food Preparation & Serving; Building & Grounds Cleaning & Maintenance
Sales	Retail Workers, Cashiers, Sales Representatives, Telemarketers
Office & Administrative Support	Clerical Assistants; Records Clerks; Executive & Administrative Assistants; Postal Services; Receptionists
Natural Resources, Construction & Maintenance	Farming, Fishing & Forestry; Construction; Installation, Maintenance & Repair
Transportation & Production	Bus, Car & Truck Drivers; Machine Operators; Carpenters; Painters

The number of non-instructional support staff in each of the major job categories is roughly consistent at public and private institutions (Figure 5.16). The biggest staff categories are office support, IT, management, business and service. Public institutions have slightly more staff on average across institution types. The larger research-focused institutions have relatively more staff in research, business/finance, and IT/technical roles than the smaller schools, which is what we might expect given their missions.

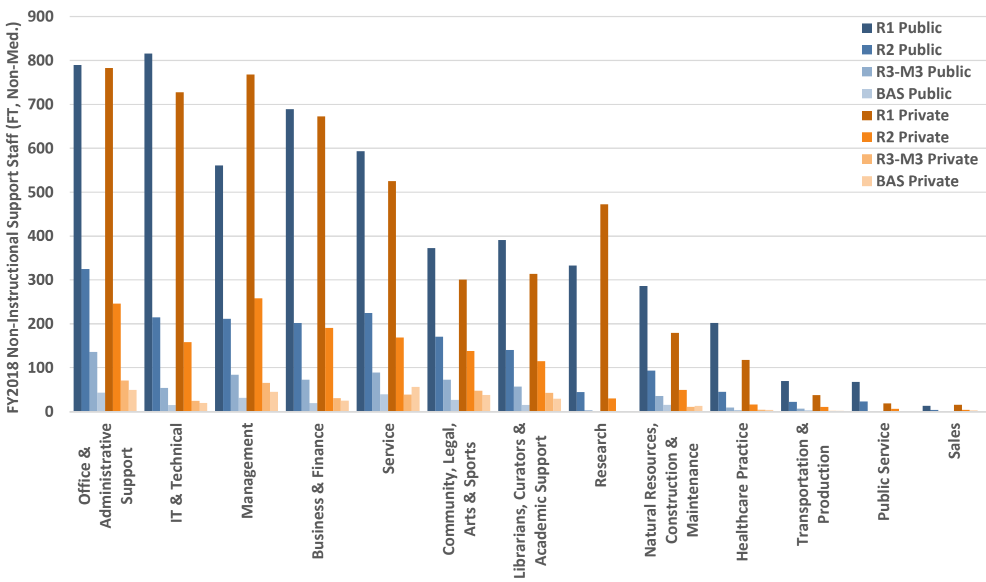

Figure 5.16. FY2018 counts of non-instructional support staff (full-time, non-medical) by type, averaged by Carnegie classification and control. Source: IPEDS (2020).

Support staff salaries are not available by rank or seniority except for those in management roles. As one would expect, managers earn more than regular staff members, with managers averaging over $100,000 per year and regular staff averaging in the $40,000 to $60,000 range (Figure 5.17). The higher-earning fields on average include research, IT/technical, and business/finance, while office support, sales, and service occupations are at the lower end. Unsurprisingly, public institutions pay staff less than the privates, averaging 7% lower across the board, and ranging from twice that difference between R1 schools to 2% less at R3-M3 private schools (likely indicative of the financial stress at those institutions that we've noted multiple times).

IPEDS only began collecting detailed salary data for non-instructional employees in FY2013, so the trend data don't yet provide much information beyond looking like those for instructional staff. Average inflation-adjusted support staff salaries increased about 3% from FY2014 to FY2015, and by small amounts in the other years.

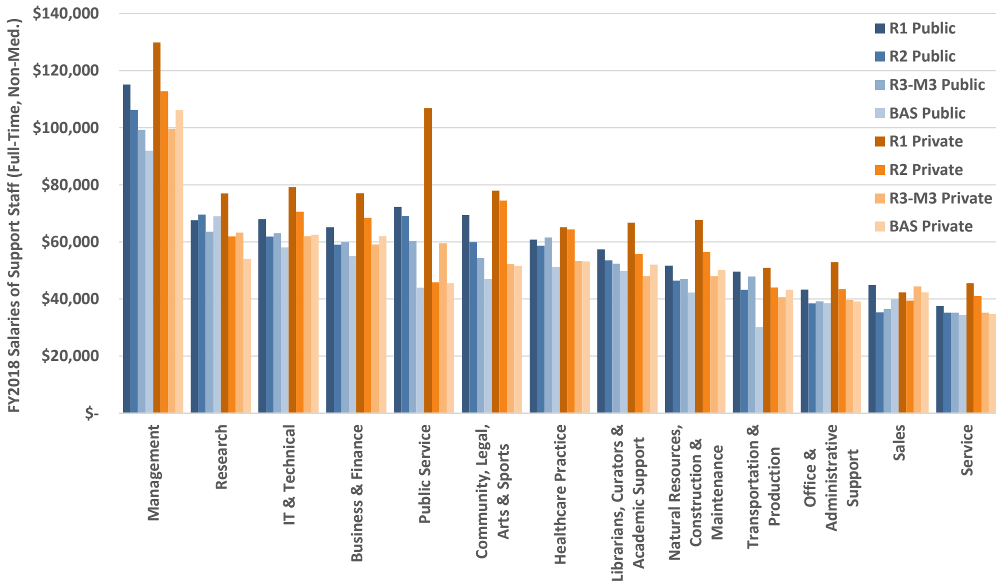

Figure 5.17. FY2018 twelve-month salaries for types of non-instructional support staff (full-time, non-medical), averaged by Carnegie classification and control. Source: IPEDS (2020).

5.9 Is administrative bloat a myth?

If ever you hear the phrase "administrative bloat," know that it works like chum in the water to get the sharks circling. This trope relies on the age-old mistrust the faculty has of administrators as misguided or even malicious instruments of corporatist power, and on the assumption that administrators have been proliferating for years, "wasting" money that could be used to hire more faculty members instead. In this particular context, an administrator is a well-paid individual in an academic managerial role such as a dean or vice provost, or a vice president in a non-academic administrative area like human resources or communications, i.e., higher administration. Rarely does the sense of the term extend to rank-and-file professional staff members carrying out their support roles in lower-level administration.

Administrative bloat in the sense above is a myth: higher administrators are not escalating relative to the faculty or students and have not done so for decades (Desrochers and Kirshstein 2014; Kelchen 2018). However, the relative numbers of professional support staff[2] have indeed been rising. These trends are made plain by the data in Figure 5.18, which shows that the number of executive administrators per faculty member has remained constant at about 0.3, while the number of professional support staff per faculty member has increased by almost half (0.7 to 1.0) in nearly two decades.

2 Professional staff positions require at least a bachelor's degree.

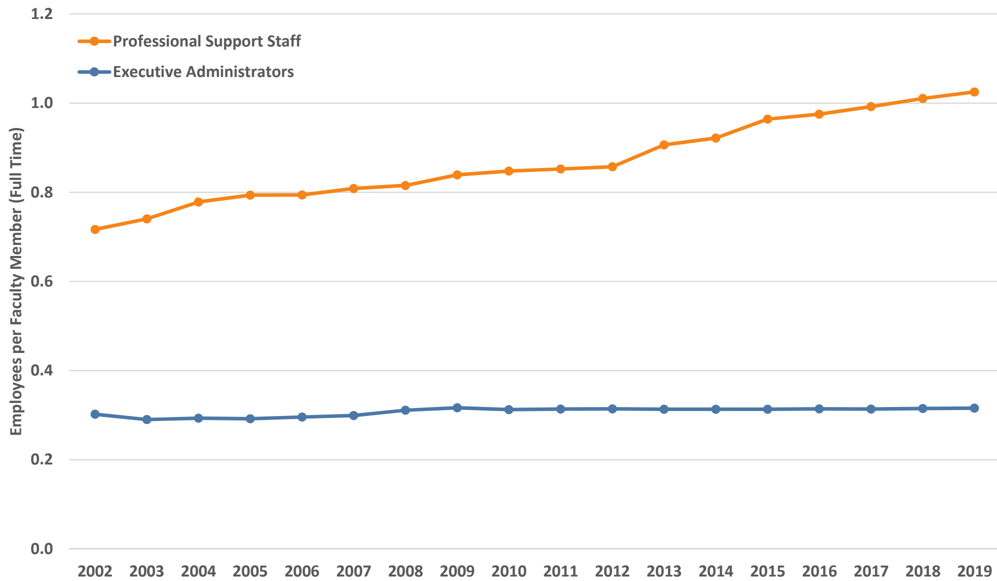

Figure 5.18. Trends in executive/managerial administrators and professional support staff per faculty member (all full time) averaged across all eight types of institution by fiscal year. Data categories changed in FY2013 and were aligned to the closest match. Source: IPEDS (2020).

The fastest-growing professional staff segment has been student support services (see more about those spending trends in Section 7.8). These positions include advisors, counselors and other professionals who, in some cases, perform duties that otherwise the faculty would have to do. In other cases, they serve in roles that didn't necessarily exist in prior decades and are now providing essential support that is expected by students and parents. This type of position has grown relative to other staff, which would at first glance appear to indicate "lower administration bloat," but that's not the whole story. Some other staff categories have shrunk over time, resulting in a relative balance in overall non-instructional staff proportions; recall from Figure 5.4 that the overall trends in all non-instructional staff have remained parallel to trends in instructional positions. So, while the two trends (flat higher administration and growing professional staff, especially in student services) might appear to be contradictory in relation to administrative bloat, they are not—the relative increase in professional staff is offset by relative decreases in other staff categories in relation to all instructional staff. What we have seen is simply a shift to a greater proportion of staff in the professional category relative to other staff positions, with all-staff totals remaining parallel to trend in instructional staff. Therefore, whether in its classic higher administration invocation or more broadly relating to non-instructional staff, administrative bloat is a false hypothesis that refuses to die. It is likewise a red herring in arguments about rising costs in higher education, which have structural causes as we saw in Section 3.7.

5.10 How do we account for graduate assistants?

Graduate assistants are distinctive in an accounting sense because they are a special kind of student-employee hybrid. A graduate assistantship is a form of financial aid awarded only to selected students on a per-semester basis to enable them to attend graduate school (an assistantship is not like a regular job for which anyone can apply). Yet, graduate assistants clearly perform work in teaching or research, typically half-time or less. Graduate assistants are completely different to regular staff members attending a graduate program who may receive qualified tuition reduction as an employee benefit, and whose job does not depend on satisfactory academic performance in the program. The hybrid nature of a graduate assistantship simultaneously enables many students to attend graduate school while providing academic labor to their program, the latter having sometimes led to labor relations disputes and efforts to organize, most recently at elite private institutions (Kroeger et al. 2018).

Graduate assistants are, needless to say, found at schools with graduate programs, and those are primarily R1 and R2 institutions (Figure 5.19). The teaching/research assistant percentage split is 57:43 at R1 publics and close to that at R2 public and private schools, but the split at R1 privates is exactly the opposite way around (43:57) with more research than teaching assistants. The typical graduate assistantship is awarded to a full-time research doctoral student (or research master's student) and rarely to graduate students in professional programs (e.g., EdD, MBA, MD) or part-time graduate students. Figure 5.19 also shows that the share of all full-time graduate students receiving assistantships

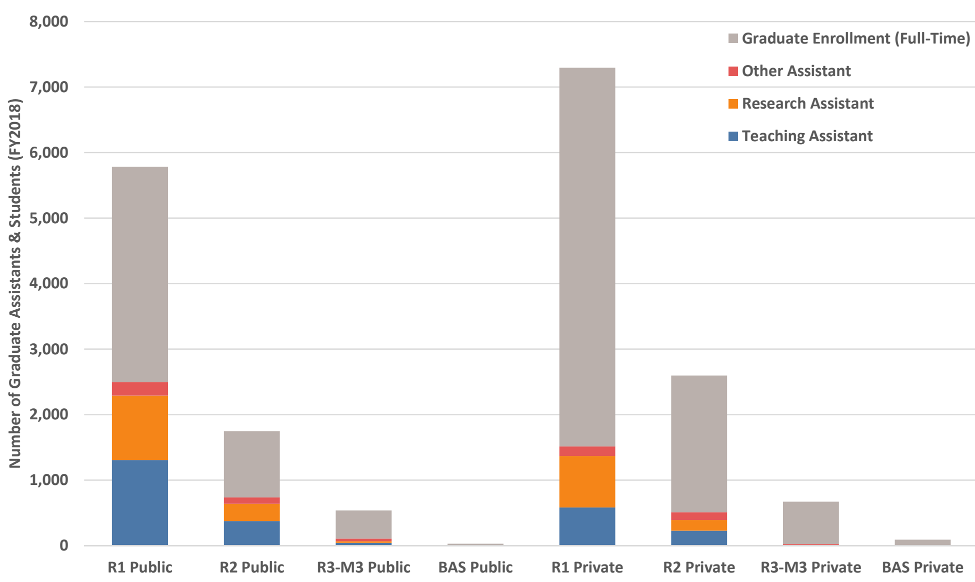

Figure 5.19. FY2018 total unadjusted counts of graduate assistants (teaching, research, other) as a share of full-time graduate student fall enrollment, averaged by Carnegie classification and control. Source: IPEDS (2020).

at public institutions is double the share at private institutions (43% versus 21%), which is due to a combination of factors at the privates: smaller undergraduate enrollments needing fewer teaching assistants, relatively larger graduate enrollments, especially in professional programs, and more self-paying graduate students.

Trends in the unadjusted counts of graduate assistants have been rising over the last decade and a half, by roughly 1% annually at the publics and about 3% at the privates. As with the instructional staff, we should adjust these totals to account for enrollment growth over time, and those adjusted trends are shown in Figure 5.20. Note also that these totals are for all graduate assistants, teaching, research and other; on average, teaching assistants are 53% and 40% of all graduate assistants at public and private universities respectively. Adjusted graduate assistant trends were rising until the mid-2000s at all four types of institution, after which they leveled off and even receded at the R1 publics. At the privates, the trend in graduate assistants increased in the early 2010s and rose to about 10% more than at the publics.

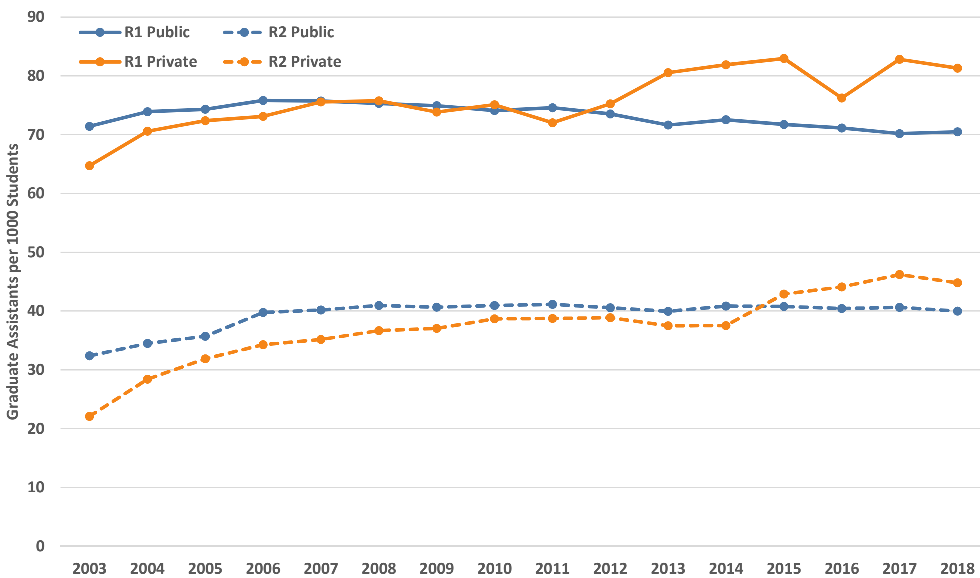

Figure 5.20. Trends in graduate assistant headcount adjusted by total fall student enrollment, expressed as graduate assistants per 1000 students, for public and private R1 and R2 institutions by fiscal year. Source: IPEDS (2020).

5.11 How much do graduate assistants earn?

Graduate assistantship stipend amounts are not collected comprehensively on a national basis in IPEDS (although it does count the number of graduate assistants). Instead, total assistantship dollar amounts (among many other variables) are collected every few years via sample (National Center for Education Statistics 2018a), but when the data are broken out by subset such as Carnegie classification, degree level, and so on, they can be unreliable or unavailable because of small sample sizes. These data are also not specified by appointment level (half-time, quarter-time, etc.). Full-time research doctoral students are the most consistently comparable subgroup across institutions and categories to receive a half-time graduate assistantship, typically a nine-month or ten-month stipend for teaching and often for twelve months as a research assistant. Given the above constraints, these "most comparable" stipends are illustrated in Figure 5.21. Graduate assistantships across all fields are 30% lower at R1 publics compared to R1 privates, almost $18,000 versus nearly $26,000 (the difference is 9% at R2 schools). Dividing the data by major academic field, half-time nine-month stipends in STEM fields are higher than in others (about $21,000 versus about $16,000), and the public/private difference holds except in business-related majors. In the life sciences, graduate assistant stipends are often linked to the predoctoral amount stipulated annually by the National Institutes of Health, which at $23,376 for FY2016 (National Institutes of Health 2016) falls right between the average public and private half-time stipends for life and physical sciences. By the way, it is sometimes incorrectly assumed that, as teachers or researchers, graduate students are "cheaper" than their nearest staff counterparts: instructors or postdoctoral researchers (for more on this topic, see Section 8.5).

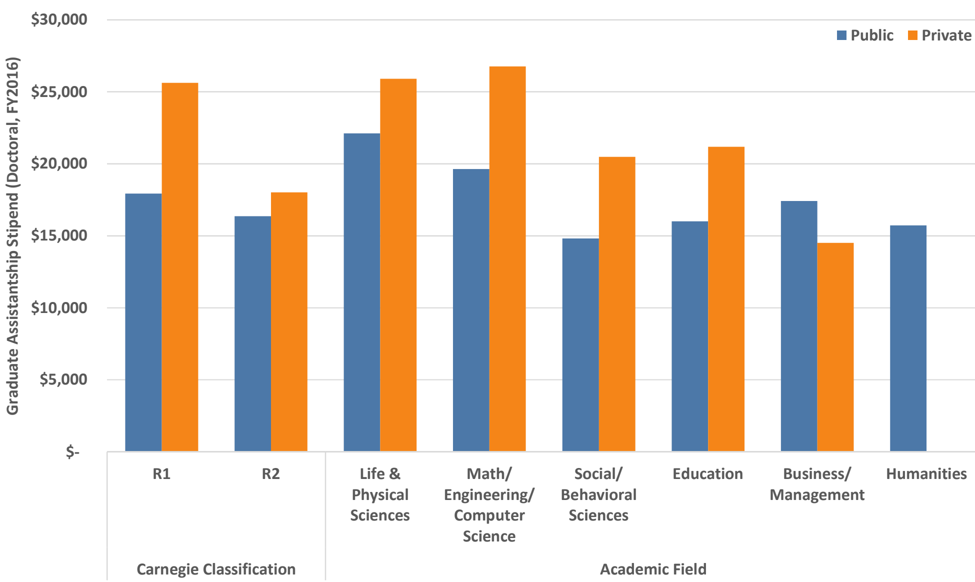

Figure 5.21. FY2016 half-time (0.5 FTE, non-summer) graduate assistantship amount for full-time, full-year research doctoral students averaged by Carnegie classification, academic field and control. Note that data for some categories are unreliable or unavailable because of small sample sizes. Source: NPSAS:16 (National Center for Education Statistics 2018a).

Trends in graduate assistantship stipends are hard to discern with much precision given the data issues mentioned above, but such as they are, the inflation-adjusted trends have generally been upwards (Figure 5.22). The annualized rate of increase for the NPSAS survey data is roughly 1.5%, which is interestingly slightly higher than that for the faculty. Amounts at the publics have been essentially flat since 2000 given the variability in the data, while at the privates they have been flat in the post-recession years. Inflation-adjusted NIH stipends have likewise been flat since the recession and are now a bit lower in real terms than they were in 2004 after they rose with the NIH budget-doubling between 1998 and 2003.

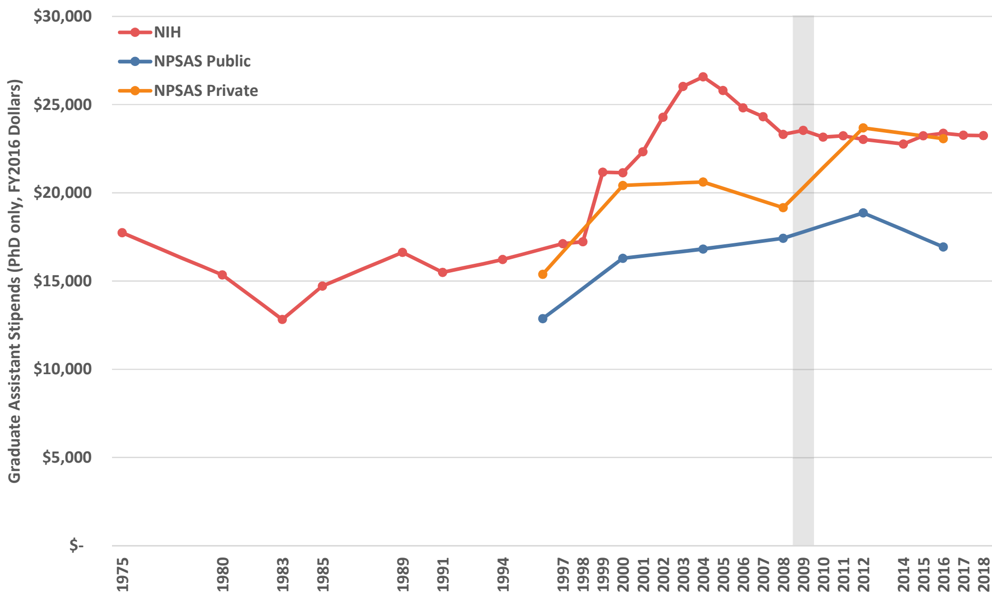

Figure 5.22. Trends in half-time (0.5 FTE, non-summer year) graduate assistantship amounts for full-time, full-year research doctoral students at public and private R1 and R2 institutions, and trend in the stipulated NIH pre-doctoral stipend amount for graduate research assistants (0.5 FTE, full-year), all by fiscal year in 2016 dollars. Sources: NPSAS:16 (National Center for Education Statistics 2018a) and NIH (National Institutes of Health 2016; 2019).

5.12 How much are employee fringe benefits and costs?

Full-time university employees, whether academic or regular staff, have an associated set of fringe benefits and related costs that are paid by the institution in addition to an employee contribution. On average, as we saw in Figure 3.1, employee fringe benefits total an additional one third of salary costs. IPEDS stopped collecting detailed fringe benefit data after FY2011, but fortunately the set of benefits has remained essentially unchanged since then, so we can still usefully examine those data (Figure 5.23). In addition to major benefits like healthcare, retirement and social security, there are other items such as workers' compensation, disability income protection, unemployment compensation, group life insurance and housing allowances. A signature benefit in higher education as compared to other sectors is a tuition plan for dependents. It is a valuable benefit for many employees and is therefore an important incentive in attracting workers into higher education. The dollar value to the employee, and cost to the institution, can be significant, especially at private institutions with their higher tuition levels. Some benefits have a vesting period of several years before they are fully usable (e.g., retirement, tuition). Public institutions often participate in their state benefits program, which may include a pension system as well as a healthcare plan that is purchased on the open market.

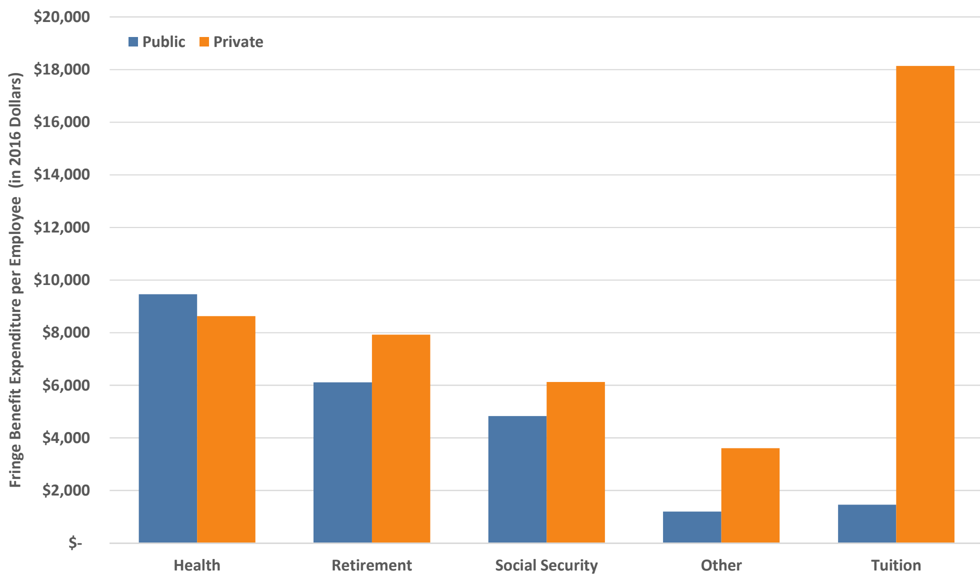

Figure 5.23. Most recently available (FY2011) per-employee fringe benefit expenditures (equated nine-month contract) for public and private institutions, in 2016 dollars. Retirement plans are within five years of appointment; tuition and other items include restricted and unrestricted expenditures. Source: IPEDS (2020).

The public-private dollar difference in employer benefit contributions in Figure 5.23 is likely due to the higher salaries at the privates; likewise, the higher salaries at R1 schools lead to relatively higher dollar contributions too. When expressed as a percentage of salary, this relationship can be inverted. For example, in FY2018 the average faculty retirement benefit as a percentage of salary was 11.7% at four-year publics versus 7.3% at non-religiously affiliated four-year privates (American Association of University Professors 2018).

Fringe benefit costs grow faster on average than any other costs in higher education, with an average annual increase of 3.9% over FY2007–FY2017 (Commonfund Institute 2017a); also, see the HEPI (Section 3.7), which indexes all higher education costs and averaged only 2.4% growth over the same period. The fast-rising cost of healthcare is a major component of the overall growth in fringe benefit costs, affecting not only universities and colleges but all employers. Healthcare premiums have doubled in the last twenty years (Figure 5.24): they rose rapidly in the early 2000s, from 5% to 13%

annually even after adjusting for inflation, but subsequently stabilized somewhat in the late 2000s and have remained mostly under 4% since then, again after adjusting for inflation. The employer contribution has remained in the mid-80% range for most of these two decades. However, one of the key ways that plans keep prices down is through deductibles. Both the number of high deductible health plans and the amount of the deductible has been rising, and since 2008 annual deductibles for covered workers have increased eight times as fast as wages (Kaiser Family Foundation 2018).

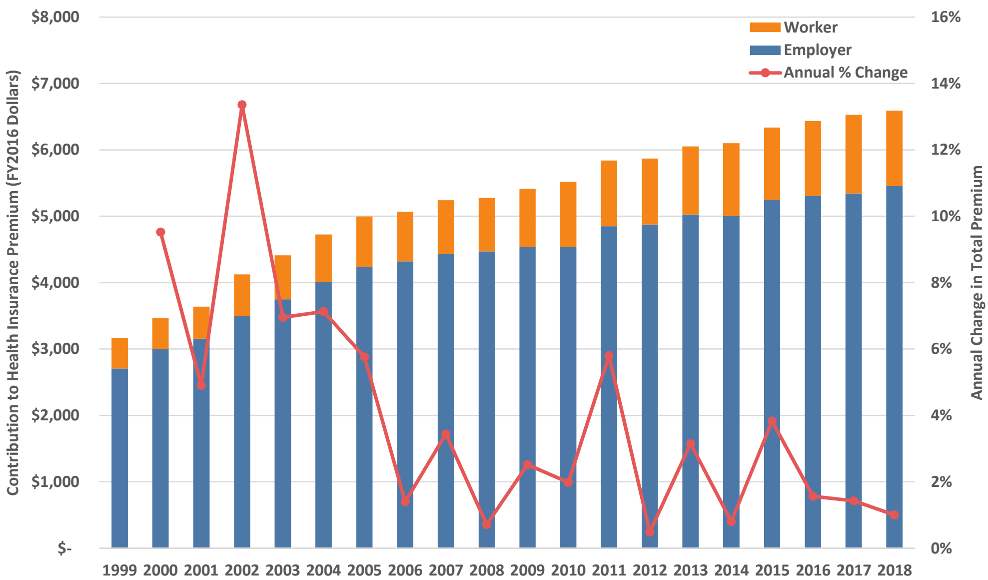

Figure 5.24. Worker and employer contributions to health insurance premiums (single coverage) and year-to-year percentage changes in total premiums, in 2016 dollars. Source: Kaiser Family Foundation (2018).

Retirement benefits have been undergoing structural changes for some time. Defined benefit (traditional pension) plans are in retreat, while defined contribution (retirement investment) plans have been on the rise since pre-tax 401(k) plans were established in 1978. At public universities, with their state public pension plan links, 11% currently offer a pension plan only, 10% offer a defined contribution plan only, and 79% offer both kinds of plan, whereas at private universities only 1% are currently limited to a pension plan, 92% offer a defined contribution plan only, and 7% offer both (Sibson Consulting 2018). Overall, the average higher education employer contribution to defined contribution retirement plans is 8.7%, which is a valuable benefit at two to three times more than the typical corporate contribution (Sibson Consulting 2018).

Finally, universities variously offer a range of additional benefits to employees. Certainly, all offer paid and unpaid leave programs, but they differ in what they include, such as vacation time, sick leave, paid time off, extra holidays, short-term and long-term disability plans, parental leave, bereavement leave, military leave, and sabbatical leave. About half of institutions offer employee assistance programs (Sibson Consulting 2018) and non-traditional benefits as well, such as financial consultation, clinical counseling sessions, legal consultation, stress management, group life insurance, professional development, wellness initiatives, access to campus fitness centers, as well as resource and referral services for substance abuse, elder care and childcare. These benefits can go a long way to creating a desirable workplace, and while their cost to the institution is not large in comparison to healthcare or retirement, they still need to be monitored and managed.

6. Academic Affairs

6.1 What does a college budget include?

Colleges are even more varied than the universities in which they exist. A broad Arts and Sciences college at an R1 university may contain two or three dozen departments with many hundreds of faculty members, while a small professional school (e.g., Nursing, Law) at the same university may have only two or three dozen full-time faculty members and no department structure. Furthermore, an entire M3 university or baccalaureate college may be the equivalent of a single college at an R1 institution.

I've created an example high-level annual college budget that could represent a modestly sized R1 college or a large college at a smaller institution (Table 6.1), in which the precise numbers are less important than the budget components that they illustrate. For professional schools, say in Law or the health professions, that have more financial autonomy and often no undergraduate program, it is simple enough to modify the estimates accordingly. Let's examine the example in detail, starting on line 1 with the revenue section. I've specified undergraduate and graduate net tuition as if they were calculated in a responsibility centered management (RCM) or activity-based budget environment. As explained in Section 6.2, that approach is merely a way to allocate a share of revenue based on activity, and these two sources would simply be allocated from the central university budget in a traditional (incremental) budget environment. We'll assume that the college teaches 25,000 undergraduate student credit hours (SCH) to all students, including general education and classes taken by students majoring in other colleges, a typical class being three credit hours per student. We'll also assume that the college receives $300 per credit hour for a total of $7.5M. In addition, we'll assume the college has 2,000 majors in its degree programs and that the college receives $1,250 per major for a total of $2.5M. These two amounts together make up the $10M undergraduate net tuition revenue (line 2). The university pools all tuition revenue and subtracts financial aid before allocating revenue to the colleges as a net amount. The calculation is similar for graduate programs; we'll assume 7,000 graduate SCH at $300 too, which generates $2.1M, plus 1,200 graduate majors also at $1,250 that generates $1.5M. Those two amounts total $3.6M and although that number is already net of any central financial aid

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as for undergraduates, individual graduate programs often award tuition waivers as part of recruiting. We must subtract those locally-awarded waivers, which we'll assume amount to $0.6M, leaving a net graduate revenue of $3M (line 3).

Table 6.1. Example annual college budget, showing major categories of revenues and expenditures, including shares of revenue and institutional costs. See text for explanations.

Line	Item	Detail	Amount ($)
1.	**Revenues**		
2.	Undergraduate Net Tuition	*Undergraduate revenue, net of central aid**	10,000,000
3.	Graduate Net Tuition	*Graduate revenue, net of central and local aid***	3,000,000
4.	Fees	*Program and course-specific fees*	500,000
5.	Research (F&A)	*Indirect cost recovery from grants****	1,000,000
6.	**TOTAL Teaching & Research**		**14,500,000**
7.	Institutional Allocation	*University revenues, e.g., state, investments*	5,000,000
8.	Philanthropy	*Endowment income and gifts*	1,000,000
9.	**TOTAL REVENUES**		**20,500,000**
10.	**Expenditures**		
11.	Facilities Share	*60,000 ft^2 @ $25 per ft^2*	1,500,000
12.	Support Units Share	*35% of Teaching & Research*	5,075,000
13.	Central Investment Share	*3% of Teaching & Research*	435,000
14.	**TOTAL Support Cost Share**		**7,010,000**
15.	Salaries—Faculty	*70 @ $80,000 per year average*	5,600,000
16.	Salaries—Staff	*15 @ $50,000 per year average*	750,000
17.	Teaching Assistants	*80 @ $30,000 per 0.5 FTE per year*	2,400,000
18.	**TOTAL Salaries**		**8,750,000**
19.	Fringe Benefits	*36% of Total Salaries*	3,150,000
20.	**TOTAL Personnel**		**11,900,000**
21.	Operations	*Office supplies, lab equipment, travel, etc.*	1,500,000
22.	**TOTAL Operational Budget**		**13,400,000**
23.	**TOTAL EXPENDITURES**		**20,410,000**
24.	Net Revenues-Expenditures		90,000

**Undergraduate activity: 25,000 student credit hours @ $300 = $7.5M; 2,000 majors @ $1,250 = $2.5M; total = $10M*

***Graduate activity: 7,000 student credit hours @ $300 = $2.1M; 1,200 majors @ $1,250 = $1.5M; less $0.6M local aid (tuition waivers); total = $3M*

****Research grant revenues: $1M of indirect cost recovery for use of facilities and administration @ 50% of $2M in direct grant costs; grant total = $3M*

The college also receives fee income to cover special program and class-specific costs not covered by regular tuition that we'll assume is $0.5M (line 4). For research income, the direct costs are restricted funds that are budgeted separately but indirect cost recovery contributes back to the regular budget. Thus, if we assume gross revenue from research grants of $3M, $2M of that would be direct costs involved in carrying out the research (researcher time, equipment, supplies) and $1M would reimburse the university for associated facilities and administration costs (space, accounting services, compliance, etc.) assuming a 50% indirect cost rate. The college receives the $1M as revenue here (line 5) but will use it to pay its share of those costs when we get to expenditures. All teaching and research revenues thus total $14.5M (line 6).

Most colleges require an institutional allocation beyond teaching and research revenue to cover all costs, assumed as $5M in this example (line 7). This amount would typically come from state appropriations and/or investment and endowment income depending on whether this was a public or private institution. The final revenue item is income from philanthropy, assumed to be $1M (line 8). These are restricted funds, but typically a portion is directed towards endowed chairs and program support; increasingly such funds effectively add to the operational budget. All revenues for our example college total $20.5M (line 9).

Moving on to the expenditures section (line 10), we'll again specify the first few items in an RCM context. These support costs (lines 11, 12 and 13) reflect the college's share of space and central administrative support units. In an incremental budget the college would not see these items and they would be subtracted from tuition and institutional revenues before allocations were made. The college's share of all facilities costs (construction bond payments, maintenance, etc.) is computed as the share of space it uses, here assumed to be 60,000 net assignable square feet at an assumed rate of $25 per square foot for a total of $1.5M (line 11). The college's share of all non-college support unit costs is slightly over $5M at an assumed rate of 35% (line 12). For simplicity I've used a simple flat rate based on total teaching and research revenues, but in practice this would likely be a combination of different rates on undergraduate, graduate and research activity. The college's contribution to the central fund used for reinvestment back into the colleges is a little under $0.5M at an assumed rate of 3%, again levied as a flat rate on all teaching and research revenue for simplicity in this example (line 13). The college's combined support cost share totals slightly over $7M (line 14).

Personnel costs include salaries and stipends and associated fringe benefits. Our example college has 70 FTE faculty members with an assumed average salary of $80,000 across a mix of all faculty ranks, for a total of $5.6M (line 15). There are 15 support staff at $50,000 average salary, totaling $0.75M (line 16). The stipends for 80 0.5 FTE graduate teaching assistants, at an assumed $30,000 each, come to $2.4M (line 17). Together, employee pay totals $8.75M (line 18) to which we add fringe benefits at an assumed rate of 36% to get a bit over $3M (line 19), with total personnel costs thus amounting to $11.9M (line 20). The fringe benefit rate is also a simplification for sake of example, as different position types may have different associated rates, and even more simplistically I've assumed that it includes tuition for graduate assistants here too. The final budget item covers all other costs of operations such as classroom and teaching materials, office supplies, equipment maintenance, travel and so on, and I've assumed a value of $1.5M for all operations (line 21). The total operational base budget combines personnel and operations costs for a total of $13.4M (line 22). When added to the support cost share, total expenditures slightly exceed $20.4M (line 23), leaving a small net remainder from overall revenue (line 24).

This example includes the major parts of a college budget and although it glosses over umpteen minor items, the main point is to provide a relative sense of the components and how they might interact. For instance, to add one additional assistant professor at $73,000 salary will require about $100,000 including benefits on a sustained annual basis. That expenditure is the equivalent of an additional 460 SCH (333 SCH plus a further 127 SCH to cover the combined 38% support cost share) and it assumes there is a spare office for the new person, otherwise the extra space and facilities cost will be $2,500 for a 100 square foot office. That 460 SCH represents 153 class seats using 3-credits per class, which at 30 credits per year is about 5 net new students. The point about them being net new is critical—if they simply move internally then that doesn't produce new revenue for the institution. Alternatively, increasing the endowment by about $2M would produce revenue of about $100,000 annually, and it could be used to offset funds to retain some star professors through endowed chairs, thereby freeing up funds for a new assistant professor. Not surprisingly, there are multiple combinations and, in practice, there are many efforts going on simultaneously to grow revenue and control expenditures.

A final thought on academic unit budgets: because departments represent disciplines and fields, they are the fundamental organizational units. However, a generic example department budget isn't especially useful because each department has a unique institutional context and a cost structure that varies by discipline. Still, one can think of a department budget as a smaller version of a college budget. A college such as the one in this example might have five or so departments, some small and some large, and the college budget would be allocated among them and the dean's office. So, adjusting this budget and dividing everything by five or ten would provide a generic department budget. However, the challenge with smaller units like departments is that they individually have constrained revenue and expenditure portfolios; therefore, they may need to receive or supply cross-subsidies within the college, requiring careful judgment and management by the dean.

6.2 What is RCM or activity-based budgeting?

One of the biggest changes in university budgeting in recent decades has been the increasingly widespread adoption of a budget model that distributes responsibility for managing revenues and expenditures. Such an approach is known variously as Responsibility Center Management (RCM), Responsibility Centered Management, or more generally as Activity-Based Budgeting (ABB). Compared to the other prevalent model, incremental budgeting, RCM is a fundamentally different approach for major subunits of the university, particularly schools and colleges, to manage how they generate and spend resources. There are articles and whole books on RCM (Kosten and Lovell 2011; Curry et al. 2013) and its implementation, something I led at my institution, and from which I learned a great deal about many of the topics in this book. As with all the topics we are covering, I provide simply the essence of RCM here.

RCM adoptions are a response to the "hat-in-hand" approach of incremental budgeting. In that traditional model, units request an increase in their budgets for the following year, based on current needs and new initiatives, from central administration. Under RCM, the dean is given responsibility for all budgetary aspects of the college (hence the term "Responsibility Center"), not only for generating the revenues but also for managing costs effectively. Neither of these is a feature of incremental budgeting. It is not surprising, then, that the rise in RCM budgeting has echoed the trend toward increasing tuition-dependency.

RCM has evolved over the last several decades, so that a recent RCM model can differ in key ways from older implementations (interestingly, with a greater role for central administration management) as institutions learn from each other and adapt the approach to suit their own situations. RCM's roots lie in the budget models of some of the oldest private universities, where each school or college had an independent budget in the federation making up the university, with "every tub on its own bottom" (or ETOB) as the saying at Harvard goes. If ETOB is at one end of the spectrum and government agency-like central budget control is at the other, proponents of contemporary RCM aim for it to combine the best of both worlds somewhere in the middle. However, RCM evolved from the ETOB end of the spectrum (mostly at the privates) many decades ago. It has only seen broader implementation at the publics since the 1990s and into the 2000s and 2010s. Given its varied history, when a university is considering RCM as a new budget model, critiques may be raised based on perceptions of older ETOB-like models. For example, under classic ETOB a college could theoretically go out of business with little opportunity for intervention from the rest of the university. In contrast, contemporary RCM is built around the concept of subventions (cross-subsidies) in the institutional budget, such that academic priorities are supported by a shared mix of higher- and lower-revenue units and activities.

At the unit (college) level, the change in thinking relative to incremental budgeting is that the base budget no longer arrives automatically each year—if unit activity rises relative to others then the unit's share of the overall budget rises too (and vice-versa!). Under either budget system, it is a convenient local fiction that a base budget is semi-permanent—as we've seen in many of the preceding sections, the institutional revenues behind those budgets have been changeable, but they aren't consistently felt locally. Under RCM, colleges sense more closely both the opportunity and precariousness in institutional budgeting that before was largely the concern of senior central administration. Under incremental budgeting, the focus is typically more on academic priorities rather than their revenue or cost dimensions. These differences are at the heart of critiques of both systems.

Figure 6.1 illustrates RCM as compared to incremental budgeting, in a nutshell. Under RCM, colleges (responsibility centers) receive their share of campus revenues as well as their share of costs. Many of those institutional costs (e.g., space and facilities) are invisible to colleges under incremental budgeting, but under RCM the college sees the cost and is provided the (previously invisible) budget to pay for those costs. Notice that colleges likewise see and pay for the costs of central support units (student affairs, human resources, etc.) that were also previously invisible. The net effect of these changes on a college budget is zero in dollar terms, but significant in terms of perception.

Under the incremental model, a college that taught more (or less) than it did the previous year would not necessarily see the change in marginal revenue, whereas under RCM it would see the related revenue increase (or decrease) as well as the associated costs. In RCM, the revenue-generating activity of all colleges is tracked using simple metrics (e.g., total credit hours, enrolled majors, sponsored project revenue) and revenue is allocated by each college's share of the total activity. Costs are allocated based on share of space occupied for facilities and via a proportional share of support unit costs. These costs are often called taxes, and one of the most important taxes is a contribution to a strategic investment fund that is managed centrally and is available to fund new initiatives.

It is worth underlining that RCM itself doesn't "make" any decisions, it is merely another way of getting to a budget allocation. It provides latitude for central control and management through subventions and strategic investments while prioritizing a decentralized approach that ideally enables greater entrepreneurial activity by the units. Because the activity formulas and metrics are well-known, RCM proponents claim that it is more transparent and predictable than the incremental model. Still, a well-run incremental budget system with comparable levels of communication can be transparent and effective at stimulating innovation too. In practice, neither is perfect: both have many positive attributes as well as unintended consequences and perverse incentives that require active management for the system to work well.

RCM is structured to incentivize and optimize revenue generation and cost-effective practices. In doing so, it places increased authority and accountability on the deans and vice presidents. While RCM proper operates at the college level,

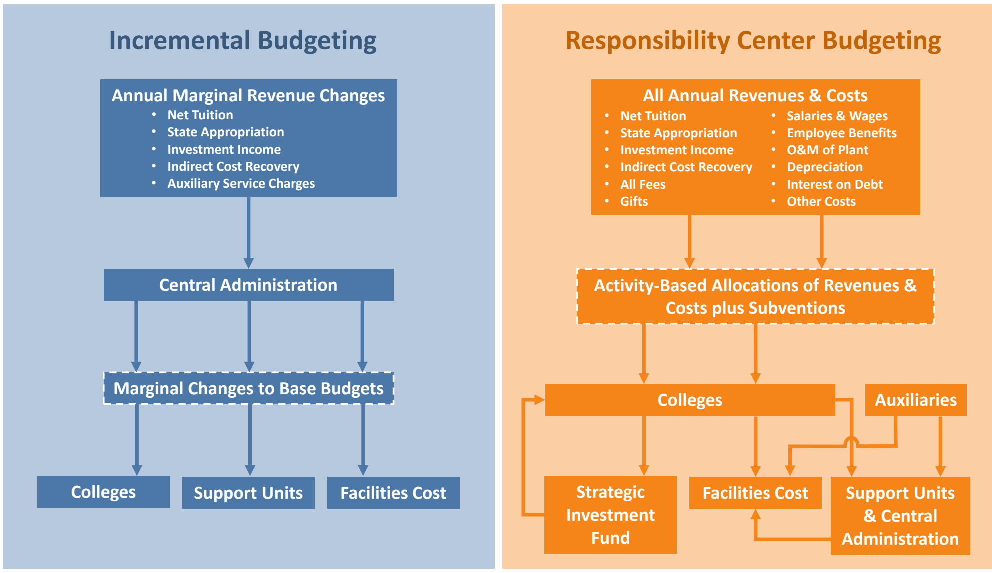

Figure 6.1. Schematic comparison of annual budgeting under an incremental process versus responsibility center management.

it relies upon clear communication between colleges and their departments for it to succeed—faculty must understand the within-college budget model so that they can connect their innovations and adaptations with college incentives. It is not unusual for communication to be oversimplified at this level, resulting in a "dollars for butts in seats" mentality that is hard to counteract. Furthermore, because universities are necessarily academically decentralized, many important decisions with financial implications are made at the department level. Yet, RCM is not designed to be a department funding mechanism—that model must be able to handle a relatively higher variance in subventions within and across departments because their budgets are not sufficiently diverse or large enough to absorb "noisy" fluctuations. Thus, the dean must balance academic priorities with budget trends while providing short-term budget stability. This is the reason that RCM is primarily used at larger universities, where the responsibility centers (colleges) have enough varied programs that they can manage year-to-year swings in the budgets across their internal units (departments).

While RCM is often implemented in response to the perceived shortcomings of incremental budgeting (e.g., no incentives to cut costs, dollars don't necessarily follow teaching activity), RCM is not a panacea and it doesn't print money. RCM can lead to an everyone-for-themselves attitude, with units competing over the size of their slice of the pie because they have less control over growing the whole pie (for example, colleges poaching enrollments from each other instead of attracting new students to the university). The core notion of a well-implemented RCM budget system is that it should incentivize rapid local responses to opportunities and challenges that together benefit the institution, by aligning the locus of revenue and cost decisions with the locus of academic decisions. In practice, as I've mentioned, both incremental and RCM approaches are messy and imperfect, requiring many complicated adjustments to fit them to a complicated institution. One thing both systems have in common: campus units will gripe about their budgets either way because there are winners and losers under both, and because there is never enough money to support and grow the size and quality of every campus program (see Bowen's Law in Section 3.7).

6.3 What is the cost of producing a degree?

It turns out that this simple question is devilishly hard to answer accurately. The reason is that we don't account for activities in a way that makes it easy to answer. We can indeed calculate useful institution-wide figures summed across all levels of degrees and all disciplines, but the minute we want to examine the cost of producing just bachelor's degrees, PhD degrees, MD degrees, etc. or the cost of producing degrees in Economics, Engineering or English, we run into all kinds of issues. Let's look at the institution-wide numbers first before unpacking them in the next couple of sections.

We discussed E&R (education and related) expenditures, the subset of all expenditures related to delivering and supporting instruction, in Chapter 3. In particular, we looked at E&R expenditures per student FTE in Sections 3.3 and 3.4, which is a useful way to compare investments per input. For investments per output we calculate E&R per degree awarded instead (Figure 6.2). By this measure of institutional cost of education per degree we see many of the same patterns as we did with the per-FTE calculation: the privates spend about twice as much per degree than do the publics, with the private baccalaureate and R1 institutions spending $150,000 to almost $250,000 per degree, as compared to other schools spending $60,000 to $100,000 per degree in recent years.

It's tempting to mentally divide by four to obtain an annual cost, but it's not that simple. These amounts include all levels of degrees, undergraduate, professional and graduate, each with a different typical time-to-degree. Many undergraduates don't finish in four years (and others transfer away or don't complete), master's degrees take two years or less, a PhD can take six-plus years, and their relative proportions differ by institution. Therefore, the E&R cost per FTE metric analyzed in Chapter 3 is better suited to obtaining an annual amount. We can also see that research universities have a higher cost structure than the other institutions, an important part of that being the relative mix of faculty workload. Nevertheless, E&R spending per degree is widely used as a cost-of-production metric to benchmark output efficiency in an economic sense, and it is also useful to analyze trends. In the data underlying Figure 6.2, from FY1987–2009 the annualized growth rate in cost-per-degree across public institutions was 0.7% (aligning with labor cost, see Section 3.7) and a striking 3.1% across private institutions. Post-recession, from FY2009–2017 the two rates were both modest at 0.6% and 0.5% respectively.

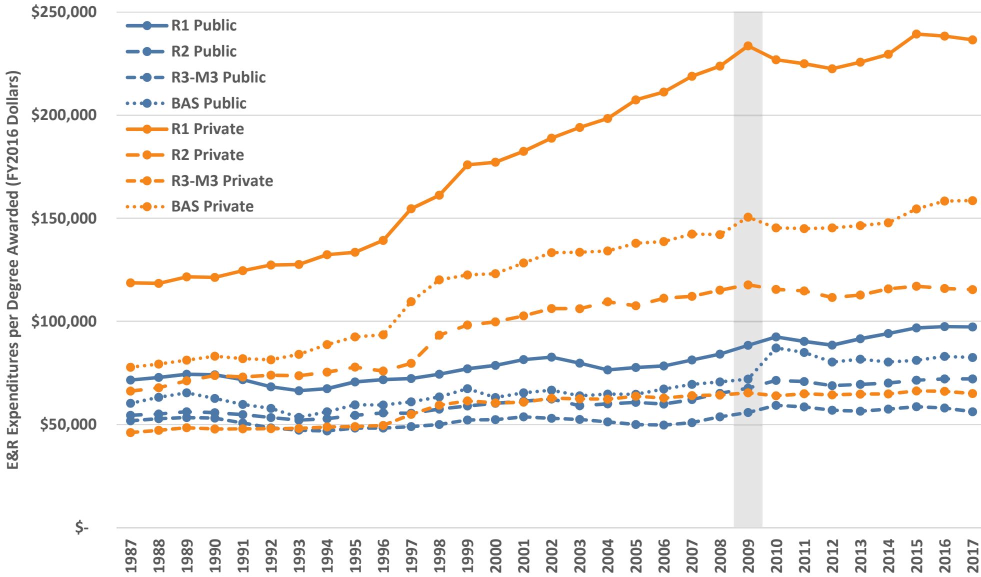

Figure 6.2. Trends in Educational and Related (E&R) expenditures per total degrees awarded in 2016 dollars by fiscal year, averaged by Carnegie classification and control. Source: IPEDS (2020).

6.4 How does the cost of degree production vary by discipline?

Systematic national data on discipline-specific costs are not widely available, in part because disaggregated department-level data on teaching workloads, salaries, etc. would risk revealing individual personal information. The National Study of Instructional Costs and Productivity, known as the Delaware Cost Study, was initiated by a consortium of institutions in the 1990s to collect such data voluntarily for internal benchmarking by participants, and it now includes hundreds of four-year public and private institutions (Higher Education Consortia 2019).

Fortunately, a recent study has provided the first wide-ranging analysis of program-level costs based on those data (Hemelt et al. 2018). The authors used sophisticated modeling to analyze the relative effects of class size, instructor salary, workload, and non-personnel expenses as key drivers of cost differences by discipline. For ease of understanding, I have converted the results from natural log form into percentage form, showing cost per SCH relative to English for 20 fields for each of the four drivers and as an overall net difference (Figure 6.3). There are wide ranges in the differences across fields, overall and in the component drivers, especially salary and class size. Note that average salary in a department is a function not only of the disciplinary market-based salary but also the mix of faculty types (tenure-track, contingent, teaching assistants). Also, the average class size in a department depends on the mix of lower-division undergraduate classes versus typically smaller upper-division and graduate classes. Departments that provide introductory or fundamental classes to students across the university, such as Mathematics or English, have a different average class size to those that focus more exclusively on professional or graduate education. Overall, engineering and nursing degrees are relatively costly (roughly double the cost of English degrees), while education and fine arts with small salary effects are still 30–40% more expensive because of class size. Business and accounting are interesting cases because, although salaries are relatively high, the effect of class size lowers their overall cost. At the other end of the scale, disciplines such as psychology, sociology, philosophy and mathematics are less costly primarily because of their average (mix of) class sizes. While faculty workload (class sections per faculty member per year) is a contributing factor in some disciplines, its overall effect is not large, while non-personnel costs (e.g., equipment) are relatively unimportant overall. The study found these results to hold across all institution types meaning, for example, that psychology is consistently less expensive than physics whether at an R1 public university or a private baccalaureate college (Hemelt et al. 2018).

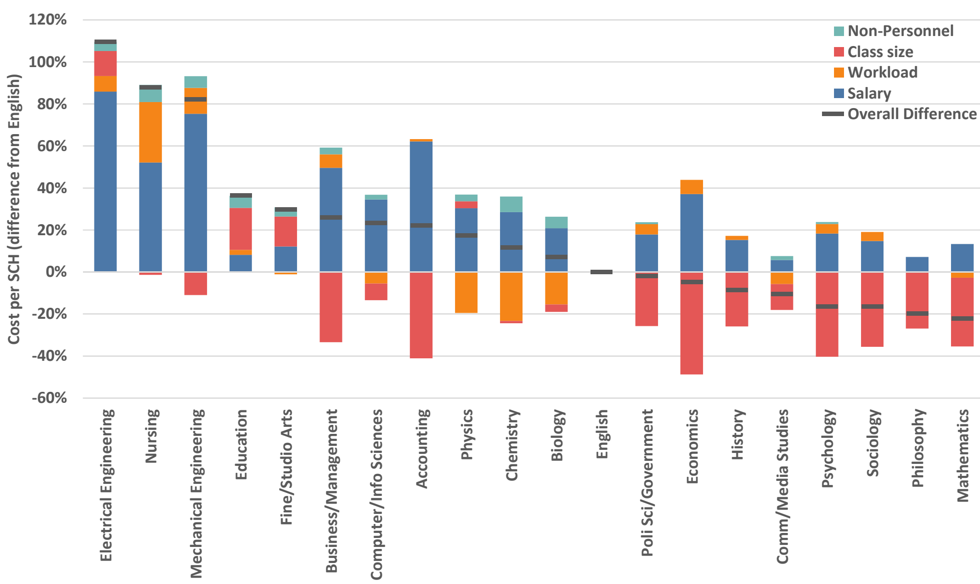

Figure 6.3. Instructional expenditures per student credit hour (SCH) by field of study, expressed relative to English for four cost drivers and the net overall difference, using 2013–2015 data from the Delaware Cost Study. Data are converted to percentages from the original modeled natural log cost differences. Source: Hemelt et al. (2018).

6.5 Do the humanities cross-subsidize the STEM fields?

This is a loaded question for two reasons, one because there are several layers of answer, and two, because it is an attention-grabbing ringer for the broader question of whether different fields cross-subsidize each other across the university. To the latter, yes, unequivocally, cross-subsidies exist in almost every university and for good reason: not doing so would undermine academic priorities that enable students to select and combine classes from multiple fields and to change majors if necessary, without worrying about cost. There has nonetheless been a longstanding practice of adding what are essentially surcharges for some fields that are more expensive or where the market (i.e., anticipated future earnings such as for an MBA) will support a higher quality program. But importantly, cross-subsidies and surcharges at the department or program level are not the whole story as they still don't cover the full cost: the bigger truth is that virtually all programs are subsidized.

Let's return to the original question about humanities and STEM and use it as a worked example to understand the various layers of this answer (Table 6.2). Fundamentally, as we saw in Section 6.4, because many humanities fields (e.g., English, history, philosophy, and many languages) have modest salaries and can be offered effectively at a moderate class size, on average they are less expensive to operate than most science and technical fields (e.g., physics, engineering) that have relatively higher salaries, smaller classes and/or lower teaching loads (Figure 6.3). But recall that mathematics, the "M" in STEM, is among the least expensive disciplines to teach. Those direct instructional costs per SCH by discipline are approximated from the study mentioned previously (Hemelt et al. 2018) and they are the starting point in our example (Table 6.2, line 1). You'll see that they range from $165 per SCH for mathematics to $400 per SCH for an engineering program, with an overall average of slightly under $240 per SCH. So, as a layer-one answer, the underlying direct instructional costs of the humanities are lower than in STEM on average, but it is important to keep in mind that the disciplines in each group have a mix of cost structures and the groups are not monolithic. Now we assume a net tuition amount of $350 per SCH (line 2), which as a guide is $10,500 per year based on

Table 6.2. Example of the layers of cross-subsidization across disciplines. Amounts are in dollars per student credit hour (SCH).

Line	Item	Humanities			STEM		
		English	History	Philosophy	Physics	Engineering	Math
1.	Direct Instructional Cost	(200)	(190)	(180)	(285)	(400)	(165)
2.	Net Tuition	350	350	350	350	350	350
3.	Differential Tuition/Fees	-	-	-	-	50	-
4.	SUBTOTAL	150	160	170	65	-	185
5.	Indirect Support Cost	(240)	(240)	(240)	(240)	(240)	(240)
6.	OVERALL TOTAL	(90)	(80)	(70)	(175)	(240)	(55)

a standard 30 SCH load for a full-time student, representative of a public institution. We also include differential tuition for the Engineering program at $50 per SCH (line 3), which equates to $1,500 per year on top of base tuition. Our initial subtotals (line 4) show the humanities disciplines generating positive margins of $150 to $170 per SCH, whereas physics generates $65 per SCH, engineering breaks even and generates zero, and math produces $185 per SCH. Many arguments about cross-subsidies will focus solely on the disciplinary cost data as a layer-one answer or will use these offset-by-revenue subtotals as a layer-two answer.

As I've intimated above and explained earlier in this chapter, our example so far is incomplete because it does not include all costs related to education. We mustn't forget the indirect instruction-related costs of academic support, student support and institutional support, that together form the "R" in E&R (education and related) expenditures. From Chapter 3 and elsewhere we know that those are roughly equivalent to instructional costs, so we'll include them as a flat rate of $240 per SCH across all disciplines (line 5). The resulting overall total (line 6) shows the fully-costed picture: all fields generate negative margins and they are all subsidized from other institutional funds (e.g., state funding at the publics or investment income at the privates). So, the layer-three answer to our question is that all fields "lose" money, humanities and STEM included, but the humanities are subsidized relatively less than STEM.

There are at least two implications of this conclusion. First, when a department proposes a new degree program that will add students and local revenue, remember that unless it is an unusually high tuition program with little to no financial aid (such as a professional program aimed at executives), odds are that it will still incur costs to the institution that need to be built into budget plans. Second, the impact of subsidies for all will be modulated by enrollments, such that low or high subsidy programs may in turn have high or low enrollments that can amplify or diminish their overall financial impact in total dollar terms. Oftentimes these effects can creep up on an institution as enrollments ebb and flow across the disciplines. We'll examine those next.

6.6 How have popular majors shifted over time?

Student enrollments have more than doubled over the last half-century (Figure 4.13), though not all undergraduate majors have grown in matching proportions. Perhaps unsurprisingly given the digital revolution, from FY1971 to FY2016 library science shrank from 1,000 majors to less than one tenth of that number, while computer and information sciences grew almost 30-fold from about 2,000 to over 60,000. In relative terms, library science went from 0.1% of all majors to almost zero, while computer and information sciences grew from 0.3% to 3.4% of all majors, more than a tenfold relative increase (Figure 6.4).

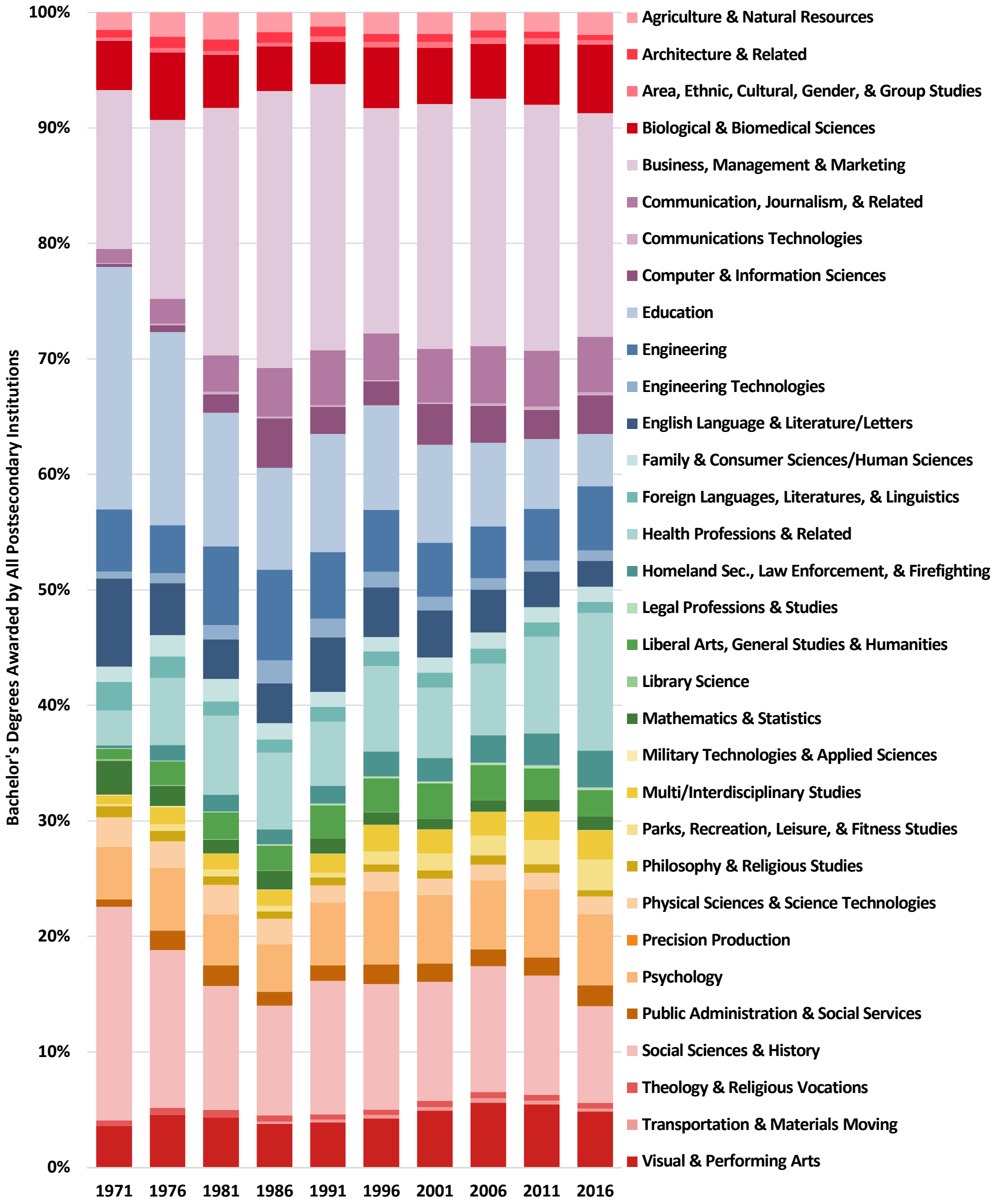

Figure 6.4. Trends in percentages of all bachelor's degrees awarded by field of study at postsecondary institutions, per academic year at five-year intervals. Source: NCES Digest (National Center for Education Statistics 2018d).

These sorts of shifts can have significant financial and personnel implications for departments that shed or gain majors (and SCH) relative to others on campus. In the short term, annual fluctuations are often handled by adjusting class sizes or by increasing or decreasing the number of contingent faculty members and class sections. In the medium to longer term, as clear trends become evident, areas of persistent absolute growth or decline will almost inevitably lead to a concomitant shift in the tenure-track faculty. In a decline, depending on the career demographics of the department in question, the adjustment to the underlying cost structure may happen expediently, via attrition of positions through retirements and individual job moves, or it may be delayed considerably.

Returning to Figure 6.4, let's review the most dramatic shifts in sheer numbers of majors over the forty-five years. The two fields that have grown the most are business and health. Business, management and marketing added over 250,000 majors and the health professions added over 200,000 (most of that in the last decade), which represented relative increases in percentages of all majors of 5.6% (13.7–19.4%) and 8.9% (3.0–11.9%) respectively. Other growth fields in absolute terms include communication/journalism, psychology, biosciences, visual/performing arts, computer/information sciences, and engineering. Some of those, such as communication/journalism and computer/information sciences, increased their share of all majors by several percentage points, while others such as psychology and biosciences saw modest growth in their relative share of all majors.

The field that has shrunk more than any other is Education, with total enrollments dropping by half (from 176,307 to 87,147) between FY1971 and FY1986 and holding roughly constant since then, accounting for its 16.5% (21.0–4.5%) reduction in share of all majors over the half-century. English language and literature, much like education, lost about half of its enrollments in the 1970s (dropping from 63,914 to 31,922 from FY1971–FY1981) and although it recovered somewhat in the 1990s, it has dropped again in recent years. That's a 5.4% (7.6–2.2%) drop in relative share of all undergraduate majors over the forty-five-year span. Although their enrollments are smaller, foreign languages, literatures and linguistics mirrored the decline/recover/decline-again pattern of English, and hundreds of foreign language programs have closed in recent years (Johnson 2019). Mathematics and statistics saw a similar decline and has recovered only in the last decade. With net flat enrollments over the half-century, both fields were crowded out by other growing fields and each saw their share shrink from about 3% to about 1% of all majors. One final interesting example is social sciences and history, which enrolls about 160,000, again net flat over time, but with a similar cycle to English, in that it has seen a substantial loss of 10.1% (18.5–8.4%) in relative share, second only to education.

Not only do these shifts illustrate the dynamics behind changing departmental fortunes within the university, but they also reflect broader vicissitudes in the academy and in society. There is no denying that students vote with their feet (as do parents with their dollars). Like it or not, those votes reflect diminished interest and support for majors in education, languages and literature alongside increased attention for business and health. We can and should vigorously debate those priorities and what they mean, as US higher education has done since the late 1800s and before. As we do so, it's worth a reminder that ours is the system that, through the land-grant acts, inserted a more practical education into the classical curriculum of the day. Furthermore, it is also the system that in the mid-twentieth century massively expanded access to higher education and thereby the purposes and people that it serves.

6.7 What does it cost to run a graduate program?

Graduate education is the jewel in the crown of US higher education. It has long been the envy of the world and remains so, despite rising competition from Europe and Asia. Several factors contributed to the ascent of US graduate schools: co-evolution with disciplinary specialization (especially in the sciences) during the twentieth century, the inclusion of advanced coursework rather than "dissertation only" degrees, unprecedented government research investment during the postwar years which fueled the rise of research universities including support for research assistants (RAs), and simultaneous massive growth in undergraduate enrollments which fueled support for teaching assistants (TAs). The US model, especially for the PhD, of a structured experience through advanced seminars and mentored apprentice-like research training, along with a part-time assistantship to support the student, was radically different from the lone scholar model prevalent in Europe. I could go on about the many other innovative attributes of US graduate education, but I'll spare you that excursion and instead make my point about graduate programs and university business: while this approach undoubtedly enables the highest quality education, by paying one's students to attend graduate school, educating them in very small classes and providing them with extended one-on-one training with renowned experts, it is an incredibly expensive (and on the face of it, utterly foolish) business model! How do we make it work?

It works by the mutual reinforcement of attracting the best faculty and the best graduate students who want to work on their scholarly topic together. Crucially, it's also built around the teaching support required for the undergraduate operation and, in fields where sponsored projects are available, the competitive research grants that those faculty win. There is one other distinct model, the professional master's degree, that teaches technical and/or executive content and that, because of desirability and anticipated future earnings, can charge market rates without assistantships and tuition waivers.

Let's do some numbers. For a tuition/fee-driven professional program, things are straightforward enough that we don't need a worked example; the program revenue must simply be enough to fund the costs of operating the program. For the PhD scenario, I'll keep things simple and deal with program-level funding only, acknowledging that other institutional support costs are out there. In partial justification thereof, we'll assume our scenario is taking place in an existing department with an active undergraduate program and the faculty already in place. At some point those faculty members, especially if this is a research university, will want to start a graduate program. With the large expenses of core infrastructure and salaries covered, so the thinking goes, the marginal costs of adding a few core graduate classes to augment classes already available in related fields is low.[1] Question: OK, so what does it cost? Answer: about a million bucks a year. Never fails to get people's attention.

Here's the logic (Table 6.3), line by line, for the basic first-order (program level) annual costs of a PhD program. We'll provide half-time assistantships at a going rate of $25,000 per year (line A). Each student's tuition will need to be covered, either by paying it directly (typically via a research grant) or via an internal waiver (typical of teaching assistantships), plus an amount for benefits, and we'll assume that to total $15,000 per year for a public university (line B). A doctoral program needs to meet minimum size or productivity requirements, which are often imposed by boards, for example an average of 3 graduates per year (line C). A minimum size is also necessary for academic reasons to enable a viable cohort for class sizes. If the program offers its classes on a two-year rotation, that means 6 students in a graduate seminar. Attrition is easily forgotten because, by definition, those students are no longer in the program (whether for academic or personal reasons), so we'll add 1 per year for attrition (line D). Therefore, the program must plan to admit and support 4 students per year, and further support them for the duration of the program. We'll assume the average time-to-degree in our example discipline is six years (line E). As an aside, one can infer that this must be a nominal five-year program as students rarely complete early and more often take longer, given the vagaries of their dissertation projects.

Table 6.3. Example of annual first-order costs of a modest PhD program (see text for explanation).

Line	Item	Amount
A.	Assistantship stipend (0.5 FTE)	$25,000
B.	Tuition & benefits	$15,000
C.	Minimum completions per year	3
D.	Attritions per year	1
E.	Average time to degree (years)	6
F.	Program coordinator (0.5 FTE incl. benefits)	$35,000
G.	Operations	$30,000
H.	CALCULATED TOTAL: (A + B) × (C + D) × E + F + G	$1,025,000

The program thus has a steady state of 24 students, 4 per year for six years (slightly less if there is some early attrition, but we'll ignore that for simplicity). The program

1 Permutations of this basic scenario were proposed to me several times per year when I was a graduate dean, which is when I developed this back-of-the-envelope approach to help the faculty hone (or abandon) their plans.

will need to add a staff member to coordinate admissions, exams, funding, etc.; a half-time position is enough for this modest-size program (line F). Finally, there are always operational costs (travel, computers and printers, etc.) so we'll plug in a number for that (line G). As mentioned above, we will ignore other marginal costs such as foregone undergraduate teaching activity/faculty time, central support costs, and space. Adding it all up, we get a total of slightly over $1M per year (line H).

To succeed, the program must have the capacity to support twenty-plus students and some operations costs on a sustainable basis. The mix of TAs and RAs to achieve that varies from virtually 100% TA in the disciplines with little to no grant activity (e.g., humanities) to virtually 100% RA in grant-active disciplines (e.g., biosciences), and with many disciplines somewhere in between. For a 50:50 mix, 12 TAs would be derived from, say, 36 discussion or lab sections (at 3 per TA), each with 25 to 30 undergraduates, for 2 semesters, which is about 2,000 undergraduates or 6,000 SCH per year. The RAs would each be supported by grants with a minimum of, say, $100,000 in direct costs (the RA, principal investigator, other staff, equipment) plus indirect costs at 50%, totaling $150,000, which for 12 RAs approaches $2M per year in external grant support. These numbers reflect an active teaching and research operation. A graduate program with less than those levels of activity will need to obtain additional funds from the dean, who will cross-subsidize from other areas.

6.8 How much do the faculty earn by discipline?

In Section 5.7 we saw how overall faculty salaries were stratified from senior to junior rank and how they were generally stratified by size/type of institution. In Section 6.4 we saw how average faculty salaries by discipline were a key driver explaining differences in the cost of producing a degree across academic fields. To round out our coverage of salaries, Figure 6.5 illustrates average salaries of tenure-track faculty by rank across a set of 32 disciplinary fields. These data are collected by survey each year, with the FY2018 data representing 696 institutions and 162,818 full-time tenure-track faculty members (College and University Professional Association for Human Resources 2019). The emphasis here is on the variations across disciplines, which are determined by the market. The top end of the salary spectrum contains fields that compete, at least in part, with higher private-sector salaries such as law, business, engineering, computer/information science, architecture and the health professions. Note that medical school faculty, most of whom are practicing physicians, are not included in these data and their salaries are considerably larger than the others shown here (see also Chapter 11). In most arts and sciences disciplines, where there is little direct private-sector competition with academia, salaries across those fields fall in a compressed range of about $15,000 in each rank, or within roughly plus/minus 10% of the average. These ranges reflect moderate competitive forces in the disciplinary salary markets. In these sorts of fields, theology, the arts, languages and literature are at the lower end of the salary spectrum with social sciences and STEM fields in the middle ranges.

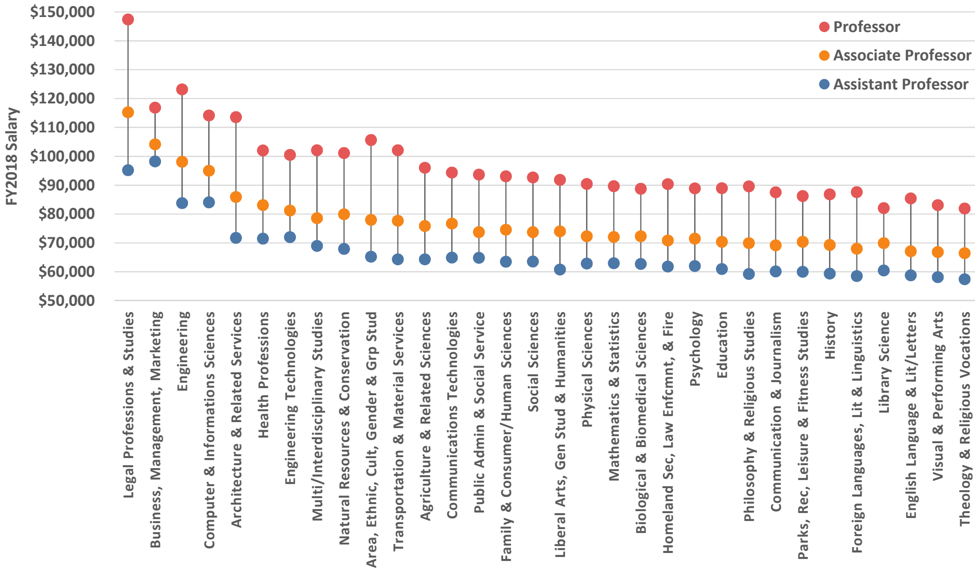

Figure 6.5. FY2018 Tenured and tenure-track faculty salaries by discipline and faculty rank, sorted by the disciplinary three-rank average. Source: CUPA-HR (College and University Professional Association for Human Resources 2019).

6.9 What are the financial implications of tenure?

This is another one of those fraught questions where the opinion-to-fact ratio runs high in discussions about the ills of higher education. Tenure is misunderstood by many, including those in the professoriate. To avoid confusion, let's start with a definition and follow that with a few paragraphs of basic explanation:

> Tenure is the granting of certain employment protections against arbitrary dismissal that, absent just cause for discharge, create the expectation of renewed appointment each year.

Employment contracts span a spectrum regarding the protections they contain. In jobs with low protections, employees work "at will" and they can be dismissed on the spot for no reason and without much, if any, due process. In jobs with medium protections, employees might receive a reason for dismissal and may have recourse to a review process and, assuming no egregious wrongdoing, they will receive notice of their employment and pay ending after several weeks. In jobs with high protections, such as those with tenure or union contracts, before dismissal there is an extensive review process that typically goes beyond the employee's direct supervisor, there are established rules about what are and are not valid reasons for dismissal ("just cause"), and again assuming no egregious wrongdoing, the notice of employment and pay ending may range from weeks to months to the end of the contract year.

A tenured appointment is preceded by a probationary period (typically five to seven years) on the tenure track. Although there are exceptions, assistant professors are usually on the tenure track and associate and full professors are usually tenured. An assistant professor must demonstrate sufficient quality and quantity of scholarly work to be granted tenure (and if denied will depart the institution or move into a non-tenure job). Most universities have annual and/or post-tenure review systems for ongoing assessment of productivity. Contrary to misconception, tenure is not a sinecure and just cause for dismissal includes poor job performance. Other just causes include things like violations of research integrity, serious violations of institutional rules (e.g., stealing, severe harassment), and moral turpitude.

Tenure exists primarily to protect its close relative, academic freedom, so that professors cannot be fired for teaching or doing research in their area of expertise that may be politically unpopular, undesirable to certain interests, or otherwise controversial. History has plenty of examples of this, such as Galileo's imprisonment for being at odds with the Church by positing that the Earth revolved around the Sun, and prohibitions on teaching Darwin's theory of evolution, as well as multiple contemporary calls for professors to resign or be fired because of their work on divisive issues (e.g., the politics of race and religion, or "unpatriotic" findings on terrorism). In my own research specialty, climate science, I have colleagues who have felt the pressure of the fossil-fuel industry and associated political forces for whom the scientific findings are an inconvenient truth.[2] The American Association of University Professors (AAUP) is the keeper of the flame for academic freedom and tenure (American Association of University Professors 2019b; 2019c); its 1940 Statement of Principles on Academic Freedom and Tenure (American Association of University Professors 1940) is the definitive document on the subject and the AAUP website has further supporting material.

Returning now to the financial implications of tenure, it's been said that the granting of tenure is a million-dollar decision. That's because a professor, once tenured, might be expected to work another thirty years at the institution (or move to another, ensuring that the new position comes with tenure). The original statement must date back many decades, because at current associate and full professor salaries the long-term commitment of the institution is closer to three million dollars without including benefits. An interesting economic corollary of this implication is that, compared to positions they might obtain in the private sector, professors are willing to accept lower pay with tenure because of the implied long-run commitment and perceived lower risk of job loss. Much can be made (misguidedly) from the fact that tenure imposes large fixed costs on the institution and that universities need greater flexibility in how they allocate resources. This argument is specious because, and we've seen elements

2 The term is a good one, even without being enshrined as the title of Al Gore's award-winning movie. Interestingly, the movie's title was debated right up until its screening at Sundance (Armstrong et al. 2016).

of this point in every chapter of this book so far, tenured professors make up a small proportion of the overall university budget. Let's do those numbers to make it clear.

Although we examined faculty ranks and trends in Chapter 5, there we dealt with tenure status as implied from job titles. To look at tenure numbers explicitly, Figure 6.6 shows the share of faculty by tenure status. Although the patterns are generally similar to the earlier charts on faculty rank, there are some differences in the details here because we are including part-time faculty as well as non-instructional faculty (typically research faculty at the bigger schools). About half the faculty are on the tenure track or tenured, with a higher proportion at R1 than R2 schools, and lowest at the R3-M3 institutions; the share is largest at baccalaureate colleges, especially the privates. These proportions are unevenly affected by the share of part-time versus full-time contingent faculty that can exceed 60% and even 70% at medium and small institutions. Overall, by headcount, tenured faculty average under 40% of the total. If we compare the underlying numbers to total non-medical employees (back in Figure 5.2) the we find that the tenured faculty averages about 12% of the total. That means that 88% of the labor pool is "flexible" in an economic resource sense. Furthermore, we saw in Chapter 3 that labor expenditures average about two thirds of all expenditures, so there is even more flexibility of resource allocation in the overall budget. In short, despite looming large in a perception sense, tenure is not any more limiting in fact than many other parts of an institution's financial commitments.

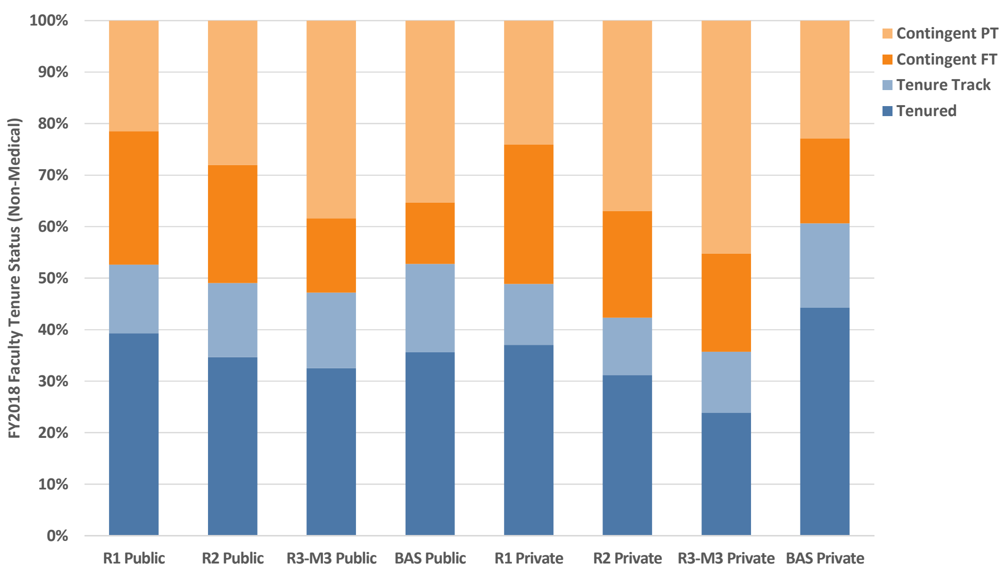

Figure 6.6. Share of non-medical faculty in instruction, research and public service by tenure status in FY2018. Tenured and tenure track faculty are shown as combined full-time and part-time appointments (less than 3% are part-time), while contingent faculty not on the tenure track are shown by full-time (FT) and part-time (PT) appointment. Source: IPEDS (2020).

Another oft-misunderstood financial aspect of tenure is what happens if there is no money. It is critically important to understand that tenure is an employment protection, and not the employment itself. Put more plainly, there is no money attached to tenure. If a university runs out of money, as has happened at some small colleges in recent years, that "financial exigency," as it is known, is considered a just cause that can enable the dismissal of tenured faculty members. Now, a university that decides it wants to close one department can't easily claim "Sorry, we don't have enough money, we need to close your department and get rid of the tenured professors!" Apart from the institution likely being able to carry out more conventional budget cuts if this was just one department in question, the university would have to declare a financial exigency, a last-ditch kind of move (somewhat akin to restructuring to avoid bankruptcy in the for-profit world) that can have significant consequences for its bond rating and ability to borrow. But if it really is in dire straits, a university can indeed lay off tenured faculty. A related scenario applies to medical schools, where the faculty are basically funded from their clinical activity. If the hospital goes belly-up and cannot meet payroll, the university will likely have no alternative way to cover the sizable salaries of the medical school professors, tenured or not.

Box 6.1. Competition in Faculty Hiring is (Sort-Of) Like Professional Sports

The arcane ritual of hiring a professor can seem odd to those outside the academy. It helps to think of departments as a bit like professional sports teams. Disciplines are specialized fields that don't generally compete across fields for faculty members, just as football doesn't compete with basketball for players. Within each discipline, however, there is competition taking place across institutions and among the faculty in the field: institutions compete for the "best" faculty members and faculty members compete for the "best" jobs. As with any other career, while salary and prestige certainly play into job changes, there are many other factors influencing when or why people change jobs (e.g., family, location, position "fit"). Faculty jobs differ from most others because, in all but the biggest cities, there is generally a maximum of one potentially suitable position in that specialty at the university or college in that town. If a town has one basketball team, then there is generally only one point-guard position that might become available. In either case, many people will try out for that one slot when there's an opening. In a departure from the metaphor, tenure-track faculty hiring is largely done by the team (the whole department or a committee) and finalized by the department head and dean. When an offer is made, there may be a counteroffer by the person's current department. Sometimes there are pre-emptive retention offers to dissuade someone from looking to move. For professors, the money is nowhere near as big as in professional sports, but the odds of landing a position are arguably better!

6.10 How do we account for faculty time and workload distribution?

Faculty members are the keystone species in the ecosystem of university employees, the core individuals carrying out the academic mission. Even so, the mix of duties reflecting that mission is not uniform across faculty members, plus the academic year is inherently seasonal, so how do we account for what the faculty is paid to do? It turns out that descriptions of faculty workload and cadence, and associated lingo, follow some common conventions across the wide variety of US higher education institutions; differences from one institution to another are typically minor variations on the overall theme.

Let's get a stone out of the faculty's shoe right up front. There are those outside the academy who think that all the faculty do (or ought to do) is teach, by which they mean that faculty members should be in the classroom instructing all day, because that's all that universities do, right? That's as ridiculous as saying that lawyers must be in court all day or that, ahem, legislators are supposed to be in session all the time. Enough said.

Faculty members are "exempt" employees under the Fair Labor Standards Act (FLSA), meaning that they are exempt from overtime pay and the minimum wage. Exempt employees are not paid by the hour but instead receive a salary for the overall work they perform, typically in professional, administrative or executive positions. The faculty, like other members of the learned professions, meet the professional exemption test because their duties are primarily intellectual, require advanced knowledge in a field of learning, and regularly entail the use of discretion and judgment (US Department of Labor 2016; 2018).

Contrary to casual assumption among uninitiated faculty members, there is no presumption of a forty-hour work week precisely because they are exempt employees under the FLSA; one is paid to get the job done no matter how little or how much time it takes. Studies have consistently found that full-time faculty members work fifty to sixty-plus hours per week. As long ago as 1942 the median was fifty-eight hours (Charters 1942), in 1992 and again in 2004 the average for full-time faculty at four-year institutions was fifty-four hours (National Center for Education Statistics 1993; 2008; Cataldi et al. 2005), another study obtained an average of sixty-one hours at Boise State University (Ziker 2014), and University of Wisconsin-Madison reported an average of sixty-three hours per week (Blank 2015). Where cited across these sources, the variation across institution types, faculty ranks, and disciplines was consistently small, typically plus/minus a few hours.

The "hours worked" number therefore represents a faculty member's 100% total effort, a denominator that is variable from person to person (and to head off a corollary rookie assumption to the one above, there is no connection between effort percentage and a forty-hour work week). The 100% is split among the three core academic mission activities of teaching, research, and a range of other public/professional service duties such as administrative assignments, clinical activity, cooperative extension, university and professional review teams and committees, and peer-review or editorial service for scholarly journals. When referring to faculty workload, one properly means the mix of percentages across all these activities that add up to 100% overall, although it is sometimes used less precisely and confusingly as a contraction of faculty teaching workload (a.k.a. teaching load).

Most, but not all, faculty members are appointed to work an approximately nine-month academic year. Depending on whether a campus calendar is based on semesters or a quarter system, exactly how long those last, and local policies on expected pre-term preparation and post-exam grading periods, the appointment period may be as short as seven or eight months or extend to ten; in any case, the standard academic year does not include summer and the standard faculty member is technically unpaid for that time. There are plenty of exceptions to this general practice. At land-grant universities, professors in agriculture often have an association with Cooperative Extension and may therefore have twelve-month contracts. Likewise, medical school professors have associated clinical responsibilities and twelve-month appointments. Faculty members at research universities in disciplines where external grant funding is available have an incentive to augment their nine-month (i.e., three-quarter time) salaries up to the full twelve-month equivalent, as compensation for grant-specified research performed over the summer (and in short breaks depending on local policy). Grants can also be used to "buy out" teaching in a regular semester using an appropriate percentage of the individual's salary. Department chairs and others doing part-time administration duties may also receive summer compensation for their duties if they are expected to work during that time.

You may have heard of faculty members doing outside consulting work. Any such activities must take place strictly outside of the effort and hours discussed above, and independently of the institution. Many universities have a contractual prohibition on full-time faculty members working for another entity, with a carve-out for consulting done as an individual. Best practices for such consulting include pre-approval by a supervisor to ensure that the faculty member has the time and flexibility to handle an outside commitment without negatively affecting primary faculty duties, and to cross-check potential conflicts of interest.

Statements of faculty workload distribution apply to the academic year and are often expressed as a string of three numbers representing teaching, research, and other service,[3] totaling 100%.[4] For example, a common distribution at R1 institutions is

3 Convention varies as to the order of the three numbers. The third is almost always service; however, teaching and research can be in either first or second place and they are sometimes ordered such that the bigger of the two comes first. It's best to check.

4 The individual percentages are typically round numbers in multiples of 10, sometimes multiples of 5, and occasionally in some finer split. The general idea is that they are broad estimates of effort meant to provide a shorthand summary of a complex set of activities, often interrelated, rather than a precise accounting.

40/40/20, whereas at an institution with lower research and higher teaching emphasis a 60/20/20 distribution would be more typical. Contingent faculty members with a teaching assignment might have an 80/0/20 distribution, while a research professor doing no teaching might have a 0/80/20 distribution. Often, new faculty members will be assigned a lower initial teaching load so that they may get up to speed in the first year or two. Survey data of faculty work time percentages illustrate the three-part average workload distributions across types of institutions with astonishing clarity (Figure 6.7). The other service component is almost unwavering at just over 20% across all types of school, with the share of teaching and research activity varying primarily with the missions of the schools and showing little distinction between public and private institutions.

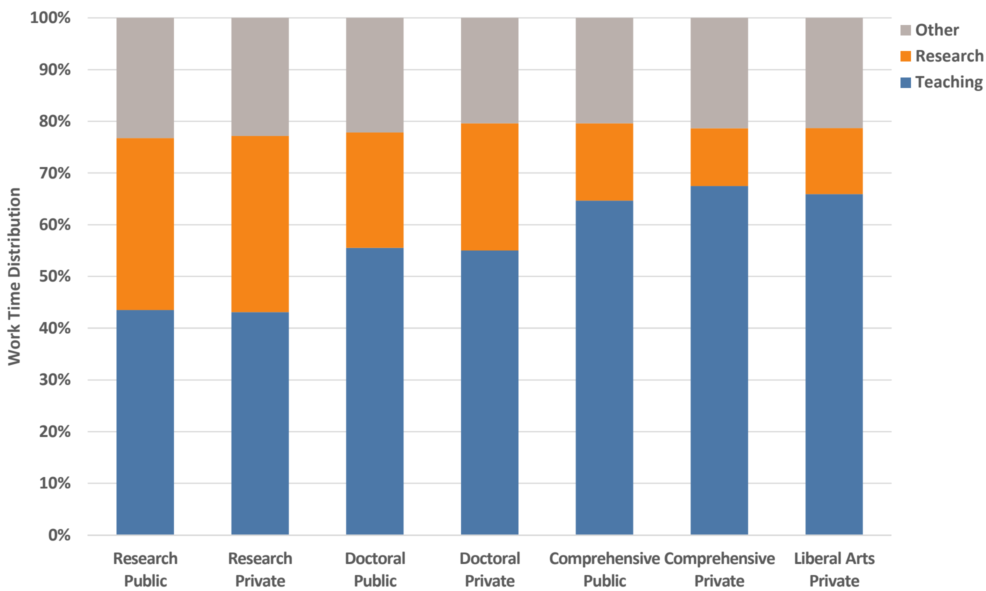

Figure 6.7. Work time distribution of full-time faculty and instructional staff by level and control of institution. Source: NCES Digest/NSOPF:04 (National Center for Education Statistics 2008).

Teaching can comprise many activities, some easier to count than others: large introductory undergraduate courses that may or may not have graduate teaching assistants; medium size upper-division classes with a heavy writing emphasis; small graduate seminars; multiple sections of the same class versus each class being different. There is more outside the classroom: class preparation; grading; advising; mentoring; curriculum coordination; and more. Useful metrics can include student credit hours, classroom hours, class size, student contact hours (the two previous metrics multiplied together), and of course, number of class sections. All these items are primarily about quantity, and none deal with quality (assessment of teaching and learning is a hugely important topic, but one for a different book). Many institutions have formulated local combinations of the above that strive for an equitable balance of teaching commitments, at least within disciplines or colleges.

Despite the minutiae, and much as for workload distribution, a simple lingua franca of teaching loads is widely used for shorthand purposes and it is based simply on classes (sections) taught by semester and year. For example, a professor at a research university might teach a 2-2 load, meaning two classes in the Fall and two in the Spring semester of a regular academic year, while a professor at a baccalaureate college might teach a 3-3 load with lower expectations for research. A 4-4 load is usually only carried by lecturers and instructors at a university, because their assignment is dominantly teaching (a 5-5 load is ordinarily only found at a community college). As an astute reader, you may have noticed that teaching one section seems to correspond to about 10% of effort but beware, "there be dragons", as the edges of ancient maps used to proclaim, because both workload distribution and teaching load are highly generalized, and they gloss over details and customs that can be of great consequence locally.

Now that you know the jargon, you can decipher a comment like the following that you might easily hear at a faculty gathering: "I'm at fifty percent admin while I'm department chair. I'm glad the dean agreed to a one and one load, so I can keep my research going."

6.11 What is happening in online higher education?

As with other sectors experiencing digital transformation, online higher education has seen its fair share of hype and myth, while evidence is emerging about significant changes that are under way. Let's review the former before analyzing the latter.

- *Money*: Online technology was supposed to drive down the price of a degree by driving down the cost of production. Hopes for cheap (or virtually free) degrees, or inversely, institutional hopes for a windfall, have not materialized. Marketing, instructional support, and course development drive costs up while competition drives pricing down, and the upshot is that the typical institution charges near-standard tuition, often more with fees (Poulin and Strout 2017; Legon and Garrett 2018).
- *Disruption*: Clayton Christensen originated the theory of "disruptive innovation" and applied it to higher education (Christensen and Eyring 2011), and he followed that book with predictions that half of American universities would go bankrupt within a decade (Lederman 2017). It's been almost a decade and nothing of that scale has happened. The core idea is that online technology fundamentally changes the business model for higher education, leading to the disruption seen in other sectors. While his timing and hyperbole were wrong, the jury is still out on his underlying ideas.

- *MOOCs*: Massive Open Online Courses perhaps defined the high-water mark of online hype in higher education, circa 2012. Elite universities and others opened MOOCs to anyone for free but, pointedly, not for credit towards a degree. Millions registered for these classes in the US and around the world; exceedingly few (3–5%) completed them (Coffrin et al. 2014) and specialized interventions to raise completion have not had widespread success (Kizilcec et al. 2020), although MOOCs may yet find a limited role (Yang 2013; Hoxby 2014; Impey 2020).
- *Access*: The potential of online higher education to reach those who traditionally have not had access, domestically and internationally, still holds promise although there has not been much progress in online utilization by low-income and other under-served populations in the US, or by people in developing countries. But, and it is a big but, access to online higher education has been transformational for those already in the workforce and in the military (see below).
- *Unbundling*: Amid the disruption and MOOC fever, online was supposed to lead to the unbundling of degrees as the core credentialing vehicle. Degree programs and classes would be split into modules and via micro-credentialing (e.g., badges) could be used alone or assembled into certificates. There's some of that in workplace training, but it's not visible in online higher education where the fully-online degree is the core strategy (Legon and Garrett 2018).
- *Poor Quality*: In the early days the quality of teaching and content in online higher education carried a stigma. A side-benefit of the MOOC infatuation was the engagement of the elite institutions, which helped overcome perceptions of poor quality. Nowadays, even with the pandemic-related surge in online delivery, it is increasingly considered equivalent in quality to conventional higher education (and indeed better than a mediocre face-to-face lecture class).
- *Luddites*: In other sectors there were sentimentalists, such as those who could not imagine reading the newspaper on anything but paper (and a day late), or those who could not imagine losing the ambience and serendipity of the neighborhood bookstore. Let's also not forget the spectacular strategic shortsightedness of Kodak not anticipating digital cameras or Blockbuster video stores not grasping the advent of Netflix and streaming. Nostalgia for the ivied groves of academe,[5] along with uncritical denial of the advantages of online technologies, is not a viable strategy.

5 This evocative phrase was used by Mary McCarthy (1952) as the title of her academic novel, one of the first in the genre that has since grown to include dozens (Wikipedia 2019a). Selected gems include Jane Smiley's *Moo* (1995), *Straight Man* by Richard Russo (1997), *Disgrace* by J.M Coetzee (1999) which helped him win a Nobel Prize, and Julie Schumacher's *Dear Committee Members* (2014).

Online tools clearly add value to multiple aspects of teaching, learning and knowledge dissemination through multimedia materials, asynchronous and synchronous delivery, and perhaps most importantly in comparison to earlier distance technologies such as video courses, interactivity. Yet, face-to-face higher education, especially for eighteen- to twenty-two-year-olds in the US university context, has strong experiential and extra-curricular components that are not easily replicated online. The online debate, when considered coolly and without hype, is not an either/or discussion between these two alternatives; the smarter approach is to consider how mode meets market and mission. US universities are already diverse in their markets and missions (small elite private, large public research, regional comprehensive, technical or liberal arts focus, commuter or residential, applicants who are high school graduates or already in the workforce, etc.), and online approaches will have advantages and disadvantages particular to each context. In some cases, online approaches will complement and strengthen an institution's business model, and in others they may indeed threaten that model. Savvy institutions are figuring out what is best for them and adjusting their courses accordingly. Some have implemented dramatic changes, others are steadily diversifying, and many others are still on the sidelines. Much of this has been accelerated by the flip to remote instruction during COVID-19, but it remains to be seen what mix institutions will return to post-pandemic.

It's important to include data from outside the four-year nonprofit segment for context, because much of the early action in online higher education has been in for-profit institutions. All institutions with more than 10,000 fully-online enrollments in FY2019 are shown in Figure 6.8, which includes not only for-profits but also baccalaureate special-focus colleges and two-year institutions along with our usual set of four-year nonprofit institutions by type. Examining the set by sheer size of online enrollments, in FY2019 the University of Phoenix had 94,000 enrolled online, a shadow of the 470,000 it had in 2010. It is now the third-largest online school, with Western Governor's University (WGU) leading the pack at over 120,000 and Southern New Hampshire University (SNHU) at 97,000, both R3-M3 private nonprofits that have risen quickly in recent years (McKenzie 2018b). Several other for-profits and privates follow them, and at position number seven we find the largest public online university, the University of Maryland University College (UMUC). As an example of an evolving public institution, UMUC has been around since 1947, primarily serving military members and working adults in the region; it recently announced plans for a name change and associated global expansion strategy (McKenzie 2019c). Other major publics with a sizable online presence are ASU and Penn State, as well as two that have acquired previously for-profit institutions that are now affiliated with the parent public nonprofit: Purdue and its purchase of Kaplan (Purdue University 2018), and the University of Arizona and its acquisition of Ashford (McKenzie 2020b). The rising role of the nonprofits versus the for-profits in recent years has been especially noticeable, with nonprofit status signaling quality against growing skepticism of the for-profit sector in the wake of student loan scandals and the enforcement of gainful-employment regulations (McKenzie 2018b). A related development has been the rise of online program management (OPM) companies to help colleges grow their online course offerings. Those contracts can cede extensive control and up to half the tuition revenue to the OPM, what a recent report calls a "deeply unsettling picture" (Hall and Dudley 2019).

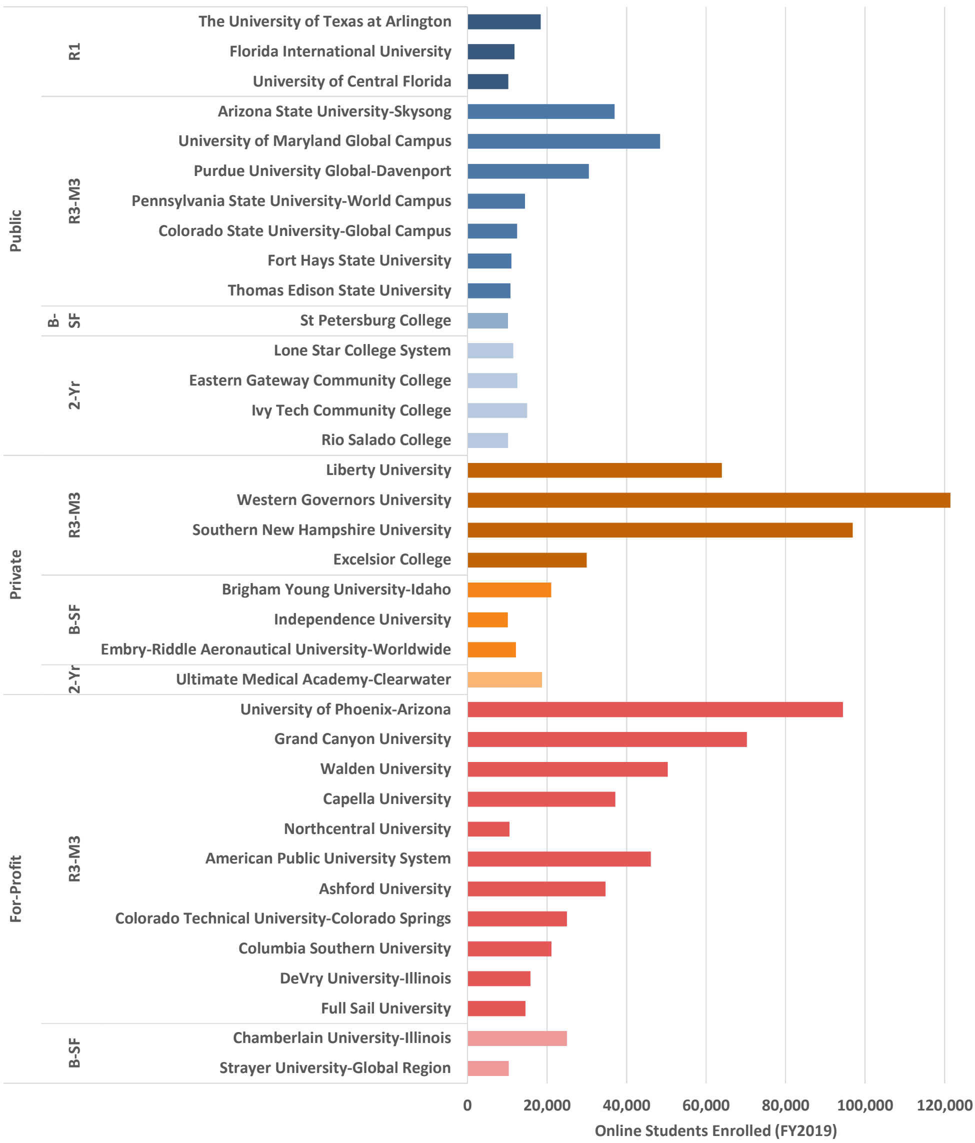

Figure 6.8. All institutions with greater than 10,000 students in exclusively online (a.k.a. distance) enrollment for FY2019 (Fall 2018), by Carnegie classification and control, including private for-profit institutions, baccalaureate special-focus colleges, and two-year colleges. Source: IPEDS (2020).

Box 6.2. A Parable for Online Higher Education

While there is little question that change is afoot, it is not entirely clear in what ways online education will reshape universities. Think for a moment about the nature of adaptation to technological change in dramatic entertainment: just over a century ago, it was all about on-stage productions in a theater; with the advent of movies, some aspects of theater moved to the new technology and others remained on stage; television brought a new wave that did the same and in turn disrupted both the theater business and movie-going; and more recently, on-demand streaming video services have changed the game again. My point is not the technological change per se, it is that today we still have the live experience of stage theaters, the immersion of movie theaters (Figure B6), and the convenience of home viewing, with each adapted to its niche. Make no mistake, there were upheavals with each new technology, such as individual theaters closing or adapting to showing movies, or the rise and fall of drive-in movies, the demise of the big three television networks and the rise of cable, and now the shift from cable to online services. In this scenario, which I think is more apposite to higher education than the all-or-nothing examples like Blockbuster and Netflix, there is an evolutionary space for prior forms, especially those with an intrinsic experiential component. Crucially, the evolved niches are still competitive and require continual adaptation to remain relevant and financially viable.

Figure B6. This photograph from July 1, 2006 shows the County Theater in Doylestown, Pennsylvania, a glorious art deco building from 1938 that is still showing movies today. Source: Frederick (2006), Flickr, CC BY 2.0, https://www.flickr.com/photos/galfred/180834829.

Looking now across institutions by type, we can see that the schools with the largest online enrollments are unevenly spread across categories (Figure 6.8). This is partly because several of the R1 publics designate their online campus as a separate "branch" campus, which is why they show up in the R3-M3 category. Others have a brick and mortar campus identity but they are generally not flagship institutions (e.g., UT Arlington but not UT Austin) although some are large (e.g., University of Central Florida). Also, there is a growing set of schools in the 5,000 to 10,000 online enrollment range (not shown) that are making concerted efforts to grow, such as Georgia Tech, which is carving out a particular niche to become a market innovator (Schroeder 2019). The largest online R1 privates are likewise in that next group of several thousand enrollments, and all are elite names (e.g., Johns Hopkins, USC, and Harvard). There is a handful of R2 schools in this smaller-enrollment group as well and, as one might expect, almost no baccalaureate colleges have significant online enrollments. As we've seen, the action is in the R3-M3 category, where WGU, SNHU, and Liberty University are many times larger than most of the other nonprofits doing online education. The number of institutions with substantial online enrollments is still small enough to fit in one figure today, but online enrollments have increased for fourteen consecutive years, with growth in 2016 exceeding 7% across nonprofit institutions (Seaman et al. 2018). No doubt, the online pivot across higher education during the COVID-19 pandemic will add to this trend.

Returning to our regular set of schools, online enrollment data reveal distinct patterns when examined by sub-category (Figure 6.9). Exclusively online enrollments average 5–10% of total enrollments for most types of institutions; private baccalaureate

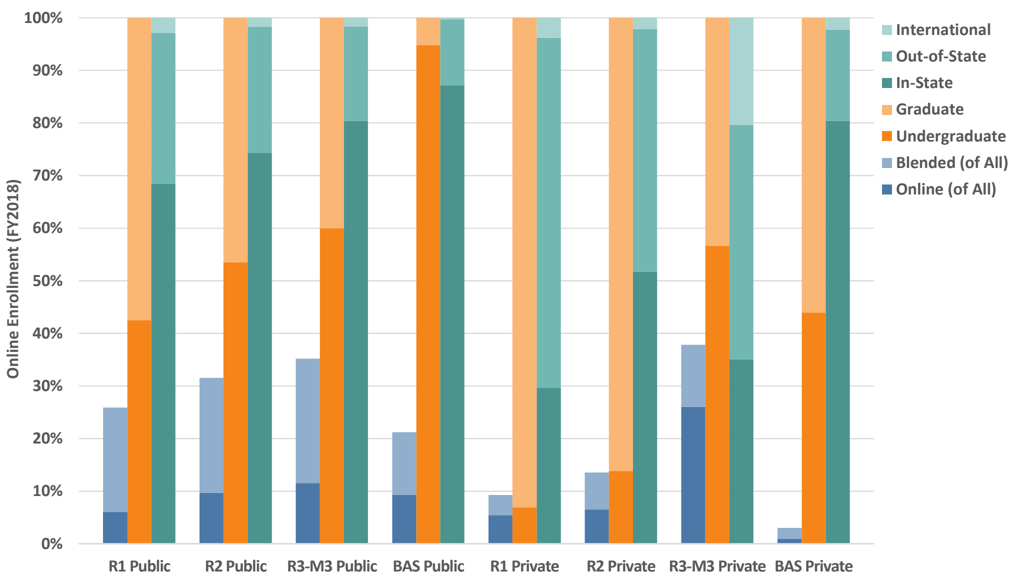

Figure 6.9. Exclusively online (distance) and blended online/face-to-face enrollment as a share of total enrollment, as well as shares of exclusively online enrollment by degree level and by location, averaged by Carnegie classification and control for FY2018 (Fall 2017). Source: IPEDS (2020).

colleges average just 1% and, as we've seen above, the R3-M3 privates have the highest share, averaging 26% of total enrollment. Thus today, at the most common type of institution in the nation, the same type that is most financially challenged and has the highest proportion of contingent faculty, over one quarter of all students are already completely online and effectively don't set foot on campus.

An interesting development has been the rise in blended or hybrid courses, in which students take a mixture of face-to-face and online classes while attending an institution. These statistics are not typically included in counts of "online" students because the classes are taken by students who are campus-based. A student, typically an undergraduate, may opt to take the online version of a class because of scheduling around other classes or a part-time job, availability of open slots, preference for an instructor, degree requirements, etc.—in other words, for many of the same reasons they choose face-to-face classes. In Figure 6.9 we can see that students taking online classes in blended mode are more common at publics than privates, more than 20% of all enrolled students at R1, R2 and R3-M3 publics in a given semester. Because the individuals taking the classes change from one semester to the next, this means that the typical face-to-face undergraduate takes several online courses before graduating. Strikingly, while relatively commonplace, blended learning is not a core strategy at most institutions (Legon and Garrett 2018).

Returning to exclusively online enrollments, you may be surprised to see that graduate students make up a large share of the total, and they constitute the majority at most privates and R1 publics. It turns out that professional and technical graduate degrees for working adults wanting to upgrade their qualifications were one of the early success areas in online higher education; e.g., business, information technology, education, and healthcare were the most popular in 2016 (Silber and Chien 2016). Undergraduate enrollments have since followed and will probably dominate in the long run by sheer force of numbers. As expected, research-focused institutions have greater proportions of online graduate students while the R3-M3 schools and baccalaureate colleges have higher proportions of undergraduates.

The location of exclusively online students may also surprise you. At most types of institutions, the lion's share of online students is located nearby, in-state. For undergraduates, the national median across all institutions is just 13 miles away, 130 miles on average (Campbell and Wescott 2019). Students from within the institution's state make up over half of all online enrollments across most types of school. The exceptions are the R3-M3 privates (likely skewed by those few extremely large schools) and the R1 privates whose elite branding enables a national market. The share of online international students is small and averages just a few percent at most types of institutions, a counterintuitive pattern given the potential reach of online and the international nature of other internet technologies. Again, the R3-M3 schools are the exception with over 20% international online enrollments.

To round out our picture of the typical online student, the data show that age and occupation differ from the conventional fresh-from-high-school student. Across all postsecondary institutions (not just four-year nonprofit institutions) in FY2016, the percentage of undergraduates whose entire program was online (i.e., distance education) was under 4% for age groups under twenty-three years old, and more than 22% for age groups thirty years or older (Campbell and Wescott 2019). The same data set shows that for non-military undergraduates about 10% are enrolled in online-only programs, whereas for veterans and active duty military the figures are 20% and 33% respectively (Campbell and Wescott 2019). Lastly, for undergraduates not working, 7% are in online-only programs versus 22% for those who are working full time (Campbell and Wescott 2019).

Comprehensive financial data for online programs are not readily available, although we can certainly infer funding flows from the various types of enrollment data above. Further insights on the funding of online programs can be gained from a regular survey of chief online officers (Figure 6.10). About half of these respondents see online programs as net sources of revenue for the institution with almost one third seeing variation in cost/revenue balance across programs. Most programs charge standard tuition, many with additional fees (Legon and Garrett 2018). Standard tuition at private institutions is much higher than at the publics, and therefore the privates are less likely to charge higher online tuition than the publics, given competitive market pricing for high-demand and high-reward programs. The allocation of online revenues is seldom dedicated solely to supporting online activities; a combined-revenue-for-general-needs

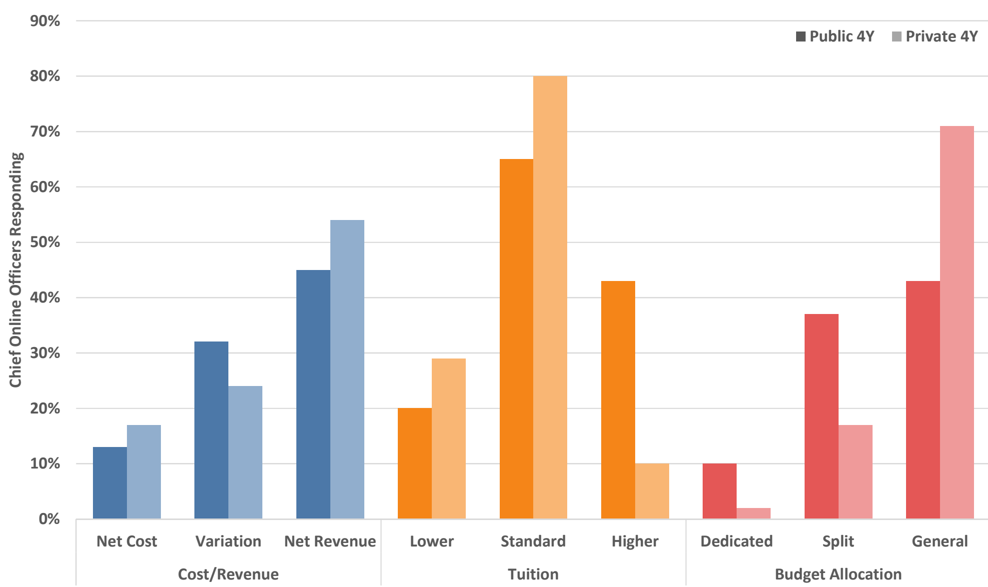

Figure 6.10. Survey responses of chief online officers at public and private four-year institutions regarding net cost or revenue generation of online programs, tuition rates charged, and whether online budget allocations are dedicated to online, split between online, academic departments and the general institution, or combined with all revenue for general use. Categories do not total 100 because of omitted responses and/or multiple rates at some institutions. Source: CHLOE 2 (Legon and Garrett 2018).

model is the most common at private institutions, while public institutions use almost equally either a split model (between online, academic departments and general needs) or the combined revenue model.

A recent development is the formation of private companies and university spin-offs competing in the market for employer-provided tuition benefits (Fain 2019). Some of that market is for workers who have some college education but did not complete a degree, and another segment is the provision of customized online credential programs that are not full degrees. These intermediary online-brokering companies offer streamlined services to employees, matching them with education providers and managing their tuition reimbursement process, while receiving revenue for those services from the sponsoring employer. No doubt this new space will be developing rapidly as online education evolves.

6.12 What is the budget role of international programs?

International programs have the laudable educational goal of creating graduates who are globally informed. Not only do US students study abroad, experiencing life in a different culture first-hand; the world also studies in the US, bringing a valuable array of international perspectives stateside. In addition to generating cultural exchange, international programs also involve money and markets.

It is useful to appreciate that there are four (sometimes intentionally confused) logics at work in international student mobility (Usher 2019): the pilgrimage logic in which scholars gathered in centers of learning as an academic rite of passage (e.g., medieval times, or Americans to the UK or Germany in the late 1800s); the soft power logic of mutual bond-strengthening (e.g., the US Fulbright program, or the Erasmus program across Europe); the war-for-talent logic in which higher education serves as an international talent magnet for the host nation (e.g., the US since the 1950s); and, the pecuniary interest logic in which revenue from international students bolsters the bottom line of income-challenged public and private universities (e.g., the UK starting in the 1980s, Australia in the 2000s, and the US especially since the Great Recession). The four logics are not mutually exclusive and often the pecuniary interest logic is camouflaged in soft power or war-for-talent terms (Usher 2019).

Budgetarily, most of the action is with inbound international students (the preferred term, rather than foreign students). Their impact is analogous to that of out-of-state students, as we saw in Section 2.13, and growing numbers of universities are contracting with companies that recruit international students into so-called pathway programs with mixed success (Redden 2018). Figure 6.11 illustrates international undergraduate and graduate student enrollments as a share of total enrollment by type of institution for FY2018. International graduate students are disproportionately over-represented (about double the overall rate and reflecting the war-for-talent logic among others) and naturally they are found predominantly at R1 and R2 institutions;

furthermore, note that graduate students make up half of all international students at R3-M3 privates. The highest proportions of international students are found at R1 private universities (over 20%) and at R1 publics and R2 privates (over 10%), with other types of schools averaging 6% international students or less.

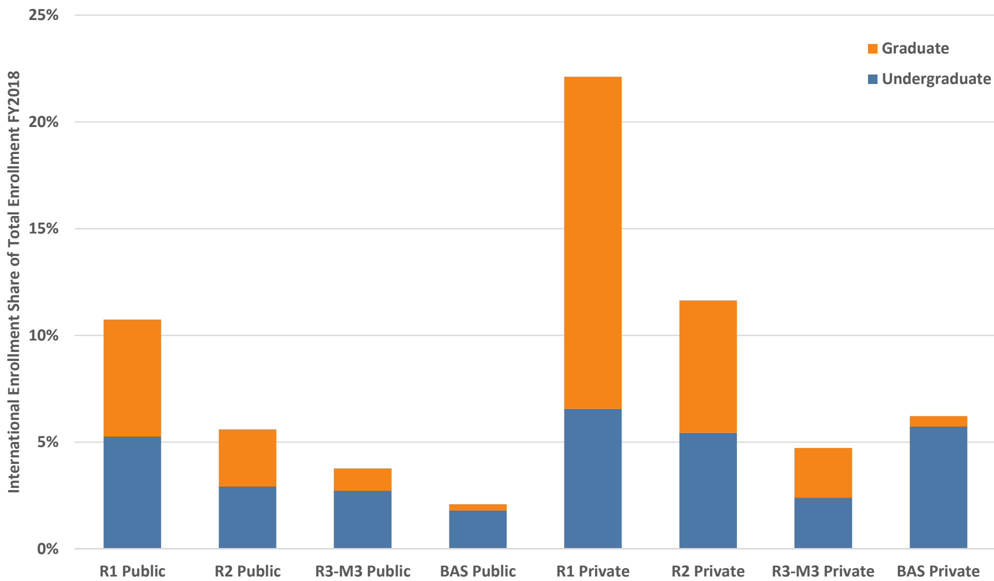

Figure 6.11. FY2018 undergraduate and graduate international enrollment as a share of total enrollment, averaged by Carnegie classification and control. Source: IPEDS (2020).

Trends in international enrollments have been generally upward across all institution types for several decades (Figure 6.12), growing at approximately twice the rate of overall enrollments. International undergraduate enrollments grew modestly through the late 2000s and then surged dramatically following the Great Recession, presumably in part as an institutional revenue opportunity. International graduate student enrollments saw more consistent growth overall with periods of variability. The consequences of post-9/11 immigration rule changes can be observed as a multi-year downturn in international enrollment in the 2000s; likewise, the downturn in FY2017 and FY2018 appears to coincide with country-specific immigration bans and widely reported anti-immigration rhetoric. That downturn continued in FY2019, and in Fall 2020 the lockdowns and border closures due to the COVID-19 pandemic led to an estimated 43% plummet in new international enrollment (Fischer 2020). International enrollments have rebounded after other major international events (e.g., the 9/11 attacks in 2001), but it is not yet clear to what degree these numbers will rebound after the pandemic.

The total numbers of international students and their primary sources of funding are shown in Figure 6.13. International undergraduates are largely self-funded (with funding by their families or by their home governments or institutions) and only about 9% are funded by the host institution. This is critical from a revenue standpoint: we

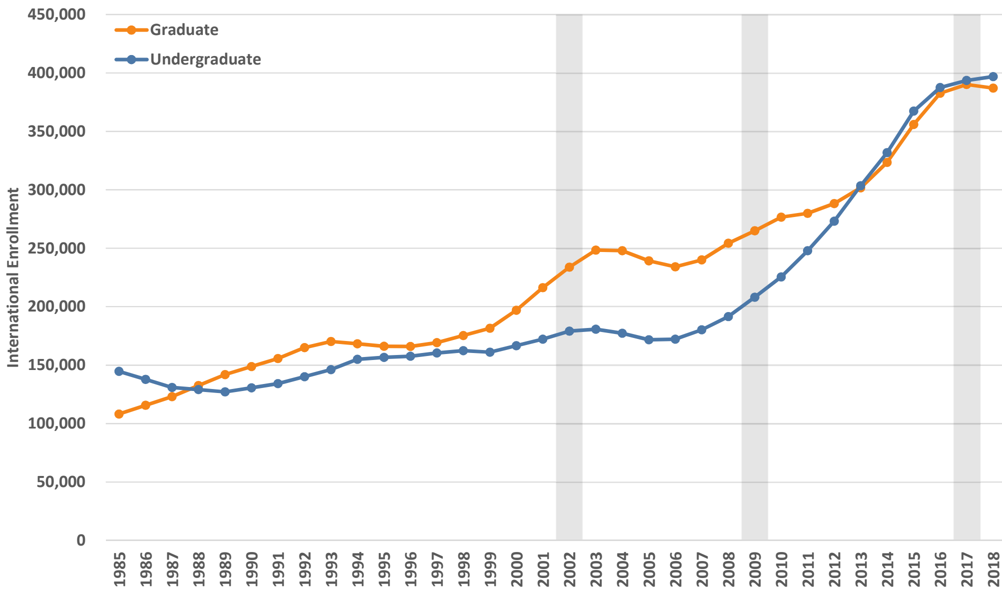

Figure 6.12. Trends in undergraduate and graduate international enrollment by fiscal year, totaled across the eight institution types. Values for FY1986, FY1988 and FY1990 are interpolated from neighboring years. Shaded bars indicate the onset of major changes in immigration policy (FY2002 and FY 2017) and the Great Recession (FY2009). Source: IPEDS (2020).

can infer that most international undergraduates are paying near-full tuition (and at the publics, this would be at the out-of-state rate). The corresponding share is smaller for international graduate students because a greater proportion of them are funded by the host institution. This funding is typically via graduate assistantships, and we saw in Section 5.9 that those are split roughly 50:50 between research and teaching assistantships. While research assistants usually have their tuition paid by the grant from the funding agency, teaching assistant tuition is typically foregone institutional revenue. Therefore, about 15–20% of international graduate students are funded by the host institution directly. For completeness, Figure 6.13 shows that non-degree seeking students (e.g., visiting for a semester) at either level are a small proportion of the total; also shown are more than 200,000 international students who, after completing their full-time studies, stay on for Optional Practical Training, employment in their field that is directly supported by a salary from the employer and is time-limited (one year, longer in STEM fields).

More than half of all international students in the US were from just two countries in FY2019: China (34%) and India (18%), and they have supplied essentially all the dramatic post-recession growth in international enrollments (Figure 6.14). Enrollments from South Korea and Saudi Arabia, the next two leading countries of origin, have decreased in recent years; the trend for all remaining countries (not shown) was essentially flat from FY2000 to FY2014 followed by modest recent growth through

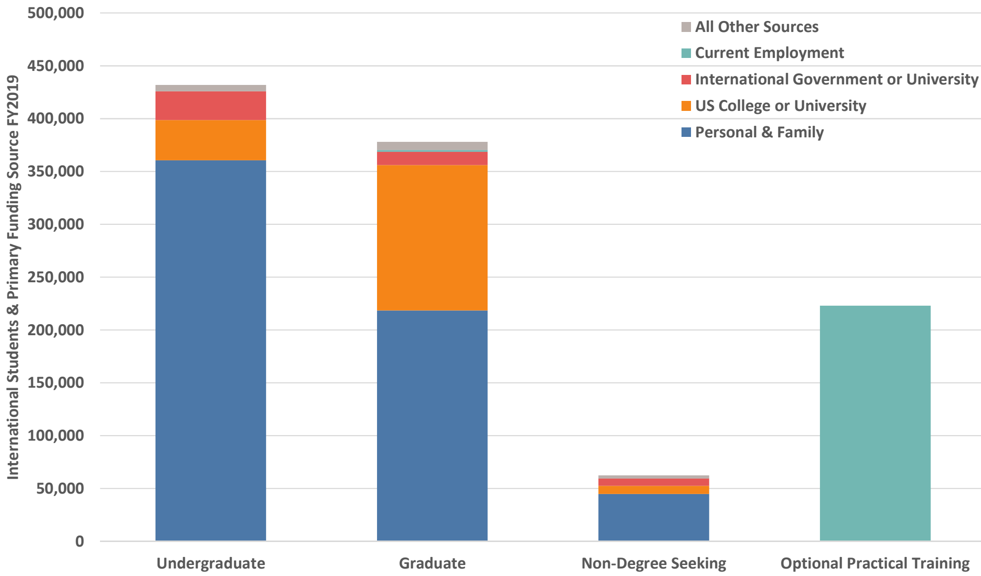

Figure 6.13. All international higher education students in the US and their primary source of funding, FY2019. Source: IIE (Institute of International Education 2019).

FY2018. The dominance of China and India in the portfolio means that any negative geopolitical or immigration issues between these countries and the US could have substantial financial consequences for tuition-dependent institutions. For example, if enrollments from those two countries returned to pre-recession levels, a drop of about 40% in total, a school with 5% international enrollment would see that drop to 3%, representing a 2% decrease in total enrollments and associated tuition revenue.

International programs have several other dimensions, including study abroad (i.e., outbound students), exchange (both directions), and international branch campuses. Because study abroad can entail a significant expense from the student and family perspective, US institutions tend to run their own programs on a cost-recovery or small margin basis rather than as a significant institutional net revenue source (although there are a few that specialize in study abroad, as well as numerous third-party operators). Over 330,000 US students study abroad each year, with Europe dominating the top destinations, which for FY2018 were, in order: UK, Italy, Spain, France, Germany, Ireland, China, Australia, Costa Rica, Japan, South Africa, and Mexico (Institute of International Education 2019).

Exchange programs are entirely different. Their philosophy is to avoid imposing additional costs on the student through a simple mechanism: bodies move, tuition stays put. Agreements are set up so that the students effectively switch seats with neutral institutional impact because they keep paying tuition at home, and the institutions ensure a reasonable balance over time. This is especially useful if pricing is lopsided when compared to the US (i.e., countries with centrally-funded education and low or no tuition, and low-income countries).

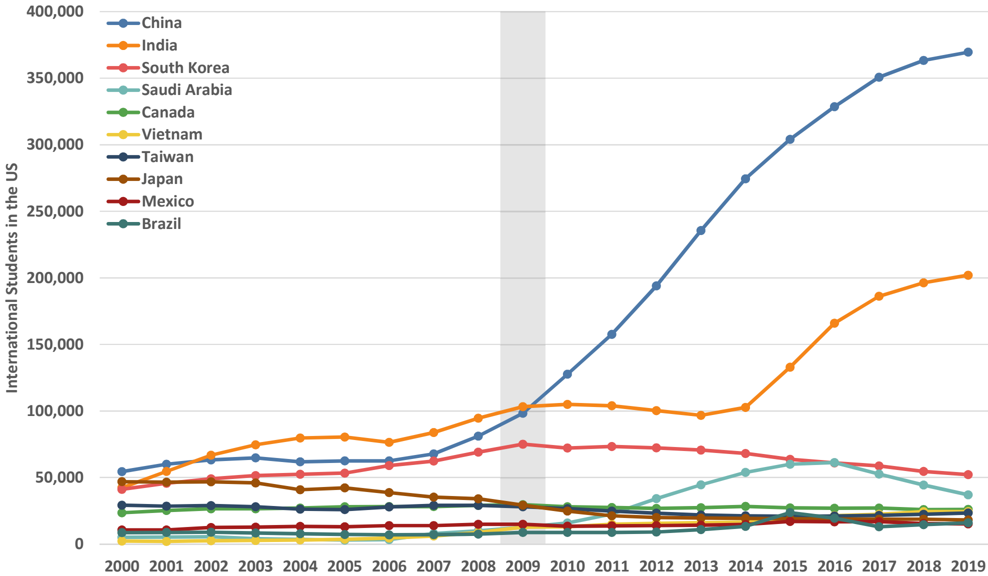

Figure 6.14. Recent trends in international higher education students studying in the US by leading countries of origin, FY2018. Source: IIE (Institute of International Education 2019).

An international branch campus (IBC) is partly or fully owned by the providing university, which awards a degree in its name based on an academic program run substantively on-site in the host country. The most recent comprehensive study shows that IBCs have been opening at a rate of about 11 new campuses per year, worldwide, since 2006 (The OBHE and C-BERT at SUNY Albany 2016). Of the 249 in operation serving about 180,000 students, almost one third have home institutions in the US (78) followed by IBCs based in the UK (39), France (28), Russia (21) and Australia (15), per Garrett et al. (2016). The host countries with the most IBCs are China (32), United Arab Emirates (31), Singapore (12), Malaysia (12), and Qatar (11), with the growth seen in the Persian Gulf countries during the 1990s and 2000s now halted and China growing markedly instead (Garrett et al. 2016). Part ownership of IBCs is common, often in partnership with the host government, other educational institutions or private entities, with the rationales for the commitment including revenue, internationalization and status, and with concerns including financial sustainability, mission creep, reputational risk, and academic freedom issues (Garrett et al. 2016). The large initial capital investment in IBCs can sometimes be offset by the local government partner, but IBCs have operational costs and activities that rival a regular campus, including a set of support services (a part of their appeal in recreating the home campus experience abroad) as well as complying with financial, labor and other laws and regulations not only of the home country but also of the host country (Crist 2017). About 13% of all IBCs have closed over time, based on the most recent data (Cross-Border Education Research Team 2017). This is a high failure rate by higher education standards but a low failure rate in comparison to other sectors involving entrepreneurial startups; for example, 90% over three years in technology (Kinser and Lane 2016). Finally, blended models have emerged, such as a "microcampus" network that merges elements of in-person delivery with online education on a host campus (Redden 2017).

6.13 What are the trends in library expenditures?

University libraries are iconic institutions, often centrally located on campus, that represent both the repository and accessibility of knowledge at the heart of the academy. So much so that some are architectural treasures: the George Peabody Library at Johns Hopkins University, the Linderman Library at Lehigh University, the Suzzallo Library at the University of Washington, and the Geisel Library at the University of California in San Diego (yes, it is named for Dr. Seuss), to mention just a few.

Knowledge in the contemporary era is increasingly stored electronically and virtually, rather than physically on paper, and academic libraries are changing accordingly. The thousands of linear feet of shelf space ("the stacks") that were devoted to local copies of broadly available periodicals and books are giving way to information commons, study rooms and even classrooms as the library provides support and access to specialized digital information sources from all over the world. Instead of the pre-digital model of purchasing resources once and keeping them forever, libraries now enter into licensing agreements with vendors to purchase access to virtual volumes. To be sure, established libraries will continue to maintain physical collections of special and unique items and even make them available to others digitally. Yet, the workaday set of scholarly journals and other frequently accessed items has been predominantly electronic for years. At smaller schools, 90% or more of serials collections are now electronic; R1 and R2 university libraries house collections of specialized non-digital subscriptions, so the electronic share is 60–80% (IPEDS 2020).

The mix of costs in library budgets is remarkably consistent across types of institutions, with 59% (plus/minus 5–10%) of expenditures going to personnel and operations and the other approximately 40% going to acquiring resource materials (Figure 6.15). Three quarters of the materials budget goes to ongoing subscriptions, the bulk of which are scholarly journals, while the other quarter is spent on one-time acquisitions, such as new books. The challenge for libraries is as follows: total library budgets have roughly kept pace with inflation (more so at bigger institutions and less so at smaller schools, within about 0.5%) but subscription costs have seen rampant increases for decades, well before the digital era.

The trend in subscription expenditures is clear in Figure 6.16, where ongoing subscription costs for research libraries have been increasing by 3.4% over inflation since the 1980s. This contrasts with expenditures for one-time acquisitions, which have remained flat in real terms. Comparable data for R1 libraries are overlaid in Figure 6.16 and, while the amounts are higher for private versus public institutions, the trends are the same. This state of affairs has come about due to monopolistic tendencies in

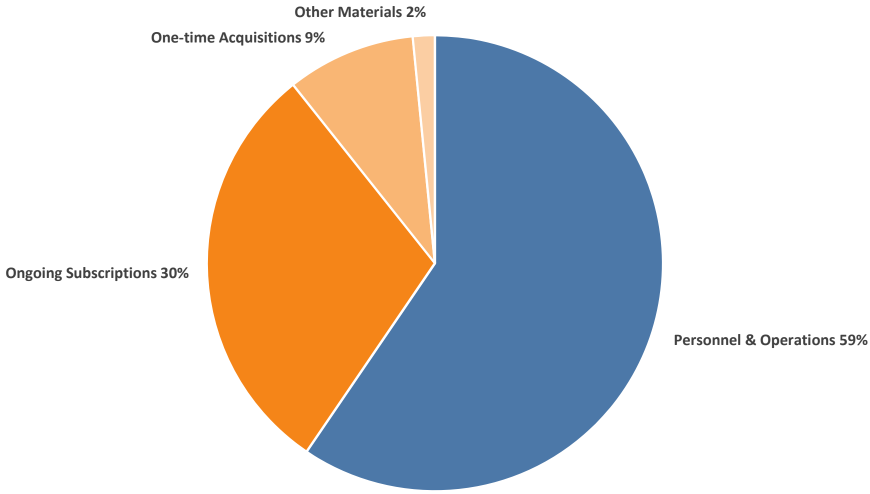

Figure 6.15. FY2017 share of library expenditures for personnel and other operations and for resource materials, including ongoing subscriptions (e.g., journals), one-time acquisitions (e.g., books), and other materials, averaged across institutional categories. Source: IPEDS (2020).

the for-profit journal market, in which journals are not interchangeable and are only available from one vendor. For highly-accessed journals, libraries have had limited negotiating room as continued subscriptions to those journals are vital to the success of the university's researchers.

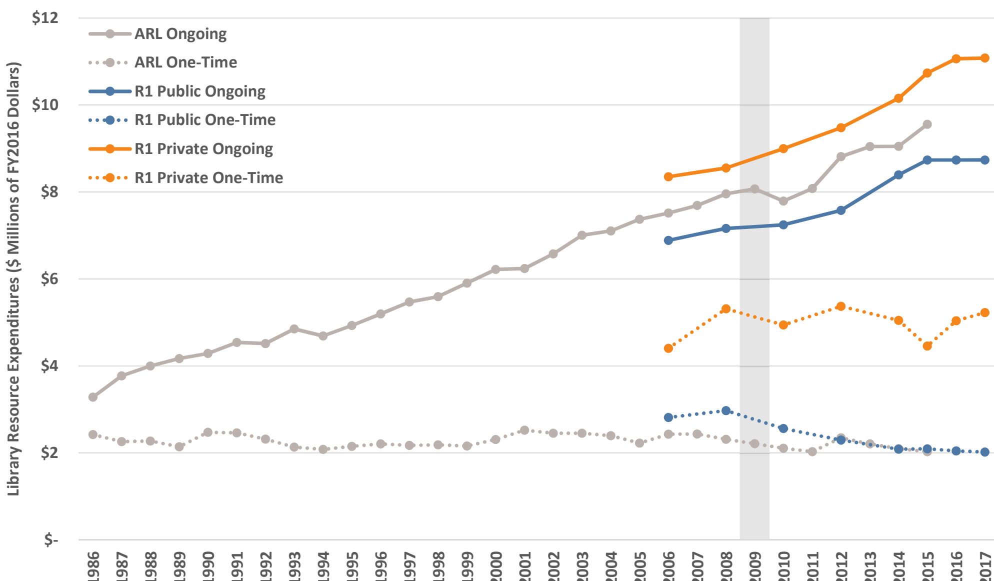

Figure 6.16. Trends in library expenditures for ongoing subscriptions (e.g., journals) and one-time acquisitions (e.g., books) for the median of Association of Research Libraries (ARL) and the average of R1 public and R1 private institutions respectively, by fiscal year in 2016 dollars. ARL data from FY2012 onward are adjusted to account for a survey methodology change. Note that R1 data are available only in even years before FY2014. Sources: ARL (2016) and IPEDS (2020).

To make matters worse, the large commercial publishers market their journals in bundles, much like cable television providers bundle channels, in which many minor titles are packaged with those in highest demand. This practice became known as the "Big Deal" in which the price per title in a discounted bundle is significantly lower than the sum of the individual list prices, although Big Deal pricing has risen nonetheless.[6] A recent study evaluated the cost-effectiveness of bundled subscription prices by comparing cost per citation from 19 nonprofit and 6 for-profit publishers (Bergstrom et al. 2014). As shown in Figure 6.17, the cost per citation from for-profit publishers is substantially higher than from the nonprofits, with big differences by institution type that reflect the differential willingness (necessity) of major research institutions to pay (Bergstrom et al. 2014). For R1 institutions, the bundle cost per citation averages roughly $1 from nonprofit publishers but about $6 across the major for-profit publishers. The range by publisher is large: about $2 for Elsevier, $3 for Springer, $5 for Wiley, and up to about $11 per citation for Taylor & Francis. At R2 institutions, the average for-profit rate is still more than double the nonprofits, and at master's institutions it is about 50% more (Figure 6.17).

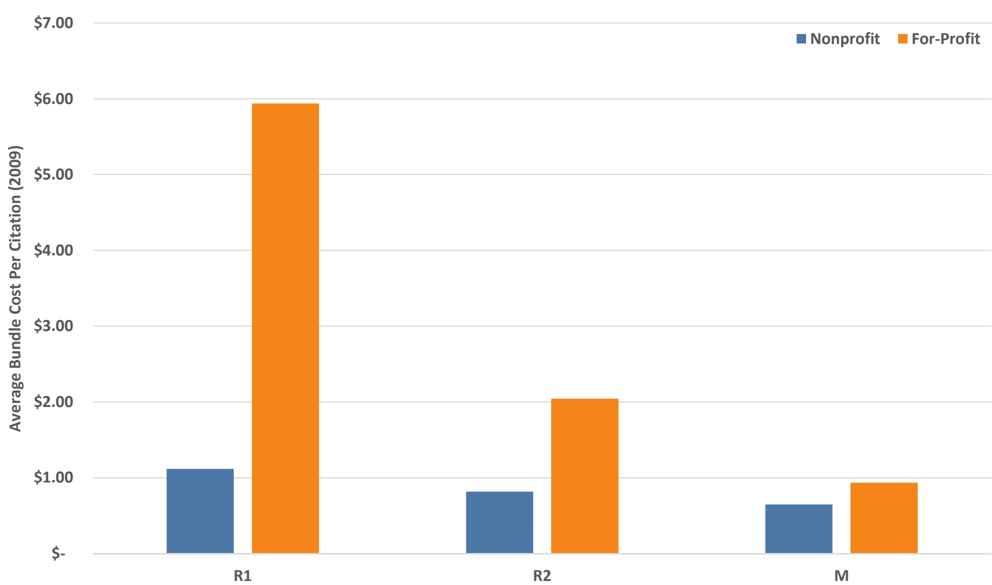

Figure 6.17. Average cost per citation for journal subscription bundles from 19 nonprofit and 6 for-profit publishers. Source: Bergstrom et al. (2014).

University libraries have not stood by idly, and through systems and consortia they have had some success in bargaining. The University of California system has taken a notably hard stance, keeping their increases from Elsevier to an average annual rate

6 The Scholarly Publishing and Academic Resources Coalition (SPARC) makes available a database of Big Deal journal subscriptions by university (SPARC 2019).

of about 1.5% versus the initial 5% for the decade ending in 2013 (Bergstrom et al. 2014); nonetheless, negotiations reached a breaking point in 2019 when the UC system dropped its Big Deal with that publisher, garnering statements of support from other libraries that have done or are contemplating doing the same (McKenzie 2019b). Part of the desire in that negotiation was for a "read-and-publish" deal, which would combine the cost for accessing content behind a paywall with another cost structure known as open access. The UC System recently announced just such an open-access agreement in a landmark deal with Springer Nature (McKenzie 2020a).

Open access is a broad movement, supported by many but not all librarians and scholars, to make published research freely available to read. Under open access, there are two main models: in the "gold" model the author or funding agency pays an upfront processing and publication fee (which can amount to thousands of dollars), while in the "green" model a version of the article is made available for free after a delay period (e.g., six months or a year) but subscription remains for immediate access (Ellis 2019). Many US funding agencies now require the green model, and the major European funding agencies now require the gold model (Ellis 2019).

It is not clear what this will mean for library budgets in the long run. The indignation of scholars at having to pay unreasonable rates to either publish or read research that they produce (and that they peer-review for free as part of the publication process) will only diminish if they move away from for-profit publishers. Yet, many of their most prized journals are from those very publishers; Springer Nature recently announced optional open access processing charges of more than $11,000 per article (Else 2020). It remains to be seen whether the open access movement will succeed in keeping down the costs of accessing the latest knowledge (see Section 9.4 for more on open access).

6.14 How much do we spend on information technology?

Institutions spend about $1,000 per person on campus for information technology (IT). Figure 6.18 illustrates expenditures on central IT per institutional FTE (full-time equivalent students, faculty and staff), with average totals ranging from about $800 to $1,500 per year. Research institutions spend more than master's institutions per FTE, and baccalaureate colleges (most of which are private) also spend relatively more. Over half of these amounts go towards personnel costs, about one third go to infrastructure and services on campus, and 2–6% goes to external providers (e.g., "cloud" services such as email or web servers hosted offsite). The total institutional investment in central IT can therefore total millions to tens of millions of dollars annually depending on the size of the institution, comparable to a mid-sized academic college. From FY2010 to FY 2016, inflation-adjusted central IT spending per FTE has grown at annualized rates of 0.3% at master's institutions and 1–2% at research universities and baccalaureate colleges (Lang 2017).

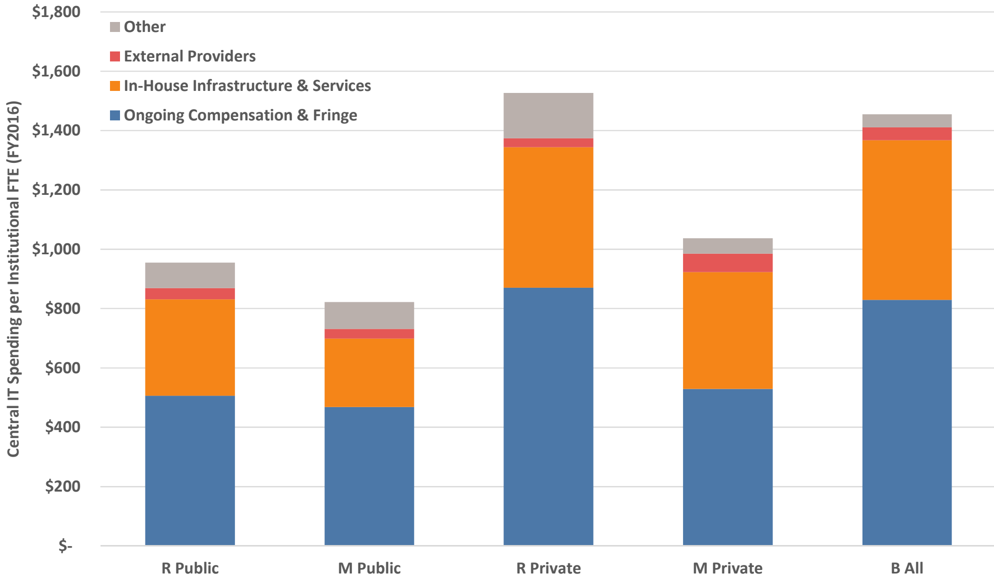

Figure 6.18. FY2016 central IT expenditures per institutional FTE (full-time equivalent students, faculty and staff) divided into primary spending categories of personnel compensation and fringe benefits, infrastructure and services provided in-house (e.g., hardware software, network cabling), and those provided through external entities (e.g., third party email and web services), by classification (research, master's, or baccalaureate) and control. Source: EDUCAUSE (Lang 2017).

The two main pressures on IT budgets are personnel and the technology itself. Stiff competition from the private sector in the salary market means that pay rates are higher and can rise faster for IT compensation versus other parts of the university, which can also lead to high turnover—it's not unusual for individuals to spend just a few years in a position before moving to another. The endless treadmill of technology refresh and upgrades means that the IT enterprise has continuous short-term capital outlays. If the Chief Information Officer (CIO) is not provided with the resources to invest in updated networks and systems, as with all deferred maintenance, the institution will fall behind in its capabilities, leading to higher costs later when the inevitable upgrade turns into a crisis. Some system replacement costs are large enough that they need to be amortized over the life of the technology, such as the core enterprise resource planning (ERP) systems like the student information system or the finance and accounting system. An entire ERP replacement project is a massive undertaking in technical and implementation terms, and at a large university the cost can amount to many tens of millions of dollars, similar in financial scale to (and as critically important as) a new campus building.

Central IT expenditures account for about 4.75% of the total institutional budget at master's universities and baccalaureate colleges, but at public and private research institutions that share is lower at about 3% and 3.75% respectively (Lang 2017). From FY2010 to FY2016 all these percentages remained essentially flat. The lower shares at large research institutions occur because distributed (i.e., non-centralized) IT is more commonplace at those schools, partly reflecting the historical emergence of IT in multiple specialized units; 69% and 45% of public and private research universities respectively spend less than 75% of total IT expenditures centrally, while that share is only 9–30% at other types of institutions (Lang 2017). Institutions have difficulty tracking distributed IT expenses consistently, and therefore it is hard to establish reliable trends in centralized versus distributed IT expenditures (Brummund et al. 2015). Recent technological trends have been towards centralization (and outsourcing) of commodity IT services such as email and website hosting. One regular survey shows consistently increasing trends in the percentage of centralized versus distributed campus IT spending for over a decade across all types of institutions: for example, the share of central IT spending increased from around 40% to over 60% at larger public universities, and from about 60% to nearly 90% at smaller private four-year colleges (Green 2007–18).

You may be wondering why I've included IT in this chapter on academic affairs, rather than in the facilities section along with utilities like lights and water. Information technologies, in contrast to regular utilities, play a direct and strategic role in furthering the academic mission of the university. Some domains of IT are utility-like, such as basic internet service and, literally, dial tone for telephones. Other domains support the broader administration of the university (accounting, human resources, etc.). Still, IT software and services are critical to not only supporting but also advancing teaching and learning, student success, and research, which is why smart institutions view IT as integral to knowledge transfer and discovery. Figure 6.19 illustrates relative levels of central IT spending across the major IT functional domains including personnel, averaged across institution types because they are similar. While all the domains are essential, some are more visible than others:

- Administration of the IT enterprise includes activities related to the Office of the CIO such as management, planning, vendor contracts, and policy development, and it accounts for one quarter of expenditures;
- Information systems include the core enterprise resource planning (ERP) systems (student information, payroll and financial, procurement, human resources, grants and contract management, etc.);
- Enterprise infrastructure and services include data centers, servers, backup power supplies, web services, databases and more;
- IT support services serve all users such as desktop support, reference staff, departmental support, IT training, and multimedia production;
- The communications infrastructure includes all the physical elements of the network such as cable, wireless network, telephone and voicemail, video surveillance, and emergency notification systems along with communication services such as email, calendaring, and collaboration technologies;

- Educational technology services cover the range of instructional software and support including learning management systems, e-portfolio, degree audit, classroom technology, online education platforms, and library systems and together they account for about 10% of central IT spending;
- Information security covers increasingly critical items such as identity management, access provisioning, authentication, intrusion detection and prevention, breach response, and information security training, with spending on IT security increasing one and a half times over the previous year (to 3% of the total);
- Finally, research computing services are not reflected in Figure 6.19 because they are only significant at the relatively small number of major research institutions, and they include high-performance computing ("supercomputers"), specialized networks (e.g., Internet2), and advanced visualization (EDUCAUSE 2020).

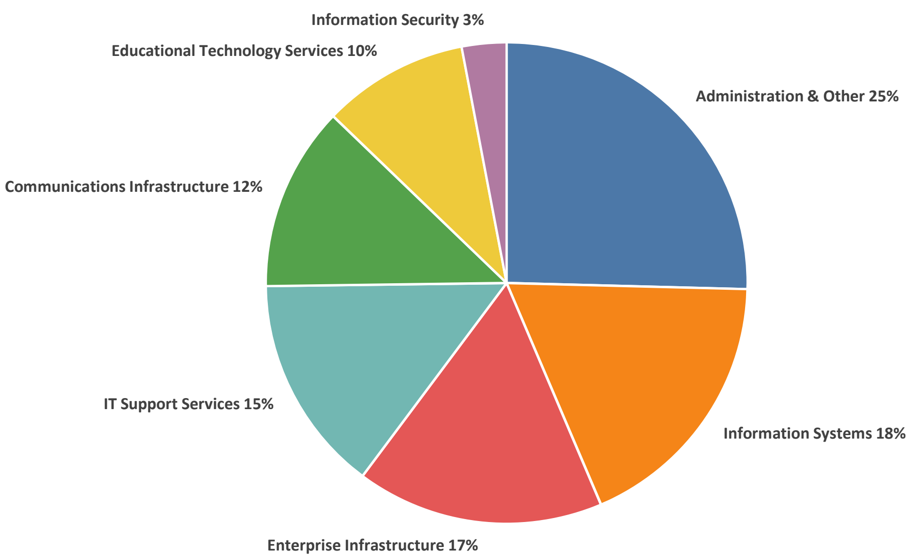

Figure 6.19. FY2016 functional domain area spending as a percentage of central IT spending, averaged across all types of four-year institutions. Source: EDUCAUSE (Lang 2017).

The various software systems and services vary widely in cost and, as might be expected in the dynamic IT environment, the relative spending on each also changes from year to year (Figure 6.20). Student, financial and human resources ERP systems are large and growing, and the vendors in this area include Oracle (Peoplesoft), Ellucian (Banner), Jenzabar and Workday (MarketWatch 2018). The biggest institutional investment in instructional technology is learning management systems (LMS). The LMS landscape has been consolidating since the late 1990s when the technology was first introduced, and over 90% of market share is now held by the big four: Canvas, Blackboard Learn, D2L Brightspace, and Moodle (Hill 2019). An LMS has become an essential tool in face-to-face and online education, although the related technology of adaptive (self-paced and personalized) learning tools has not yet gained wide adoption (Dimeo 2017). The other systems lower down the list in Figure 6.20 have seen flat or decreasing shares of expenditures, and they are generally low to medium in relative expense (the drop for analytics may be related to a definition change in the survey, as it was increasing steeply in prior years). Finally, plagiarism-detection software (e.g., Turnitin) was not listed on the survey, but it is another educational technology tool that is widely used (McMurtrie 2019).

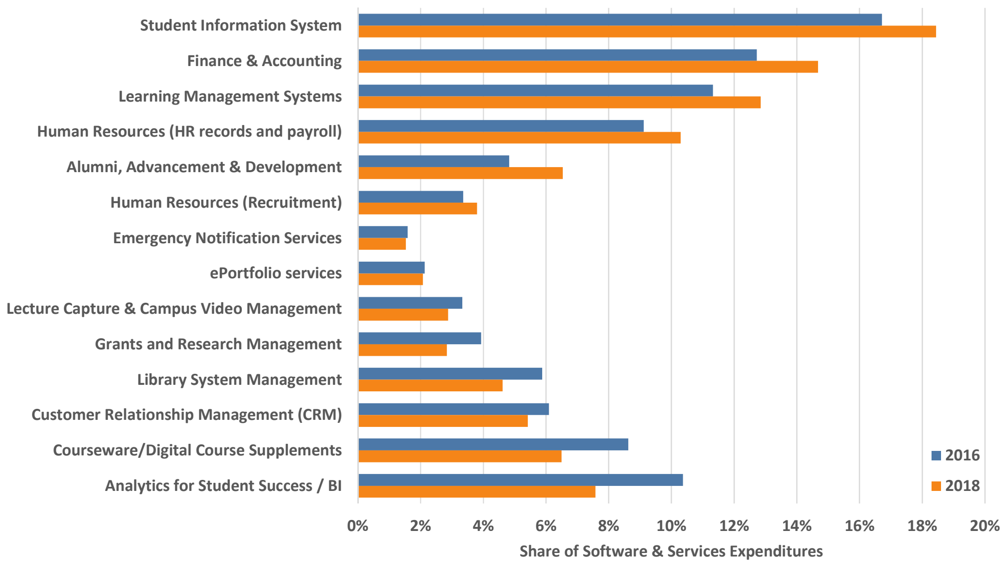

Figure 6.20. FY2016 and FY2018 shares of annual expenditures for ERP, administrative and instructional software and services, averaged across all public and private four-year colleges and universities, sorted by growing (upper portion) or shrinking share (lower portion). Source: Campus Computing Survey (Green 2007–2018).

7. Student Affairs

7.1 What are the numbers for recruiting and admissions?

As we've seen, most universities are tuition-dependent, especially the smaller non-elite institutions, and enrollment is their financial life-blood. Effective enrollment management is therefore critical to the survival and success of a campus. Enrollment management begins with recruiting and admissions, although nowadays it goes well beyond those activities. Done strategically, enrollment management is most effective when it (i) optimizes student success in the context of the institution (diversity, location, selectivity, size, etc.) and (ii) works in close collaboration with academic programs, all of which lead to improved retention and graduation rates, greater overall enrollment numbers, and consistent and predictable tuition revenues. That said, we'll focus on recruitment and admissions in this section, and then progress to other aspects of the incoming class in subsequent sections.

Every university needs to shape its incoming class and doing so requires a set of marketing and recruitment activities that cost money. A recent survey provides some insights into these expenditure details (Ruffalo Noel Levitz 2018), although it is unfortunately quite narrow (N=126) and limited to small privates and a range of publics. The median cost to recruit a new undergraduate enrollee in 2017, including personnel costs, was $2,357 at small privates (middle tercile of total enrollment from 1,673 to 2,992 students) and $536 at public institutions (middle tercile of total enrollment from 8,683 to 17,144). Omitting personnel costs, those medians are $1,102 and $175 respectively (Ruffalo Noel Levitz 2018) with the primary scaling being the efficiency of larger incoming class size. Backing out those numbers, the typical size of a recruiting and admissions staff is 10 to 30 FTE at small privates and 30 to 50 FTE at midsize publics, with expenditures of $2M to $3M in either case on the mix of activities shown in Figure 7.1. Marketing is the largest expenditure in this area, followed by travel and events such as admissions fairs. These latter two reflect the key role of reaching college-bound students in high school, and the special influence of guidance counselors who rank visits from university representatives as their most useful source for helping students with college planning (Ruffalo Noel Levitz 2017b). Universities also purchase lists of prospective students from vendors such as the College Board and ACT, which, at 10% of the recruiting budget, cost well into the six-figure range. Unsurprisingly, digital marketing budgets are growing faster than any

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other part of the recruiting budget, with traditional marketing budgets mostly staying flat or decreasing (Ruffalo Noel Levitz 2018).

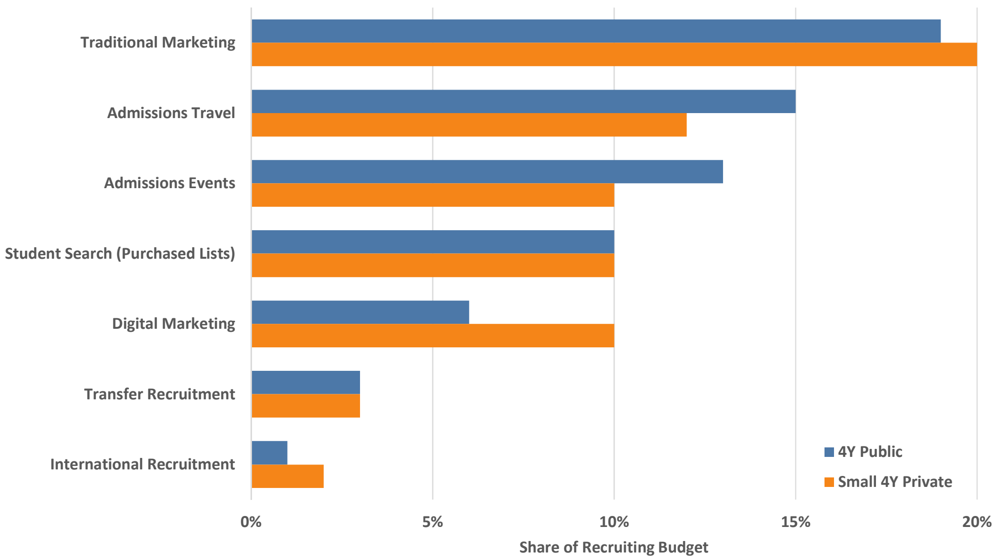

Figure 7.1. Share of FY2018 recruiting budget allocated to specific marketing and recruitment activities from a survey of 126 four-year institutions, including public institutions of all sizes and predominantly smaller private institutions. Source: RNL (Ruffalo Noel Levitz 2018).

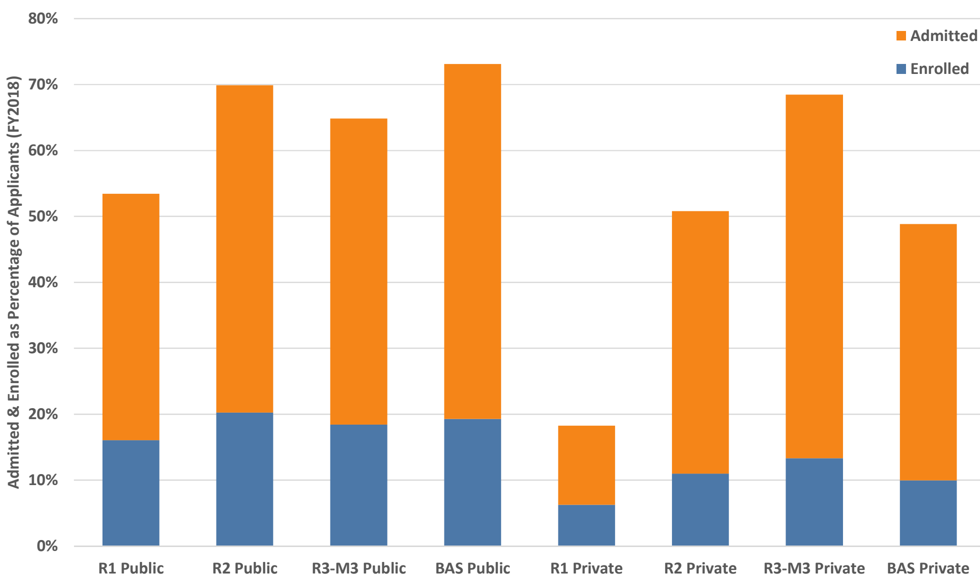

Figure 7.2. Percentage of admitted applicants and subset of those who enrolled for FY2018, averaged by Carnegie classification and control. Source: IPEDS (2020).

The number of applicants ranges from thousands at the small colleges to tens of thousands at large universities. At most types of institutions, 50–70% of applicants are admitted on average (Figure 7.2). R1 institutions admit a lower percentage of applicants than R2 and smaller institutions across publics and privates, with the most notable being the R1 privates where the admissions rate averages only 18% of applicants. Naturally, the applicant populations differ across types of institution, so that selectivity is more stratified than it looks from these basic numbers (that's coming up next). The subset of applicants who subsequently enroll is 16–20% (of the 50–70%) at the publics, likewise 10–13% of applicants at R2 and smaller privates, and just 6% of the 18% of admitted applicants at the R1 privates.

If we take these enrollment figures as a percentage of those admitted, we get a (widely over-used) metric known as the yield, the percentage of admissions that became enrollments (Figure 7.3). Purveyors of college rankings frequently use yield as a measure of selectivity, with a higher yield supposedly indicating a more selective institution. However, yield rates are so inconsistent as to render this approach utter nonsense. Indulge me, if you would: take a look at Figure 7.3, where we see that the R1 private universities average 34% yield, followed by all the publics in decreasing size order (30–26% yield), and then the other three types of private institution around 19–22% yield. If that wasn't enough to demonstrate that yield is a poor index of selectivity, allow me to cite a handful of yield rates for individual institutions as a further indulgence: Harvard leads the R1 private schools at 83% yield, followed by Stanford, MIT, Chicago, Yale, etc., much as expected; things unravel from there, though, with the R1 public universities led by the University of Nebraska-Lincoln (51%), UC Berkeley and UW-Milwaukee tied for 7th place (44%), but with UW-Madison in 31st place (35%); institutions of different types also at 44% yield like UC Berkeley include the University of North Dakota, Northwestern State University of Louisiana, and Liberty University, to name just a few. With all due respect to my colleagues at these schools, I imagine they'd be among the first to agree that they are not as selective as Berkeley. So, yield is a terrible measure of selectivity, more inconsistent than not because it is a complex contextual combination of applicant pool, financial aid, reputation, competition, and more.[1] OK, that was fun, but let's get back to our regular programming.

Recruiting and admissions staff build a class somewhat like an investment portfolio, balancing applicants across a range of academic preparation, in-state and out-of-state share at the publics, enrollment targets related to size and revenue, student demographics, and the mix of need-based and merit aid from the institution to hopefully increase academic readiness, diversity and revenue. While much of this activity is aimed at high school graduates, transfer students from other universities

1 By the way, cynical college applicants invented the concept of yield protection (a.k.a. Tufts syndrome), which alleges that, to bolster its rankings, a university will manipulate yield by rejecting or wait-listing highly qualified applicants who will surely be accepted to higher-prestige schools. Admissions officers deny its existence, but like any good conspiracy theory, it is conveniently appealing to those rejected by their safety schools in the admissions process (Pak 2015).

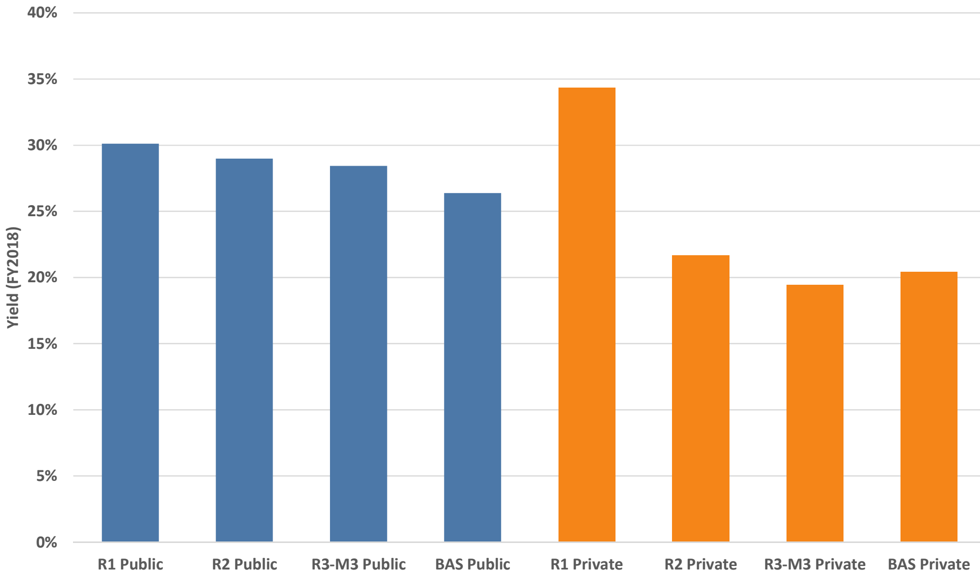

Figure 7.3. Yield, or percentage of admitted applicants that subsequently enrolled, for FY2018, averaged by Carnegie classification and control. Source: IPEDS (2020).

and colleges are becoming an important component of the incoming class at many institutions too.

As potential future students are identified and move along the path from prospect to applicant to being admitted and matriculating, admissions staff members use several indicators to monitor and manage that path.[2] At the start, these indicators include information requests, email open rates, and such, along with campus visits. A paid application fee is an early indicator of intent, and after the admission decision other similar indicators include housing deposits, orientation signup, and ultimately enrolling in courses. These are all going on simultaneously in the year or more before the student arrives, and the indicators are checked closely and regularly, with the incoming class being shaped continuously via tuning of admission and aid offers, in some cases right up until classes begin.

7.2 What are the academic and financial profiles of the incoming class?

Fortunately, we have a useful index of academic preparation in IPEDS, which collects information on standardized test scores. These tests, such as the SAT and ACT, which

2 A phenomenon known as summer melt is seen in this process, and it comes in two varieties: one is related to competition, in which students drop out of the process at one university in favor of another; the other relates to college-intending students, more typically from low-income backgrounds, who for various reasons including perceived financial issues or other unexpected obstacles, fail to make the transition to actually enrolling.

assess what might be informally described as the "three Rs" (reading, writing, and arithmetic), offer a useful common benchmarking comparison across most applicants to undergraduate programs (as does the GRE for graduate school). These tests are validated to predict first-year college grades (ACT, Inc. 2017; The College Board 2018), not college success overall or future earnings and so on; validity here is used in the narrow, technical, psychometric sense of robust statistical association. They are not perfect and display differences across demographic subgroups, largely (but not completely) attributable to differential academic preparation (ACT, Inc. 2017). First-year grades and class-rank can be similar predictors of grades in entry-level courses, but they are not standardized. It's the latter feature that makes standardized tests useful for benchmarking (comparison), which is how we'll employ them here. Using scores expressed as score percentiles so we can compare across tests as well, Figure 7.4 illustrates the interquartile range (from the 25th to 75th percentile) of admitted applicants. The admitted applicants to R1 private institutions are remarkably well-prepared and the middle 50% of them occupy a narrow band between the 93rd and 99th score percentiles. The 25th percentile individuals in that group score similarly to the 75th percentile individuals at the R1 publics and R2 privates. A similar step jump occurs from the latter to R3-M3 privates, with private baccalaureate colleges overlapping these last two categories. There is relatively more overlap among the different types of public institution as compared to the privates, although the same step pattern across types is still clear. This test score/academic preparation distribution pattern is a critical part of the college rankings discussion, which we'll cover in Section 14.2.

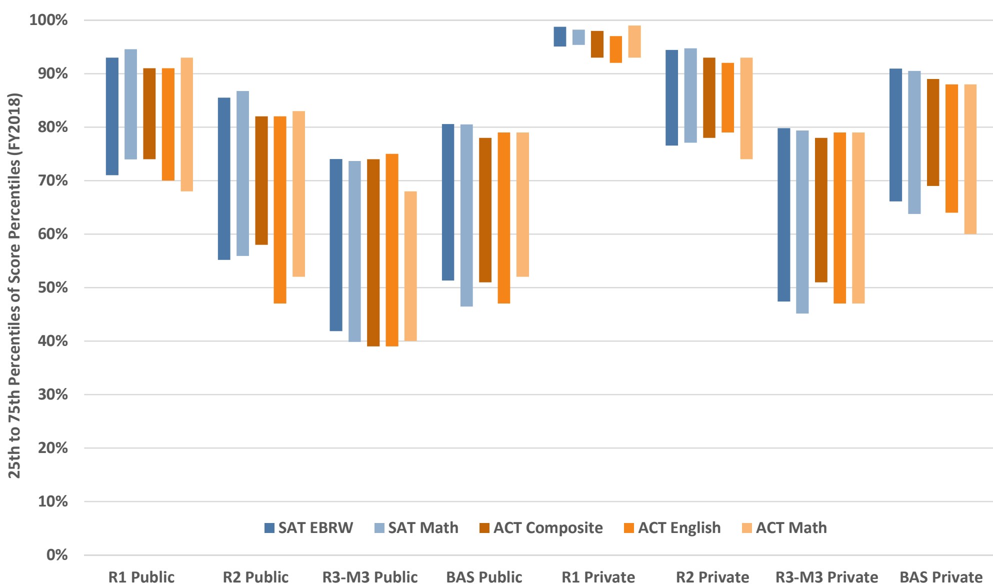

Figure 7.4. Range of 25th to 75th percentile values of standardized test scores of admitted applicants for FY2018, expressed as score percentiles for comparison, on the SAT Evidence-Based Reading and Writing (EBRW), SAT Mathematics, ACT Composite, ACT English and ACT Mathematics tests, averaged by Carnegie classification and control. Sources: IPEDS (2020), The College Board (2018) and ACT (2019).

The consistency of score percentiles within each type of institution across the various kinds of test is worth noting too. It's encouraging to hypothesize that the greater overlap across public versus private institutions reflects the public university mission of greater accessibility and inclusion. Again, we are fortunate that IPEDS collects the necessary data to test that hypothesis, in this case income levels of first-time, full-time undergraduates, illustrated in Figure 7.5, where I've expressed them relative to the US average household income distribution. These data are just as illuminating as the standardized test data. Public universities are indeed much more representative of the national income distribution than the privates, and starkly so in some cases. In a result that you might not expect, the R1 public universities and public baccalaureate colleges are within just a few percent of the US population across all income bands. Lower- and upper-income bands are relatively over- and under-represented at R2 and R3-M3 publics by roughly 10% and 30% respectively. At R1 and R2 private institutions, incoming undergraduates in the income band of $110,000 or more are over-represented by 60–80%, those in the $30,000 to $75,000 band by 20–30%, and those in the lowest income band under $30,000 are 30–46% under-represented on average. The patterns are similar, but not as extreme, for the smaller private institutions. There is so much that can be said about these two sets of data in conjunction, but I'll keep it brief. Of course, the privates by their nature are more expensive and will therefore have more students from wealthy backgrounds, especially the smaller tuition-dependent privates that are struggling for revenue. Still, the extent of the imbalance is nonetheless glaring,

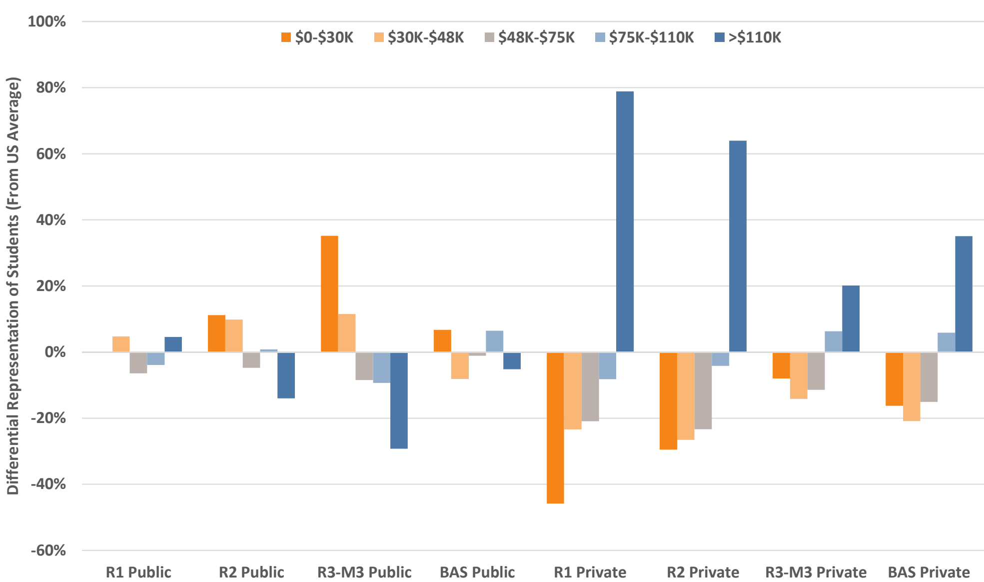

Figure 7.5. FY2017 representation of first-time, full-time undergraduate degree-seeking students (including those awarded and not awarded aid) by family income level, expressed as percentage difference from the corresponding distributional share of the US average household income, averaged by Carnegie classification and control. Sources: IPEDS (2020) and IPUMS (Flood et al. 2018).

particularly at relatively well-endowed R1 privates that often profess inclusion. A recent study found that students from families in the top 1% of the income distribution are 77 times more likely to attend an Ivy League college than those from families in the bottom income quintile (Chetty et al. 2017). Still, the fact that R1 publics can achieve a balanced mix of income bands while attracting well-prepared students demonstrates that it can be done.

7.3 How much aid are incoming students awarded by income level?

We looked at financial aid broadly in Chapters 3 and 4, and here we focus on aid awards stratified by student family income. Overall, we would expect relatively more students from less wealthy backgrounds to receive aid and to receive larger aid awards, ceteris paribus.[3] The data show that these statements are indeed true. Figure 7.6 shows that over 90% of students with family income levels less than $75,000 receive financial aid at all types of university. At public institutions, the share is 70–80% in the $75,000 to $110,000 income band, while only 50–60% of students in the band greater than $110,000 receive aid. In contrast, at private institutions, virtually all students receive financial aid, over 90% in all income bands except for the uppermost band at R1 privates at

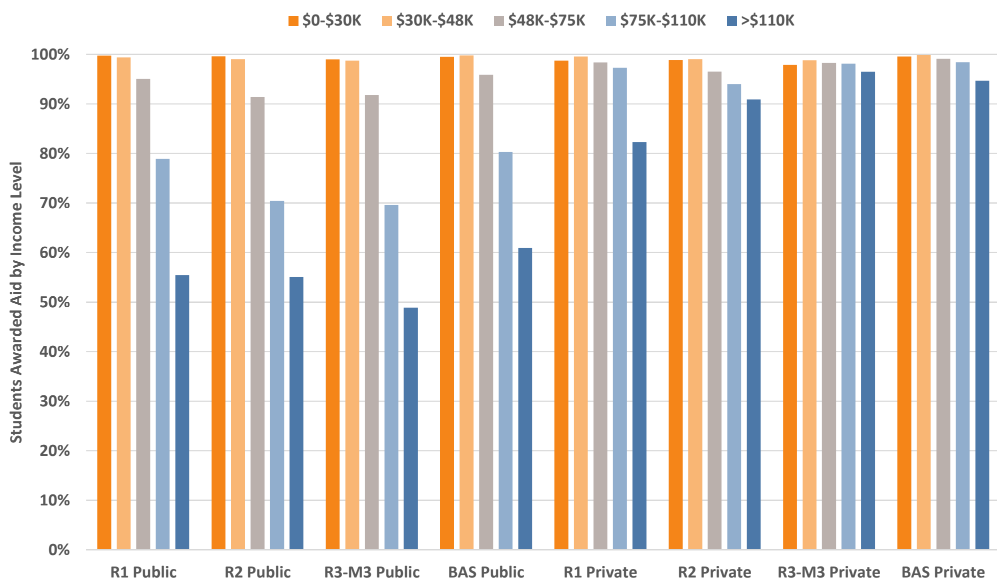

Figure 7.6. FY2017 share of first-time, full-time undergraduate degree-seeking students awarded grant and scholarship aid by family income level, averaged by Carnegie classification and control. Source: IPEDS (2020).

3 This Latin term is one of the few things I remember from my first-year economics course, and it means "all else being equal" or "other things remaining constant." It is typically used in a context such as this where one is positing a fundamental relationship isolated from the influence of other variables.

82% (Figure 7.6). The main reason for the public-private difference is the much higher tuition and associated institutional aid at the privates.

We can see this in the amounts of financial aid versus price paid towards the total cost of attendance (Figure 7.7). Cost of attendance is the full cost upon which financial aid is awarded, and it includes tuition as well as accommodation, food, books, supplies, transportation, etc. Cost of attendance (largely tuition) is much higher at the privates, with aid levels in all income bands set correspondingly higher to reduce the net price paid closer to that at the publics. Students in the lowest income band pay $10,000 to $11,000 per year at all types of public institution and, notably, also at R1 privates; however, these students pay roughly double at the smaller privates. Students in the highest income band pay most of the cost of attendance at the publics, about 90% on average, ranging from $17,500 to $23,000. At the privates, students in the higher income band pay 60–70% of the cost of attendance, but the amounts are roughly double in dollar terms, ranging from about $27,000 to $43,000 annually. Despite the high aid amounts at the privates, the net price paid is generally higher and therefore, as you will recall from the previous section, private institutions have relatively fewer students in the low- and middle-income bands. Of course, $10,000 per year at the publics (or R1 privates) is still a lot of money for a low-income family, with serious implications for equity of access (Mugglestone et al. 2019). Financial aid for low- and middle-income students has generally tracked the institutional charges, but not living expenses (St. Amour 2020).

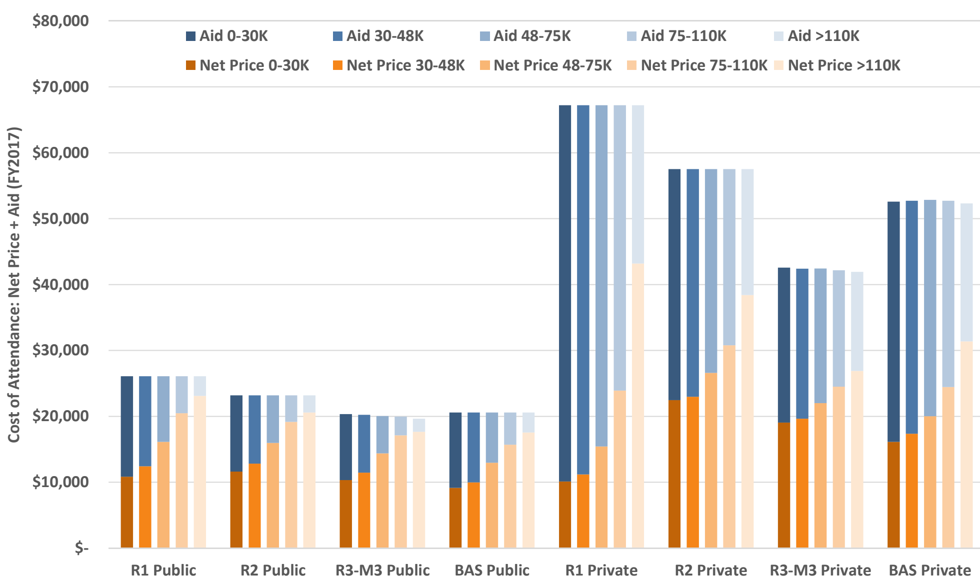

Figure 7.7. FY2017 amount of grant and scholarship aid and net price by family income level for first-time, full-time undergraduate degree-seeking students awarded Title IV aid, averaged by Carnegie classification and control. Amounts for public institutions are at in-state rates. Source: IPEDS (2020).

A related policy question surfaces from time to time: do state subsidies at public universities favor the wealthy? We have now seen all the evidence demonstrating that this is patently not the case, as a thorough study has clearly found (Delisle and Dancy 2016). The argument is that state funding for public universities provides an indirect subsidy, and because that subsidy is relatively higher per student at the larger prestigious state institutions that also spend more per student than smaller, less prestigious schools, and because students attending the bigger schools are more affluent, students from high-income families must be receiving a greater public subsidy than their low-income counterparts. That logic draws over-simplified conclusions from generic per-student funding rates and doesn't consider who receives financial aid and thus the tuition paid by family income level (Delisle and Dancy 2016). We've seen in Section 7.2 that the R1 (or any other size) publics do not enroll predominantly high-income students. Plus, we've just seen that low-income students receive grant and scholarship aid that reduces their tuition paid at all types of public university, before accounting for federal and other aid. Additionally, affluent students are more likely to attend out-of-state schools where tuition is well above the cost of education and carries no subsidy (see Section 3.6). For these reasons, the indirect state subsidy for public universities does not favor the wealthy.

Returning our attention to all types of institution, once the financial aid dust settles, the typical student pays almost double to attend a private school. The income-scaling range from lowest to highest student family income level is consistent across public institutions, with students from the wealthiest backgrounds paying roughly twice what those from the poorest backgrounds pay; that factor diverges at the privates that include both broader (R1) and narrower (R3-M3) income-scaling ranges. Naturally, because these figures are all averages, individual students each receive aid and pay a net price that is more or less unique, based on their combination of academic preparedness, family income, and fit to the university's overall portfolio for its incoming class. Up to this point we've ignored the type of aid awarded, so we'll look at the split between need-based and merit aid next.

7.4 How much aid goes to need versus merit?

Institutional financial aid, as distinct from federal, state, and other forms of aid, is divided into need-based and merit (non-need based) components and, as the name implies, is controlled by the institution. As we saw in Section 2.8, institutional aid is a typically hidden portion of a university budget because, as a discounting device, it is subtracted from gross tuition revenue to obtain the commonly used net tuition revenue. Institutional aid of both types is vital at all universities, but especially at private institutions where it is the dominant form of aid (Figure 7.8). At the publics, total aid per student averages $10,000-$15,000 and institutional aid is 10–20% of that amount while at the privates, in contrast, institutional aid makes up 40–60% of the

$20,000 to $30,000 total aid amount. The R3-M3 institutions award the lowest average proportion of institutional aid relative to other types within the public and private groups.

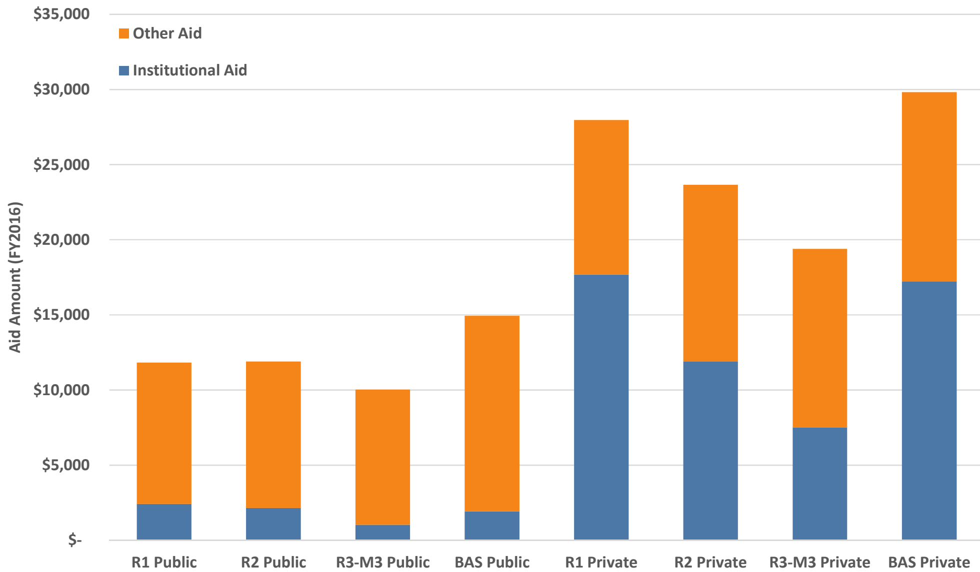

Figure 7.8. FY2016 undergraduate total aid amount partitioned into institutional and other aid, averaged by Carnegie classification and control. Source: NPSAS:16 (National Center for Education Statistics 2018a).

Let's take a brief detour to mention so-called need-blind admissions, where the notion is that the admission decision is made before, and independently of, the financial aid decision— "If you're good enough to get in, you get in regardless of your financial situation, and we'll figure out the money later." The intent of the concept is to signal to prospective students of high ability that cost should not scare them away. Only a small number of the most elite schools can cover all need; most institutions do not have enough resources to meet the full financial need of all accepted students without including impractical loans in a need-blind offer. Therefore, most institutions are instead need-aware, and they do consider need in the admission decision. Importantly, this enables them to meet the financial need for all those who are accepted— "If you get in, we'll make sure you can afford to attend." Both terms are easy slogans but, outside of the most elite institutions, each has trade-offs and neither one is inherently better.

So, how do institutions split their investments in need-based versus merit aid? Figure 7.9 illustrates undergraduate institutional aid partitioned into need-based, merit and athletic scholarships (the latter are a non-academic subset of merit aid). At the R1 privates, over 75% of institutional aid goes toward financial need. Recall from Section 7.2 that essentially all students at these institutions are academic superstars, so merit is less of a differentiator than at other types of universities. The split is near half and half at private baccalaureate colleges and R1 publics, and around 30% need-based at the other types of institution.

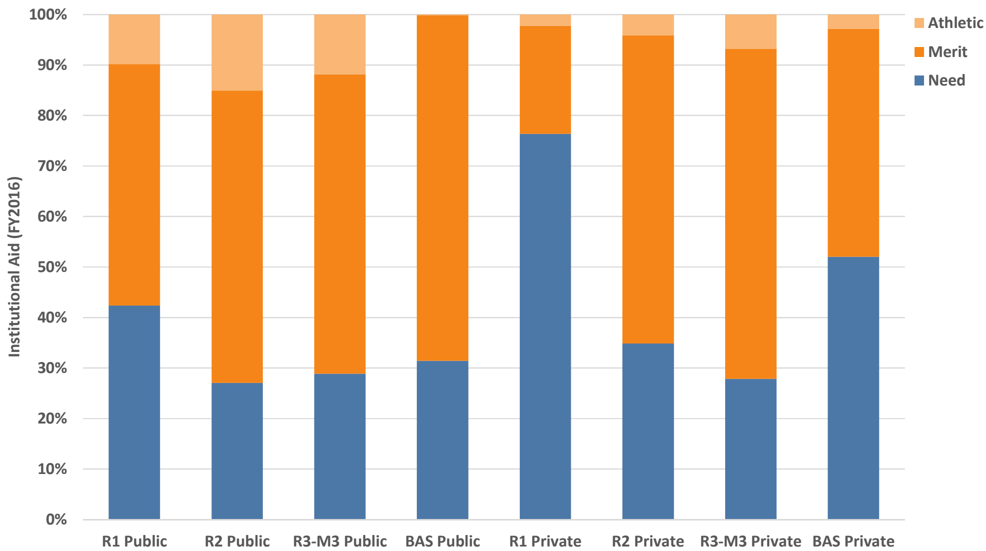

Figure 7.9. FY2016 share of undergraduate institutional aid partitioned into need-based, merit, and athletic scholarships, averaged by Carnegie classification and control. Source: NPSAS:16 (National Center for Education Statistics 2018a).

It's tempting to think that many institutions are, if you'll pardon my bluntness, effectively "buying" meritorious students. While that isn't entirely untrue, there is an additional psychology at work. For the same dollars, a school can make an offer seem more prestigious by framing all or part of the overall award as a merit scholarship. Most financial aid is "stackable" and that is certainly true of the institutional aid portion. Doesn't it sound more appealing to be offered a presidential scholarship or an our-mascot-name-here award for your high-school achievements? Then, that merit award is topped up with a need-based award as necessary. Of course, this is all done in a competitive environment and schools, especially those that wish to project prestige, must be careful not to undermine perceptions of brand quality.

I've included the athletic scholarships here largely for comparison and as a teaser for Chapter 12, which deals with athletics. It's interesting to see that at the publics, except for the baccalaureate colleges, 10–15% of institutional aid goes towards athletics scholarships; it's about half that share at the privates, but their institutional aid budgets are about ten times bigger, thus netting out athletic scholarship spending at about five times the amount of the publics, which is considerably more than what it takes to cover any tuition differential. Let's leave it at that until later.

7.5 How is tuition discounting used?

The tuition discount rate, usually referred to as simply the "discount rate," is derived by calculating the total amount of institutional grant aid (need plus merit) as a percentage of gross tuition and fee revenue. Essentially, it's what the institution awards (in cash and waivers) as a share of what it would have collected had it charged full tuition and fees (a.k.a. "sticker price") to every student, like this:

$$Discount\ Rate = \frac{Total\ Institutional\ Aid\ to\ Incoming\ Students}{(Sticker\ Price) \times (Number\ of\ Incoming\ Students)}$$

It's literally the percentage discount off the sticker price, reflecting not only what the average student pays after institutional aid (not counting federal aid, loans, etc.) but also the complement to (and a key lever of) net tuition revenue. Note that this doesn't include room and board, textbooks, etc., just tuition and fees. The version above is for the incoming undergraduate class, which tends to run a few percentage points higher than the discount rate that can be calculated similarly for undergraduates overall.

Enrollment managers have an extremely tough job to build a class of the desired quality, size, and diversity. On top of that, they have the weighty responsibility of controlling the discount rate elements that supply the institution's net tuition revenue. It's their version of optimizing the "iron triangle" (see Section 14.3): obtain the desired quantity at maximum quality and minimum cost. The unfortunate psychology of the college recruiting marketplace is that (i) higher sticker price is perceived to signal high quality and (ii) everyone expects a discount. Pricing and discount strategies have therefore evolved with the market, which has shifted from low-tuition/low-aid a generation ago to high-tuition/high-aid in recent decades.

That shift means higher discount rates, which are exactly what we see in the data (Figure 7.10). Two patterns are immediately clear: one, the trends are all upward, about 7 to 15 percentage points higher over the almost two decades of data depending on the type of institution; and two, the privates discount at almost double the rate of the publics. The current average discount at the publics is 23–34%, whereas it is 41–53% at the privates. Of course, the privates have much higher tuition, but the higher discount rates bring the average tuition paid comparatively closer to that at the publics, as we saw when looking at net price by income level in Figure 7.7 (although those numbers include all aid, not just institutional aid, but the general patterns are the same).[4]

This is a good juncture for us to return briefly to "skyrocketing" tuition increases of 3–4% annually. We saw earlier that, after accounting for rising enrollment and inflation, net revenues and expenditures have been rising at 1% or less (see Sections 2.10 and 3.4). We also saw that the explanation for those latter increases over general inflation

4 The dependence of the discount rate on (the semi-arbitrary) sticker price is the subject of a recent critique, which notes that it is a flawed metric for following university finances (Levine 2019).

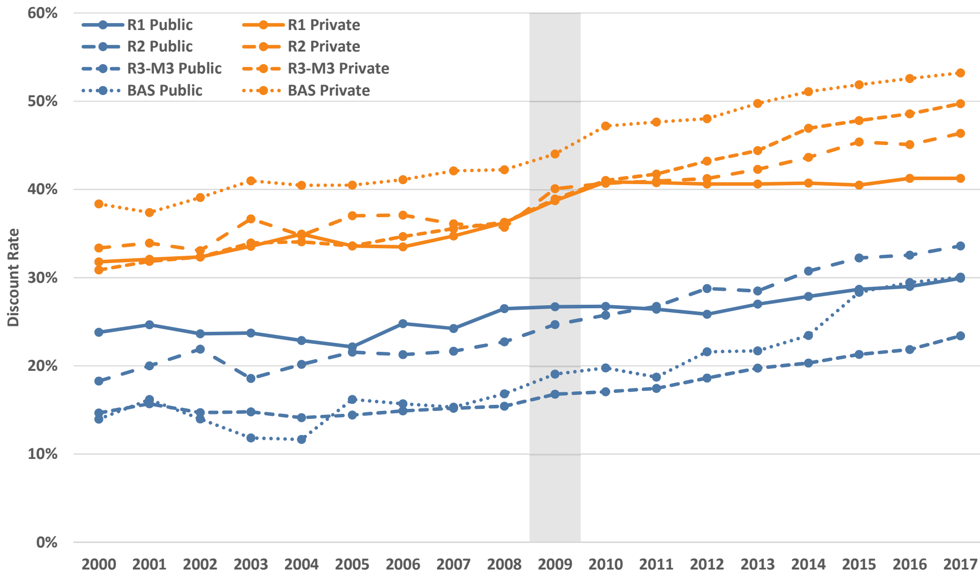

Figure 7.10. Trends in tuition discount rates for full-time first-time undergraduates, averaged by Carnegie classification and control. Values for public institutions are weighted to account for proportions of in-state and out-of-state students. Source: IPEDS (2020).

were fundamental economic forces related to being in a labor-intensive industry and the continual pursuit of quality in a competitive marketplace (see Section 3.7). Still, after accounting for all of those (roughly 2% inflation and 1% labor and quality), where has the remaining approximately 0.5–1% of the annual sticker-price tuition increase gone? The answer is in the apparently irresistible shift to a high-tuition/high-aid model with the associated prestige and discounting that the marketplace has encouraged and supported.

7.6 Why do students drop out and what proportion are retained?

A retained student, and better yet a graduate (see the next section), is not only a successful outcome for the individual but is also more financially efficient and effective for the university. A retention costs three to five times less than a fresh recruit (Cuseo 2010), and improved retention rates lead directly to the success of the institution in graduating a greater proportion of its students. Attrition, the opposite of retention, arises when students drop out of higher education. If this occurs, state appropriations yield lower returns, students diminish their lifetime incomes, and universities lose revenue (Johnson 2012).

Box 7.1. College Dropouts Get Mostly A's and B's

Contrary to popular misconception, inadequate academic preparation or performance are minor causes of students dropping out of four-year universities and colleges (Bound et al. 2010; Johnson 2012). Overwhelmingly, students drop out because of other life issues, and not because they are having academic problems (Figure B7). A major longitudinal study found that for students with unfinished degrees, 80% left in good standing, most of those with A and B grades, and with the majority departing in the first two years (Johnson 2012). Effective student-success support systems are expressly designed to address not only academic support, such as early warning and tutoring services, but also to assist to the degree possible with the many other reasons that students drop out, e.g.: by providing counseling services; by supplying financial advice and supplementary aid; and, if a student must leave, such as when a personal crisis hits, assisting with how to withdraw formally (rather than the student just leaving with default failing grades), which makes it easier to resume studies at a later date.

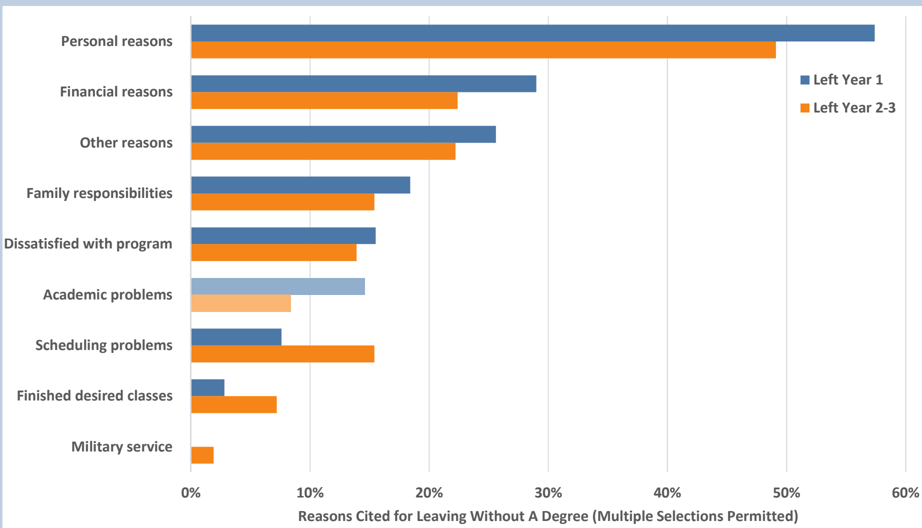

Figure B7. Reasons cited for leaving higher education by students in the 2003–04 cohort of the Beginning Postsecondary Students Longitudinal Study who had left without a degree by 2008–09. Note the relatively low frequency of academic problems. Source: Delta Cost Project (Johnson 2012).

Ensuring the success of students involves a multidimensional set of activities across many aspects of administration and student life, many of them embedded within a student affairs division: recruiting, marketing, application, admissions, transfer, financial aid, orientation, registrar, residence halls, dining, tutoring, advising, student analytics, success interventions, student organizations, mental and physical health, career services, and graduation. The contemporary student affairs portfolio, and by extension the strategic enrollment management portfolio, embody the transition from the pre-1980s "weeding out" mentality to the "student success" approach over the last few decades. Naturally, to provide this support, student affairs expenditures and personnel have grown accordingly (see Section 7.8). The results of the change have been small but steady gains in retention and graduation rates despite counteracting forces such as increasing enrollments, rising student financial need, and lower state investment with attendant increases in student-faculty ratios at smaller public institutions (Bound et al. 2010).

First-year to second-year retention rates are highest at R1 institutions and decrease by Carnegie classification, with the highest rates in the mid-90% range at R1 privates, followed by R1 publics and R2 privates in the mid to high 80s, and the smaller publics and R3-M3 privates just over 70% (Figure 7.11). We look at retention/attrition from first to second year because it is typically the largest jump—subsequent years tend to have progressively smaller attrition rates. The primary reason for students leaving is not academic performance (see Box 7.1) but having to deal with other life issues. At the institutions with higher attrition, an important contributing factor is the lower income profile of students that reduces their resilience when inevitable challenges occur, such as having to care for a family member or work longer hours at a job because another family member lost income. The relative lack of financial security means that the other pressures of life place greater demands on a student's time. As we'll see in the next section, students who are not retained do not always drop out permanently; a sizable number of them transfer and graduate from a different institution, while others "stop out" instead and return to complete their studies later. We'll also see that these behaviors are more prevalent at lower-retention institutions.

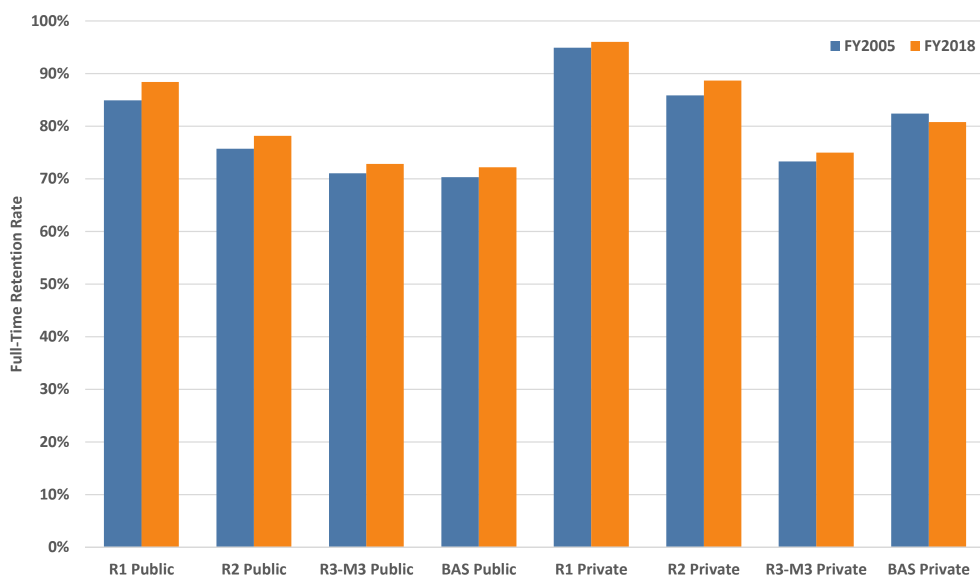

Figure 7.11. Full-time retention rate, defined as the percentage of the fall full-time first-time cohort from the prior year that re-enrolled at the same institution in the current year, for fiscal years 2005 and 2018, averaged by Carnegie classification and control. Source: IPEDS (2020).

7.7 What are the patterns and trends in graduation rates?

The official federal graduation rate is, unfortunately, the source of much confusion and myth because non-specialists who quote it don't realize how narrowly it is defined. The graduation rate required to be reported by law[5] is the share of students completing their programs within 150% of the standard time (i.e., six years for a four-year bachelor's degree) at, and here's the kicker, the same institution where they started as full-time, first-time students. So, if you go out of state for college, decide you'd rather transfer closer to home and then complete your degree locally, you don't count. If you take a year off for medical reasons and then finish your degree, you don't count. If you struggle in your first year, go to community college for a semester to improve your grades, and then return and complete your degree, you don't count. Consequently, it isn't the percentage of students who graduated in six years as many people might imagine that number, it's a considerably more conservative version thereof that assumes a standard single-institution continuous conveyor-belt model.

While the choice of such a model is understandable, it is most applicable at the kind of institutions for which it is typical: selective schools with primarily eighteen- to twenty-two-year-old students who are financially well-supported. It should be no surprise, then, that non-selective institutions catering to older and/or working students do not fare as well on this metric. Such institutions tend also to have higher proportions of students who are part-time, as well as those who are taking individual courses without the intention of completing a full credential (most notably at community colleges). Thus, the conventional graduation rate has a built-in bias that under-represents student success for types of schools and students with these latter types of completions.

Also, the regular graduation rate is "institution following" rather than "student following," meaning that, strictly speaking, it can provide only the aggregate numbers of students attending, graduating or otherwise departing an institution. The regular graduation rate does not provide the graduation outcomes of students independently of institutions attended, including those that transferred, suspended and resumed their studies, or never completed a degree. Because of these concerns, calls for national student unit-record data are made from time to time, although they are often opposed due to privacy concerns (Kreighbaum 2017). Alternative non-government systems

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5 There were no publicly available national data on graduation rates until the Student Right-to-Know and Campus Security Act of 1990 was passed. It was originally intended to inform student athletes about graduation rates at their prospective programs, which at the time were known to be lower than for all students (Cook and Pullaro 2010). One of the sponsors was US Senator Bill Bradley, a former college and professional basketball player (and Rhodes scholar). In addition to requiring graduation data to be published, the security part of the act similarly required disclosure of campus safety policies and statistics. That section was amended in 1998 and renamed the Jeanne Clery Disclosure of Campus Security Policy and Campus Statistics Act, known as the Clery Act, named for a student who was sexually assaulted and murdered in 1986 at Lehigh University. Her parents argued that, had they known of the many violent crimes on campus in previous years that had not been made public, she never would have attended (Nelson 2008).

have developed in the higher education community instead, notably the National Student Clearinghouse (2019) and associated initiatives such as the VSA and SAM (Voluntary System of Accountability 2019; Student Achievement Measure 2019). One last bit of throat-clearing before we get to the numbers: graduation rates are not the same as attainment rates, which measure the percentage of the population with postsecondary degrees.[6]

Graduation rates are based on entering cohorts from six (or more) years earlier, with a standard method to define who is included or not, and from which completion rates for different times can be computed. In recent years, IPEDS has included additional numbers beyond just the cohort size and count of graduates, such as transfers, students still enrolled, and those not enrolled; these values for FY2018, which tracks the entering cohort from Fall 2011 (i.e., FY2012), are illustrated in Figure 7.12. Most students graduate in four years, a further share in five years, and a small share in six years, although these proportions vary by type of institution. Graduation rates are lower at the publics and higher at the privates. Average four-year graduation rates at private R1, R2 and baccalaureate schools exceed those at all public institutions, including the R1 publics that have a graduation rate close to the R3-M3-privates. The relative proportions of students completing in five or six years are lowest at all types of private institution; for example, students graduating on the "five-year plan" range from an additional 8–26% beyond the number who finish in four at the privates,

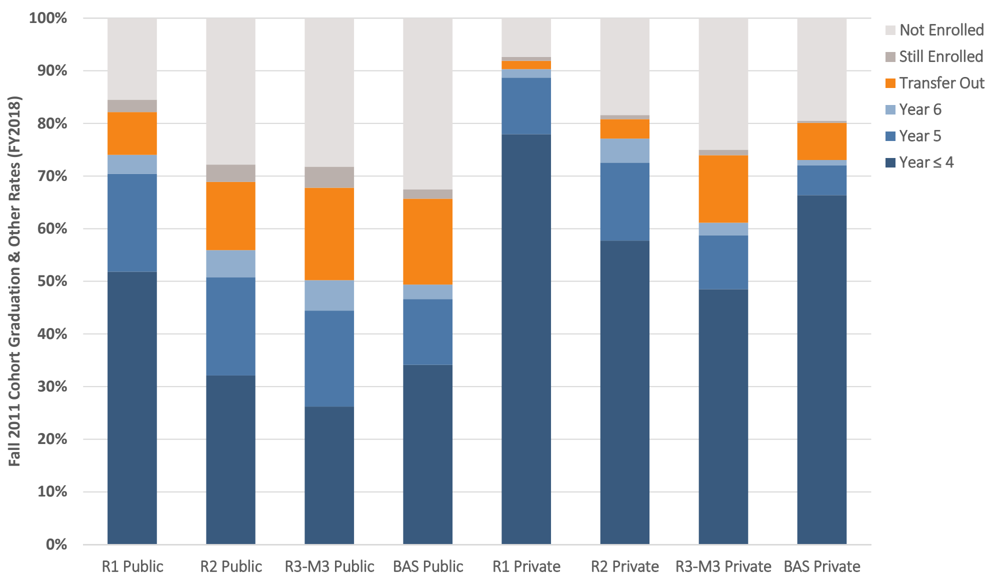

Figure 7.12. FY2018 rates (Fall 2011 entering cohort) for completion of bachelor's or equivalent degrees in four years or less, five years, and six years, students still enrolled, known transfers out to another institution, and individuals no longer enrolled, averaged by Carnegie classification and control. Source: IPEDS (2020).

6 The US educational attainment rate reflecting the share of the population aged twenty-five and over with a bachelor's degree or higher was 35% in 2018 and 4.6% in 1940 (US Census Bureau 2019a).

while the corresponding range at the publics is 36–70%. Six-year full-time first-time graduation rates average 90% at R1 privates, in the 70s at private R2 and baccalaureate schools, and 61% at the R3-M3 privates. The R1 publics average a 74% full-time first-time graduation rate, with the subsequent types down the scale at 56%, 50% and 49% respectively.

But, as I discussed above, this is an undercount of the percentage of students who ultimately finish with a degree. While the portion of students still enrolled at the same institution where they started after six years is just a few percent of the original cohort, the share that were known to have transferred to another institution is sizable at most institutions, 13–18% overall at the medium and small publics and 13% at R3-M3 privates. What fraction of those go on to graduate? About two thirds to three quarters, it turns out, if we look at the Clearinghouse data (See Figure 7.13). An additional 8–10% of students transfer and graduate at a different four-year institution, and a further 2–3% graduate from a two-year institution. If we went beyond six years, several more percent would be added from those still enrolled. The Clearinghouse six-year graduation rates are in the mid-60% zone for students who started at publics and the mid-70s for those who started at privates. Lest we start slipping back into thinking that the smaller schools are somehow "worse" at graduating students than bigger or more selective institutions, or that their students are somehow "weaker" at their studies, this is a good time to repeat the information from the retention section on the reasons why students don't finish their degrees: most students leave with As and Bs, and they leave to deal with other personal, financial and family issues that are more challenging to resolve for students with lower incomes. The proportion of students in these situations

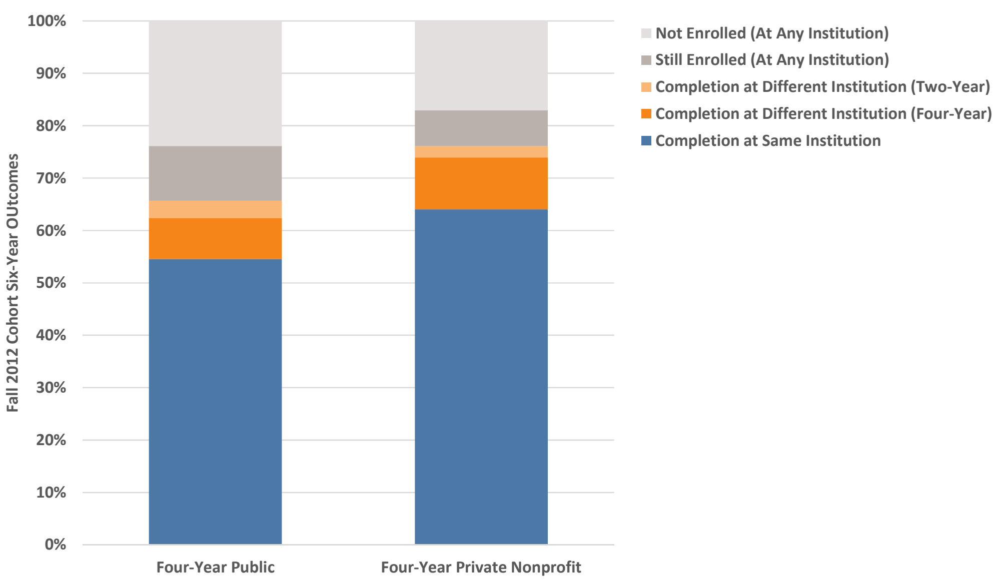

Figure 7.13. Six-year outcomes by starting institution type for the Fall 2012 cohort based on National Student Clearinghouse data. Source: NSC Research Center (Shapiro et al. 2018).

is the leading reason for the differences in both retention and graduation rates across types of institution. Effective initiatives to improve graduation rates therefore must grapple with and address these underlying challenges.

Challenges notwithstanding, graduation rates have been on an improving trend for several decades. The reportable rate is available in IPEDS only from FY2005 to the present, so to extend the general trends further back in time, I've calculated a simple proxy metric using data that are available for a longer period, degrees awarded per (current) enrollment, and shown them both relative to starting values (See Figure 7.14). While they differ in their annual variability, the long-term trends are roughly linear, showing that graduation rates are about 15% higher today than three decades ago averaged across private institutions, and over 35% higher across public institutions. Similar trends are seen in attainment rates (the percentage of the population with a degree, as mentioned above), with a rise from 33.6% of people aged twenty-five to thirty-four years old in 1987 to 52.4% of that age cohort in 2017, a 56% increase (Garrett 2019). By either measure, these are dramatic improvements, even more so given that many of the challenges for students are non-academic in nature, and these trends constitute valuable evidence that parallel activities to increase student success (and access) have indeed paid off.

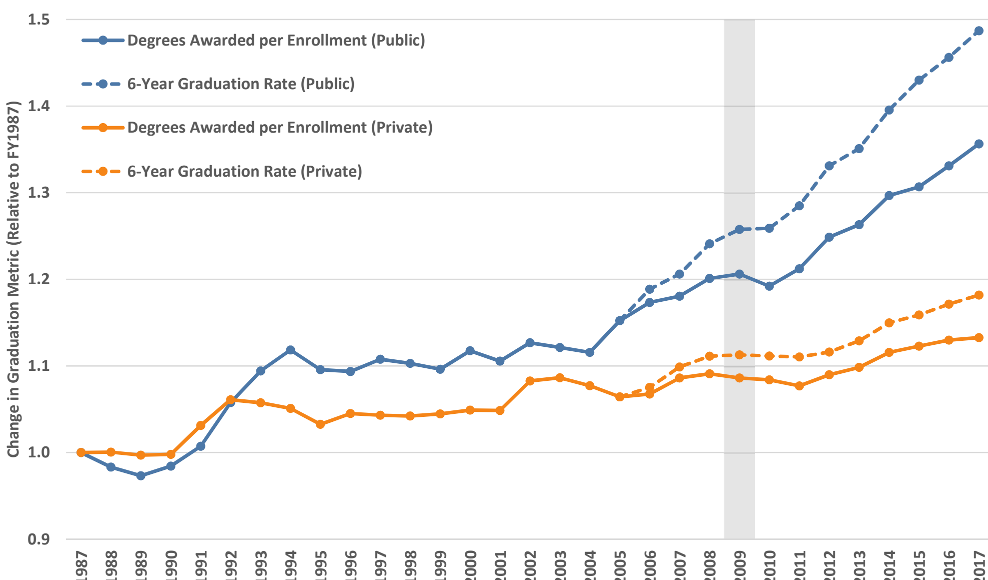

Figure 7.14. Trends in two bachelor's degree graduation metrics, the six-year graduation rate for the total cohort (available since FY2005) and degrees awarded per enrolled student (available since FY1987), both expressed relative to their starting values to enable comparison, averaged by fiscal year across public and private institutions. Source: IPEDS (2020).

7.8 What are the trends in student services spending?

What are the investment trends in student services (and possibly in student success) that have coincided with improving retention and graduation rates? As discussed in Section 7.6, these activities include transactional student services activities (e.g., admissions, registrar, records) as well as success-oriented activities such as tutoring, developmental courses, counseling services, student organizations, special advising, as well as student performance monitoring, data analytics and intervention. In FY2017, institutions of all types spent about 40% of their student services budget on personnel (around 50% if fringe benefits are included) versus other operational costs such as recruiting, marketing, consultants, analytics services, etc. The trends in overall student services budgets have been strongly upward for several decades and are visible in a variety of metrics. Figure 7.15 illustrates these student services investment trends using expenditures per student FTE and share of the overall E&R budget. Over the last three decades, inflation-adjusted student services spending per FTE has doubled at the publics and tripled at the privates. In Chapter 3 we saw that overall E&R spending per FTE has been increasing over time, and if we calculate student services spending as a share of those amounts, we see that student services spending still increased relative to other E&R spending, from 9.3% to an 11.6% share at the publics (a 25% increase) and from 10.5% to a 14.9% share at the privates (a 42% increase). For comparison, trends in academic support spending (libraries, media services, academic administration and IT, as well as course and curriculum development) were about one half (public)

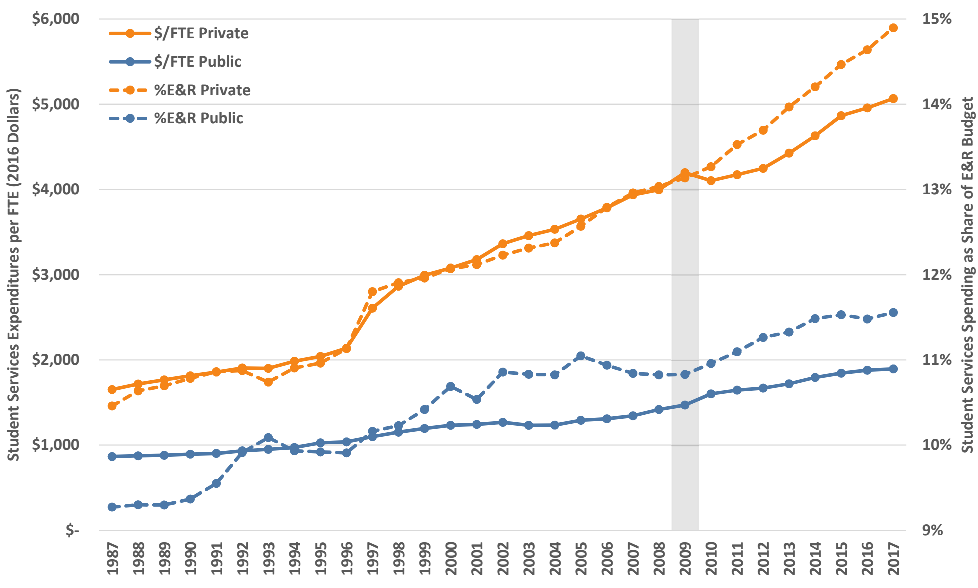

Figure 7.15. Trends in student services expenditures per student FTE (in 2016 dollars) and in the student services share of E&R expenditures averaged across public and private institutions, by fiscal year. Source: IPEDS (2020).

to one quarter (private) of these increases and for the last two of the three decades, essentially flat or decreasing shares of E&R spending.

Unfortunately, there are no easily available national figures on recruitment versus retention budgets and, based on relative costs of these activities (Cuseo 2010), we must assume that recruitment expenditures comprise a substantially larger portion. That means that much (but not all) of the growth in student services budgets has likely been in recruiting-related activities, which makes sense in a tuition-dependent environment. Still, while retention budget trends cannot be easily determined, there is little doubt that retention initiatives and activities are now widely practiced (Ruffalo Noel Levitz 2017a) and have seen an increase over time.

7.9 What is the total cost of attendance with room, board, and books?

The full cost, by which we strictly mean price, of attending university extends beyond tuition and fees (after subtracting aid) to include books and supplies, room and board, and other expenses. One can reasonably argue that individuals will incur room and board costs whether they are attending university or not—they would still be paying for rent and food if they were working a job instead—but, as a practical matter, students and parents want to know how much the entire experience will cost them.

The formalized way that institutions provide estimates of the total cost of attendance is stratified by a student's lodging arrangement: on campus, off campus staying with family,

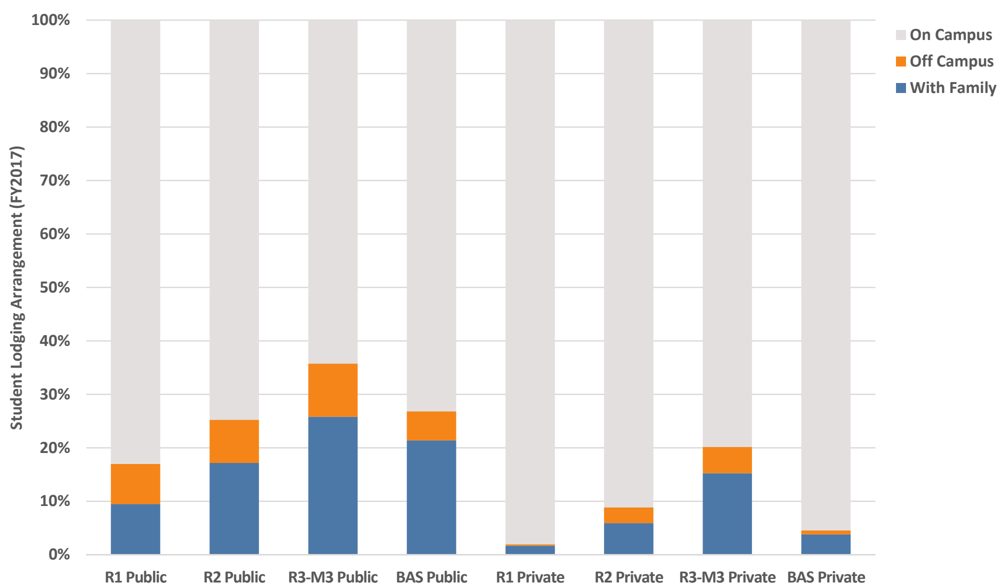

Figure 7.16. FY2017 share of first-time full-time students living on campus, off campus (not with family) and living with family. Source: IPEDS (2020).

and off campus living independently (not with family). First-time full-time students stay predominantly on campus at all types of institutions and we see this proportion vary with the different missions and student bodies they serve (see Figure 7.16), averaging from 98% living on campus at R1 privates to 64% at R3-M3 publics. At many, but not all, schools the share of students living on campus (in residence halls) is highest in the first year and diminishes in the second and subsequent years as students seek to live off campus. In the first year, only 5–10% of students live off campus independently, whereas a notably higher share of first-year students live with family (2–26% depending on the type of institution).

Figure 7.17 shows that the average costs for living on campus or independently off campus do not differ much; naturally, students living with family typically will not incur any additional costs for lodging at home although their marginal food costs will still be a factor. The room/board split for on-campus students is roughly 60/40 (about $6,500 and $4,800 on average). Room and board costs are based on a student sharing a room with one other student and a specified number of meals per week (about 20), using institutional room and board charges for on-campus students and area market estimates for off-campus students. Other expenses averaging $3,000 to $4,000 include items such as laundry, transportation, entertainment, and furnishings; the average amount is slightly larger for off-campus students largely because of higher transportation costs. Books and supply costs can vary widely by program, and the average for students in programs without specialized requirements is currently estimated by institutions for financial aid purposes at about $1,200 per year. The institutional estimate definition is an important caveat as we'll see in Section 7.11 about textbooks; spoiler alert, the book portion is only about half this total.

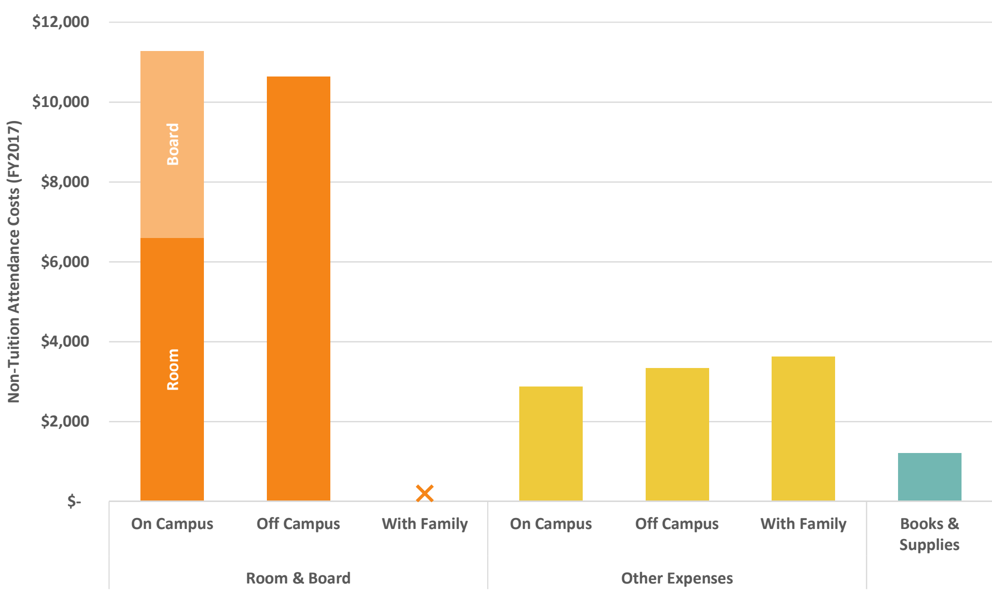

Figure 7.17. FY2017 non-tuition costs of attendance for the full academic year by lodging arrangement for first-time full-time students, averaged across all types of institution. Room and board charges are shown separately for on-campus students and are not provided for students living with family. Source: IPEDS (2020).

Adding all these components to sticker-price tuition results in the total cost of attendance, illustrated in Figure 7.18 as amounts weighted by the mix of students living on campus, off campus and with family at each school. This is the gross (rather than net) amount and, because tuition is the largest component, we see the stratification across institution types familiar to us from earlier sections on tuition. The average net price paid after accounting for all grant and scholarship aid (federal, state, local, institutional), but not loans, is also illustrated in Figure 7.18. We examined net price by income level in Section 7.3 and here we see it split into in-state and out-of-state versions for the public institutions, which reveals an interesting pattern: the net price paid by out-of-state students at the publics is remarkably comparable to that for students at the privates, $25,000 to $35,000 annually, while it is significantly less ($13,000 to $16,000, about half as much) for in-state students at the publics. These are the actual average costs to students and families, and while they are not small and have grown over time, they are also not the headline-grabbing extreme amounts sometimes cited in the media. We'll look at affordability of these costs in the next section.

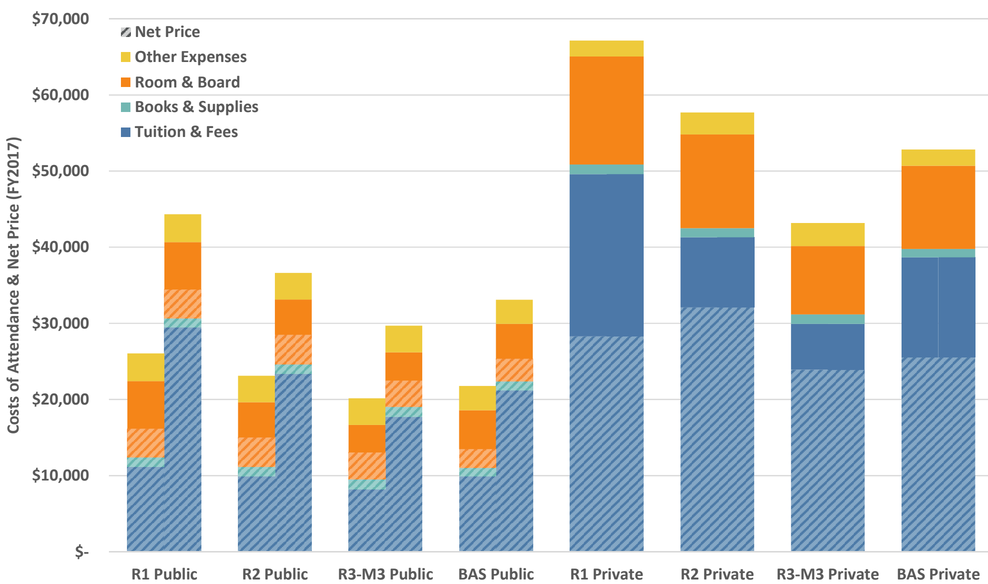

Figure 7.18. FY2017 total cost of attendance and component costs of published tuition and required fees (left and right columns are in-state and out-of-state for public institutions), books and supplies, and weighted averages for room and board and other expenses (weighted by the mix of students staying on campus, off campus and with family), as well as net price (total cost after deducting total federal, state, local and institutional grant aid), for first-time full-time undergraduates for the full academic year. Total aid is the upper portion of each column not covered by net price. Source: IPEDS (2020).

Talking of cost increases over time, though, let's finish up this section with exactly that, the trends in inflation-adjusted component costs of attendance (Figure 7.19). Room charges have risen just a little slower relative to sticker-price tuition, both having grown more than 1.5 times over almost two decades. This is interesting because room charges are part of the local housing market, with the implication that they cannot differ greatly from local market rental rates (to avoid over- or under-subscription). It turns out that inflation-adjusted median rents grew 1.4 times over this period (US Census Bureau 2019b), a similar amount to tuition and room rates (noting that these are broad national census data not tied to university-area markets). Meal charges grew less rapidly, about 1.3 times, although this increase is above the inflation-adjusted national average for food away from home of 1.1 times since FY2000 (US Bureau of Labor Statistics 2019a). In contrast, the inflation-adjusted costs of books and supplies as well as other expenses has remained essentially flat, increasing slightly before the recession and decreasing in recent years.

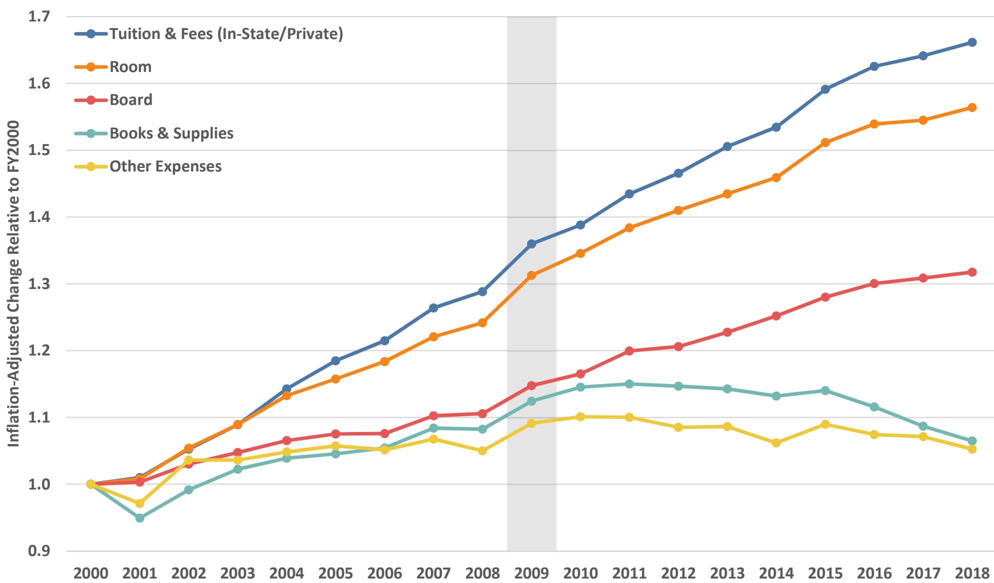

Figure 7.19. Trends in component costs of attendance expressed relative to their FY2000 amounts in inflation-adjusted dollars, averaged across all types of institutions (using in-state amounts for publics). Source: IPEDS (2020).

The cost of food can become a budget trade-off for low income students, leading to a much greater prevalence of food insecurity in recent years. National data on food insecurity are not available, but a recent comprehensive government review estimates that more than 30% of all students are food insecure (Harris 2019), although other studies present much larger numbers and another recent study challenges these high figures (Smith 2019). Campuses have begun to address this issue by opening food pantries and making sure that students are aware of their eligibility for the Supplemental Nutrition Assistance Program (SNAP), widely known as food stamps (Harris 2019).

7.10 How has affordability changed?

Affordability in our context is the net price relative to the ability to pay, which we can index to median family income for trend purposes. This makes sense because substantial portions of financial aid are tied to income-based need. Inflation-adjusted median family income was flat in the decade leading up to the Great Recession, dipped by almost 10% for several years thereafter, and only since FY2016 has it recovered to pre-recession levels near $70,000 per year (Figure 7.20). The median value doesn't convey the underlying (and widely-documented) further separation in inflation-adjusted income inequality between the lower percentiles (flat trend) and upper percentiles (over 10% growth) of the income distribution since FY2000 (US Census Bureau 2018a). As it happens, median family income increased by about $5,000 over this period, and the net price for public and private institutions increased by roughly the same amount (Figure 7.20) with the familiar pre-recession rise, then fall, and rise again pattern.

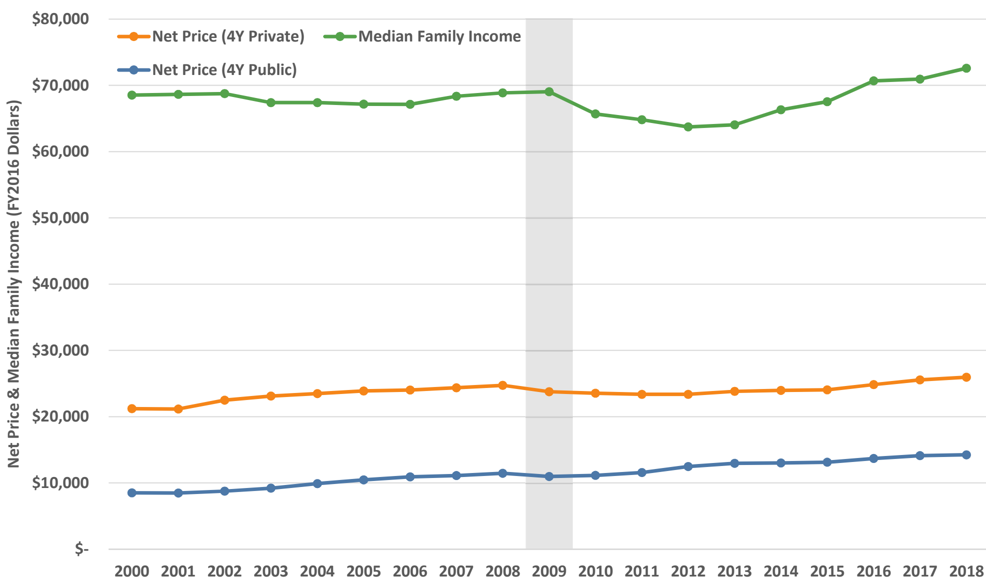

Figure 7.20. Trends in median family income and in net price for four-year public and private institutions, by fiscal year (median family income is for the previous calendar year), in 2016 dollars. Sources: US Census Bureau (2018b) and College Board (Ma et al. 2018).

Looking at net price trends as a share of median family income accounts for shifts in timing and relative amounts (Figure 7.21), showing that the privates have held steady near 35% since rising in the early 2000s, while net price at the publics rose from 12% to about 20% of median family income through FY2013 and it has since remained at that level. Therefore, and this is a big deal because it is contrary to popular perception, university affordability relative to income has remained flat for at least the last seven years, twice that length at the privates.

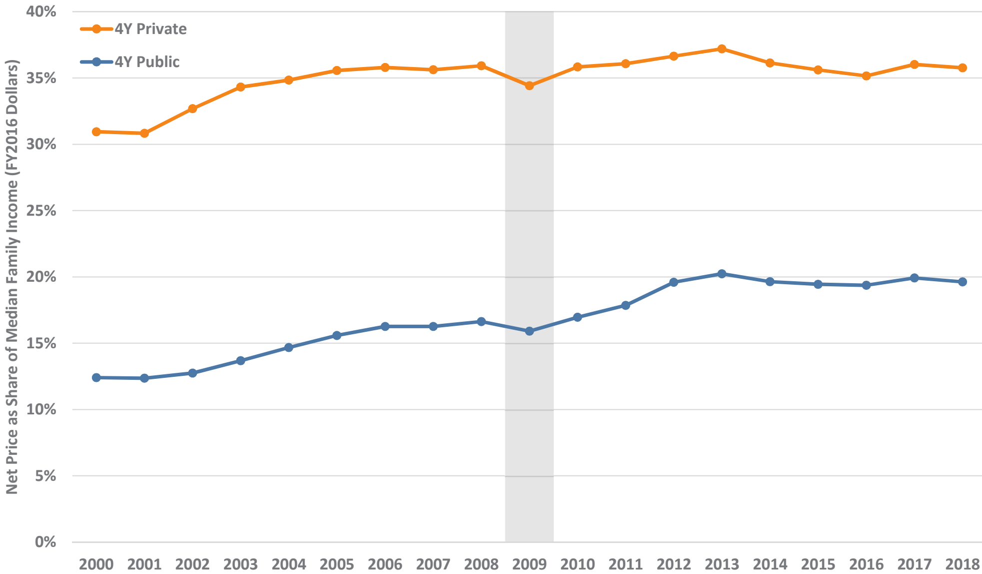

Figure 7.21. Trends in net price as a share of median family income for four-year public and private institutions, by fiscal year (median family income is for the previous calendar year), in 2016 dollars. Sources: US Census Bureau (2018b) and College Board (Ma et al. 2018).

Box 7.2. How Free is Free College?

The lexicon surrounding college affordability has become complicated in recent years, especially around what is meant by "free college" during elections. Here's a handy guide (Kreighbaum 2019b; Mangan 2019):

- *First Dollar:* program funds applied before grant aid that can then be used for living costs (rare);
- *Last Dollar:* program funds applied after grant aid (most common);
- *Last Dollar Plus:* like Last Dollar, with extra program funds for living costs (rare);
- *Tuition-Free:* program funds cover only tuition;
- *Debt Free:* Tuition-Free with extra funds for living costs, thereby avoiding loans;
- *Debt Cancellation:* program funds applied to reduce or zero-out existing loans for all or for lower-income subgroups with loans.

Some of these options can be expensive, e.g., First Dollar. Yet others can be controversial too, such as Debt Cancellation, which is criticized as unfair by those who've just paid off their loans and/or those who worked more during college to avoid accumulating debt.

You might be wondering if students, especially those from low-income families, can offset the net price and cost to families by working part-time during college. Decades ago, when net price was much lower relative to median family income, a part-time job was often an effective solution. Unfortunately, that is no longer the case. A recent study (Anthony et al. 2019) shows that at four-year institutions, a student working ten hours per week at the minimum wage would still be $6,550 short of the net price or, alternatively that the student would need to work twenty-six hours per week to offset the net price (with large differences in both of those figures across states). Unlike a generation or two ago, students and families must now bridge this affordability gap with savings or by incurring debt through loans.

7.11 How much debt do students have at graduation?

"As you walk across campus and see students moving between classes, remember that they and their families took out loans to pay our salaries." I've made this point many times in campus meetings to underscore, even in the large public research university where I work, that we are a tuition-dependent institution and the extent to which we rely on and must serve our students. The reality of paying the net price (i.e., after aid) for attending university, while considerably lower than the sticker price, means that students must foot that remaining bill by working, by using their parents' savings, and/or by borrowing the money. We looked at student loans for first-time full-time (FTFT) students in Section 4.5, and here's a quick recap:

- Not all FTFT students have debt and the share who do ranges widely from about one quarter at R1 privates to almost three-quarters at R3-M3 privates, while the share is roughly half at other types of institutions;
- The average loan is just over $7,000 (plus/minus about $1,000 depending on type of school, in FY2016 dollars) for those FTFT students with loans;
- Most student loans are federal loans, but there is a small portion of students, 4–10%, with much larger other loans averaging $10,000 to $20,000 (by type of school);
- Four years at the average loan amount is about $30,000 of cumulative debt for students who have borrowed. I underline again that this kind of number is frequently misquoted and misperceived as the average debt of all students, but because only half of all students borrow, it follows that (if someone truly wants that figure) the average cumulative debt per graduating student is also half, about $15,000;
- The trend in the share of FTFT students borrowing has been relatively flat, increasing slightly after the recession and then decreasing in recent years;
- The amount borrowed has remained flat since the recession for federal and student loans, except strong increases for that small percentage with other types of loans.

Now, instead of FTFT students, we'll move to the completion of their studies and examine cumulative debt for students that earned undergraduate and graduate degrees. The share of degree recipients with debt and the amount of debt per individual are illustrated in Figure 7.22 (note that these data are from student NPSAS

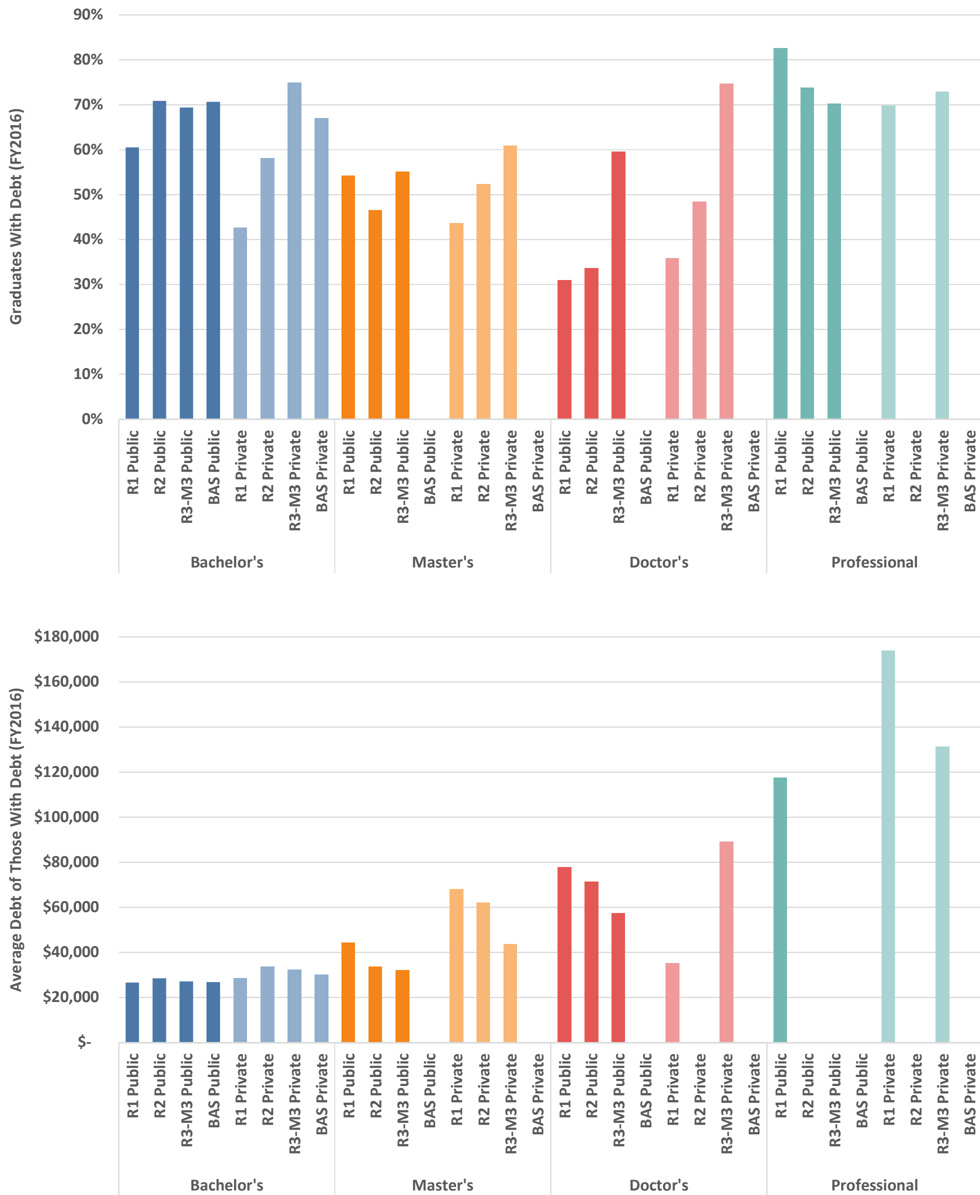

Figure 7.22. FY2016 share of graduates with debt (upper) and average debt of those with debt (lower) by degree level, averaged by Carnegie classification and control. Professional practice degrees include the doctor degree in chiropractic, dentistry, law, medicine, optometry, pharmacy, podiatry, and veterinary medicine. Blanks indicate that minimum reporting standards were not met. Source: NPSAS 2016 (National Center for Education Statistics 2018a).

surveys and are not directly comparable to the institutional IPEDS data in Section 4.5). Starting with bachelor's recipients, at most types of institution about 60–70% graduate with debt, although that share is 75% at R3-M3 privates and much lower, 43%, at R1 privates. The average debt amount for graduates with debt is quite similar across institution types, $26,000 to $29,000 at the publics and a few thousand more, $28,000 to $34,000, at the privates.

For master's recipients, the share with debt is centered around 50% depending on type of school, but with a large public-private difference in the average debt amount, $32,000 to $45,000 at the publics and $44,000 to $68,000 at the privates. Bear in mind (i) that students may be awarded assistantships for master's degrees in the arts and sciences, but financial aid is less common for professionally-oriented master's degrees that can also be priced higher, and (ii) these debt amounts are accumulated in the two years or less that it takes to complete a master's degree.

Students graduating with a Ph.D. or other research doctoral degree will take four to eight years (some requiring a master's, some not, depending on field) and they are the most likely graduate degree level to be awarded assistantships and other aid. Thus, although the degree takes two to four times longer than a master's, the share of Ph.D. graduates with debt is the lowest for all levels of degree (although it is concerning that this share at R3-M3 institutions is double that at R1 schools). Debt amounts for the generally smaller share of Ph.D. graduates with debt are more than for master's graduates, but not as much as time-to-degree would imply.

Professional practice doctor's degrees include the MD, JD, PharmD, DVM, etc.; 70% or more of these degree recipients have debt on average, and those individuals have the highest average debt amounts of all graduates, approaching $120,000 at the publics and $180,000 at the privates. This level of average debt is breathtaking for those who haven't seen the numbers before. It also highlights the issue of repayment: the starting salary and future earnings of an MD graduate will likely make repayment feasible but starting salaries for veterinarians and several others in this category are under six figures—those individuals will struggle with their debt for many years. We'll cover repayment in the next section.

7.12 What are the rates of student loan repayment?

Repayment rates have slowed in recent years, and they differ by who is paying. The repayment rate is the share of borrowers who are making progress paying down their loans (at least one dollar of the initial balance), measured within a given window (e.g., three, five or seven years) since they entered repayment. Borrowers may enter repayment in a different year than when they left the institution because of a six-month grace period, being granted a deferment for hardship, or for attending graduate school; repayment rates are reported for undergraduate debt (US Department of Education 2019a). Five-year repayment rates by institution type are shown in Figure 7.23 and, logically enough, they track the corresponding student/family income profiles (see Section 7.3). Repayment rates are lower for those who left the publics (60–75%) than the privates (68–88%), while they are highest for R1 school leavers and lowest for R3-M3 school leavers. For leavers from all types of institution, repayment rates have declined by 5–10% in recent years, especially for those borrowers who left the institution since the recession.

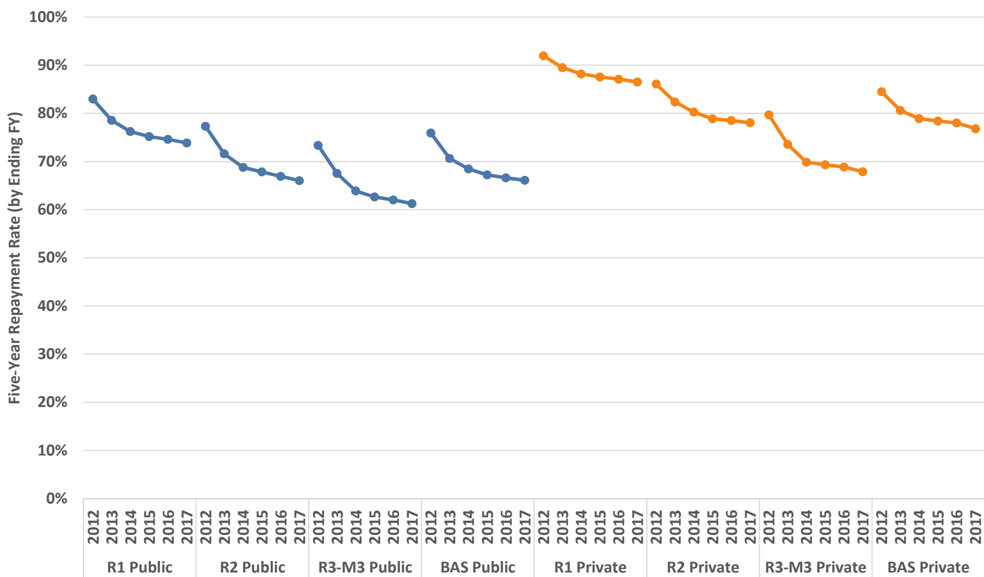

Figure 7.23. Five-year repayment rates on federal student loans by ending fiscal year for two-year averages (i.e., borrowers entering repayment in FY2006 and FY2007 comprise the FY2012 amount, and likewise those entering in FY2011 and FY2012 comprise the FY2017 amount), averaged by Carnegie classification and control. Repayment is defined as paying down at least one dollar of loan principal after five years. Source: College Scorecard (US Department of Education 2019a).

Students who graduate are, as expected, better able to repay their student loans than those who do not complete their degrees (Figure 7.24), with non-completers repaying at rates that are 15–20% lower than completers at the same type of school. Similarly, students who are financially dependent on their families have a better repayment record than those who are financially independent without family resources (Figure 7.24), with a parallel difference of 10–20% between the two groups. Note that these data reflect whether a borrower has paid down at least $1 of the loan within five years; they do not reflect if the loan has been completely repaid or those individuals who begin repayment after five years.

While we are not including for-profit institutions in our analyses, a lot of media attention has been devoted to their repayment rates, which are only about half of those at public and private four-year schools; two-year colleges are in-between (Baum et al. 2018a). Most national reports on student indebtedness and repayment include these

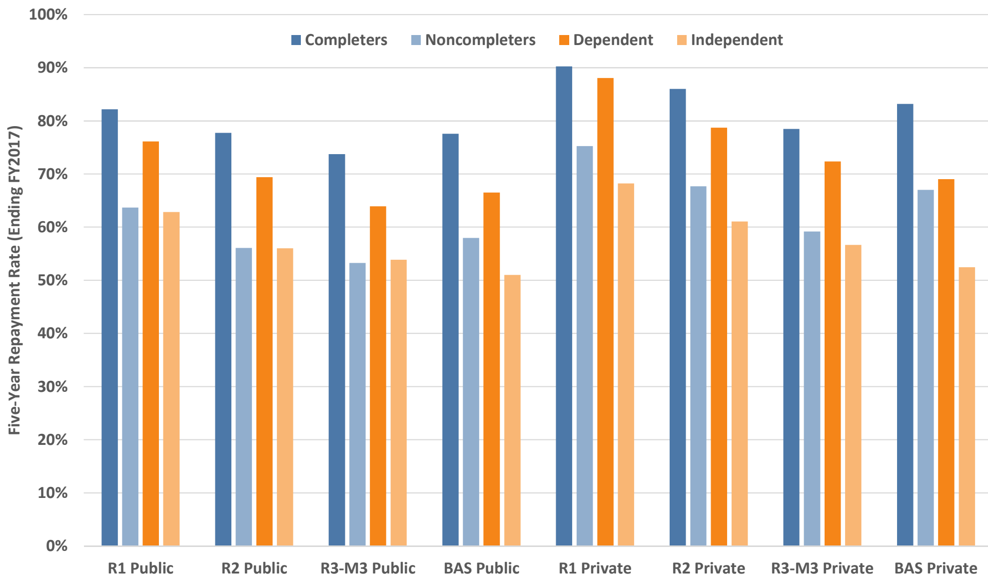

Figure 7.24. Five-year repayment rates on federal student loans for the two-year averages of borrowers entering repayment in FY2011 and FY2012 (i.e., five years ending FY2017), by degree completion status and dependency status, averaged by Carnegie classification and control. Repayment is defined as paying down at least one dollar of loan principal after five years. Source: College Scorecard (US Department of Education 2019a).

other types of institutions where the statistics are quite dismaying. Loans to student's parents through the Parent PLUS program have been a particular focus of attention, because those loans do not have the same protections as federal undergraduate loans like loan forgiveness and income-based repayment (Kreighbaum 2018; Looney and Lee 2018). As with undergraduates, the data show that large-balance graduate student borrowers attended for-profit schools that tend to have worse repayment outcomes (Lee and Looney 2018). Overall, the growth in borrowers acquiring high debt with low earnings prospects leads to unsustainable levels of indebtedness, that in turn lead to higher costs for the federal loan programs and for students.

7.13 What is going on with textbook prices and spending?

Like rising tuition, "skyrocketing" textbook prices generate considerable consternation that is further confounded by conflated questions and confusing data sources. Textbook prices (and consequent antipathy toward publishers) rather than other course materials have fueled the concerns and drawn most of the attention, so we'll begin with them.

Two core questions: how much have textbook prices risen, and how much are students spending on them? Curiously, the answers are (i) a lot, and (ii) less and less. The best data on prices are literally part of the CPI (consumer price index): the educational books and supplies component goes back decades, while college textbooks as a subset thereof were broken out in FY2002. It turns out that they track closely, providing a fascinating trend pattern (Figure 7.25). After adjusting for inflation with the overall CPI exactly as we've done for other dollar trends, we see that new textbook prices were flat from the 1960s through the mid-1980s, then doubled in price over the next thirty years, and that trend has abated only in the last few years. The other data source for textbook prices is the National Association of College Stores (NACS); its surveys show comparable but slightly lower increases in inflation-adjusted new textbook prices and flat prices for used textbooks (Figure 7.25).

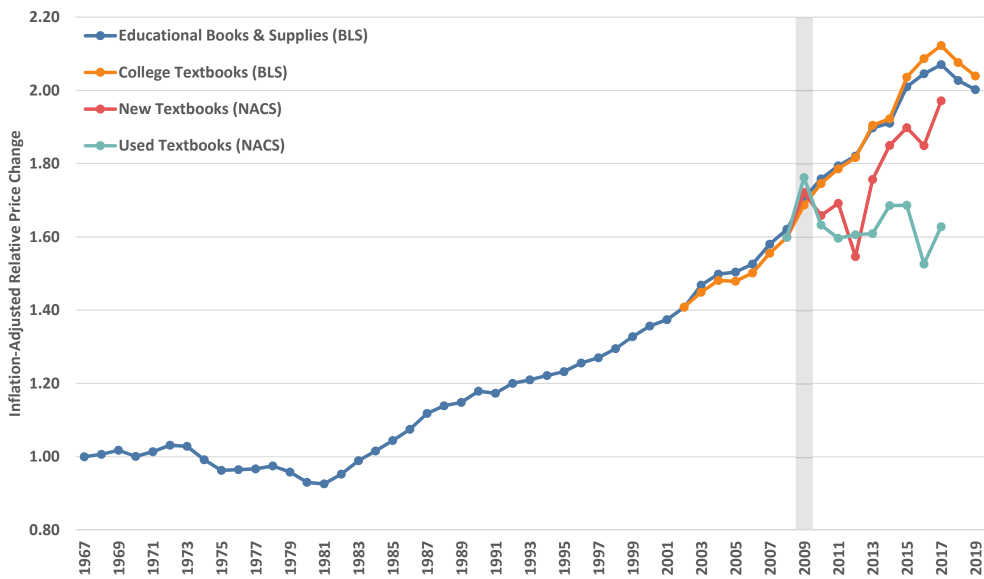

Figure 7.25. Inflation-adjusted price changes for educational books and supplies (relative to FY1967) and for college textbooks (relative to FY2002, starting at the matching value) from the consumer price index, and the price of new and used textbooks from college bookstore surveys (relative to FY2008, also starting at the matching value). Source: BLS (US Bureau of Labor Statistics 2019b) and NACS (2019a).

While new textbook prices have climbed, students have been spending progressively less on their overall basket of textbooks and course materials. Three independent surveys all converge on approximately the same number, which after adjusting for inflation is currently about $500 per year, down from about $850 in FY2002 (Figure 7.26). Data for the last five years show that the mix of materials purchased has shifted too. Of the four types, the shares of new and rented textbooks have remained roughly flat, the used textbook share has shrunk, and the digital text share has grown to make up the difference (Figure 7.27). These are noisy survey responses and not national summary data, but this latter switch is nonetheless consistent with an important trend in textbook publishing: unlike paper books, digital textbooks cannot be resold, and students can only purchase them new. While a growing trend in online versus paper texts is expected nowadays, this shift also happens to be a way for publishers to reclaim a portion of the used textbook market that otherwise does not accrue to them.

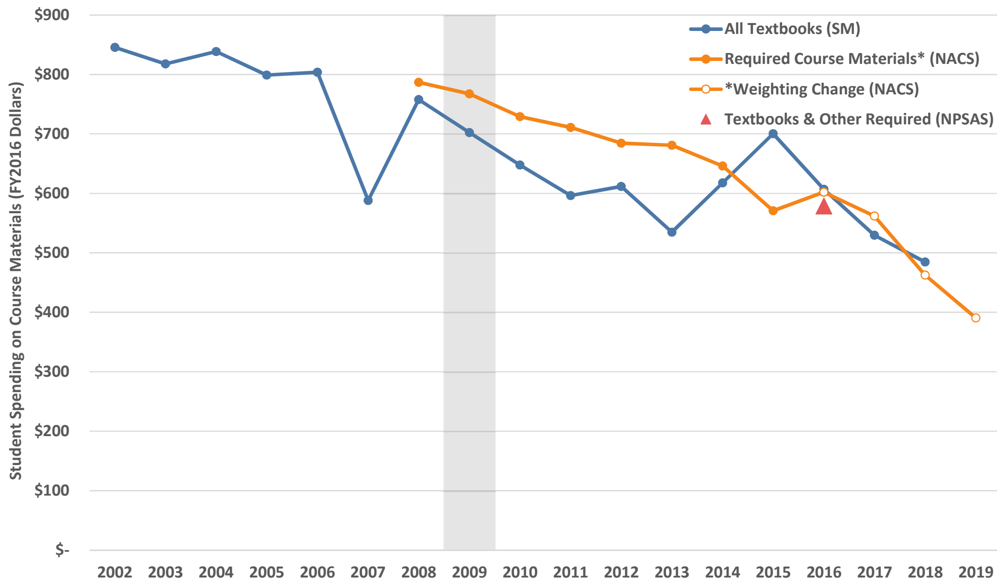

Figure 7.26. Student-reported spending on textbooks from three surveys, each averaged across all types of institution, by fiscal year in FY2016 dollars. Sources: Student Monitor/SM (Kestenbaum 2014; Business Wire 2018), NACS (2019b), and NPSAS 2016 (National Center for Education Statistics 2018a).

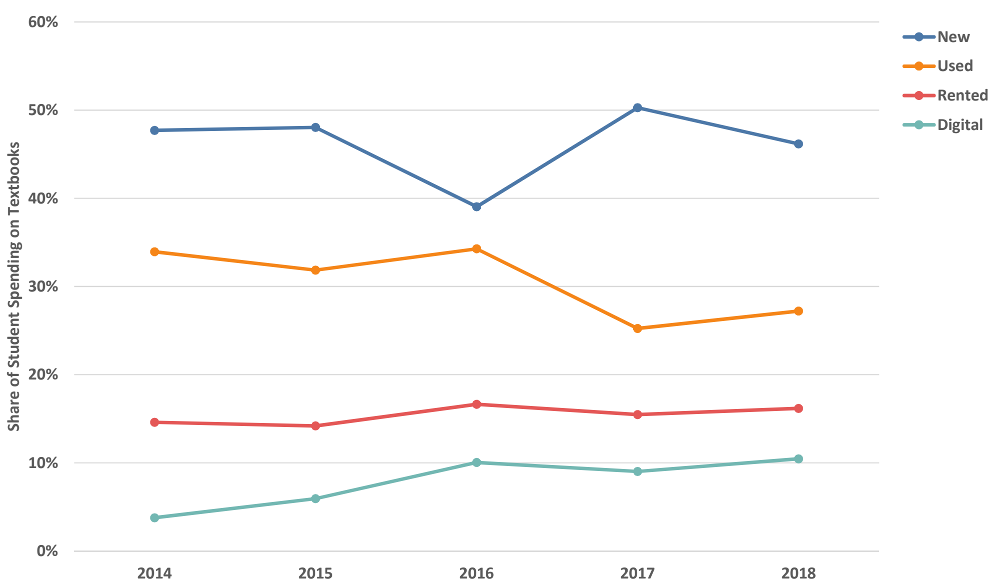

Figure 7.27. Share of student-reported spending on types of textbooks by fiscal year. Source: Student Monitor (Business Wire 2018).

The curious part of all this is that despite the decades-long increase in textbook prices, students are spending about 60% less on textbooks than they did just over a decade ago. Are they getting the same books for less using other means, or are they just opting out of buying them altogether? It appears to be a bit of both. We saw above that used textbook purchase amounts are down. The same survey shows that while renting expenditures are flat, the percentage of students renting has virtually doubled to about 40% over almost a decade (Business Wire 2018). About half of students responding purchased at least one new textbook; 39% of those bought it significantly cheaper than list price from a mix of sources, 61% from the campus bookstore, 41% from Amazon, and 21% from other bookstores and online retailers (Business Wire 2018). When it comes to all course materials of any type, not only new, 77% of students purchase from the campus bookstore, 42% from Amazon, and 25% from other sellers (NACS 2019b). Only 12% of students (Business Wire 2018) reported that one or more of their classes used an open educational resource (OER). OERs are public domain or freely usable materials, typically online, that include textbooks as well as course modules, videos, tests, etc. While almost half of all faculty members are now aware of OERs, only 13% of those teaching all courses and 22% of those teaching introductory courses require OERs (Seaman and Seaman 2018). About 30% of students do not buy or rent at least one of their required materials, and on average these students skip buying three required texts in one semester; price was cited by 30% as a reason for not acquiring the text, the other responses being that either the individual, the professor or others said it was not necessary (Hill 2015). What do students do without a text? Apparently, 57% just use class notes, 47% borrow from friends or the library, and 19% obtain material illegally (Hill 2015). Consistent with all the above, the number of books bought per student was down from 13 in 2001 to 8.5 in 2013 (Kestenbaum 2014).

In addition to required texts and course materials, students also need to purchase non-required (but practically necessary) technology such as a computer and other school supplies; the FY2019 average spending on these items was $527 (NACS 2019b), which is $496 in 2016 dollars for comparison to the textbook amounts. So, together, student-reported annual spending on books and other supplies total about $1,000 on average. That's not too different from the roughly $1,200 amount for books and supplies listed in IPEDS that is subsequently republished by the College Board (Ma et al. 2018) and widely-cited by the media and interest groups. However, it's worth repeating the easy-to-miss distinction between the source of these amounts that I flagged in Section 7.9: the underlying IPEDS amount does not come directly from student-reported amounts and instead is a broad estimate for financial aid purposes made by the institutions.

The vicious cycle of increasing textbook prices and purchase avoidance by students is reflected in campus bookstore sales figures. Campus stores are often owned and run by the institution or its student association, and they are sometimes contracted to a company (NACS 2019a). Although textbooks are just one part of college store sales (that also include stationery, logo items and apparel, and technology), overall total and per-student sales have declined almost 20% during the decade since the recession (Figure 7.28). About 22% of a textbook's price goes to the bookstore, of which almost one quarter (6%) is profit after costs, which is a modest amount; about 11–15% of the price goes to author royalties, and the rest goes to the publisher to cover costs and generate a profit (Crockett 2013).

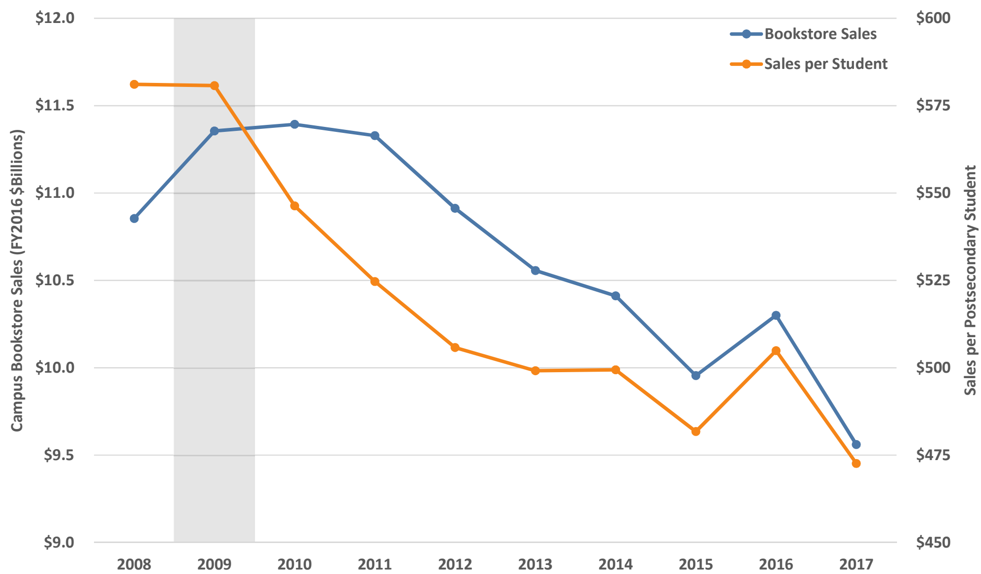

Figure 7.28. Recent trends in inflation-adjusted US college store sales and sales per postsecondary student (Fall enrollment), by fiscal year. Sources: NACS (2019a) and IPEDS (2020).

The textbook publishing industry, after the long run-up of price increases, now finds itself pressured by all the alternative options mentioned above as well as mergers, acquisitions and associated debt necessitated by a rapidly changing market. The recent merger announcement between Cengage and McGraw-Hill will rival the largest publisher, Pearson, with this consolidation resulting in a duopoly that will dominate market share (McKenzie 2019a). A new subscription-based model is emerging, aimed at institutions and departments, with content morphing from static textbook information to digital courseware that includes personalized, adaptive learning technology (McKenzie 2018a; Blumenstyk 2019b).

There is one other dimension to the college textbook business worth mentioning. Faculty-authored textbooks are sometimes assigned by those authors in their own courses, which can create an actual or perceived conflict of interest. Many universities and the AAUP have statements and policies on the necessity of avoiding such conflicts while enabling the material to be used. Remedies include an approval process, eliminating or donating (typically minor) royalties, and discounting the cost of the book (American Association of University Professors 2005; Quintana 2018).

8. Research

8.1 What's in the research budget, and how big is it?

Discovery, inquiry, the search for meaning, creative activity: all of these and more comprise the academic quest for original new knowledge that we include under the banner of research. Furthermore, like love, knowledge isn't really knowledge until it is shared, and therefore research also includes communication of its outcomes through publication, presentation and performance. Research can be undertaken for the sake of knowledge and curiosity alone, as well as for broader application and problem-solving;[1] it can be carried out by lone scholars and by large groups of researchers; and, most relevant to our purposes here, depending on the topic, it can be done at very little cost beyond time and expertise or it can require significant and sustained investment.

Many kinds of science and engineering research simply cannot be accomplished without research funding to cover the costs of equipment, supplies, specialized labor, and unique facilities. Faculty members and other researchers in these areas expend a lot of time and effort in the pursuit and acquisition of research funds to enable their research, much of it through intense national competition.[2] Naturally, those who garner such support are judged as successful by their peers. Because money (and publications) can be counted easily, it was probably inevitable that these two metrics came to be used as convenient proxies for research productivity in promotion and tenure as well as in university rankings.[3] Of course, research funds are not an end in

1 Vannevar Bush, who in 1945 delivered *Science, the Endless Frontier* (Bush 1945), the enormously influential report that ultimately led to the creation of the National Science Foundation and the unprecedented rise in research funding for US universities, made the unidimensional distinction between basic and applied research. Donald Stokes, in his book, *Pasteur's Quadrant* (1997), transformed this view into two dimensions to explain use-inspired research. He contrasted the work of Niels Bohr (purely basic) and Thomas Edison (purely applied) with that of Louis Pasteur and the discovery of penicillin, an example of use-inspired research that simultaneously contributed to basic biological knowledge and solved a practical problem.

2 Two points on competitive research grants: (1) open competition adjudicated by rigorous peer review in the US research funding system is a driver of high overall quality, and (2) those faculty members and others who are outside the grant-active disciplines often don't appreciate just how intense and time-consuming the competition can be, with funding rates under 20% in many fields.

3 I've often referred to this pair as "fame and fortune" when discussing research productivity with faculty colleagues. While they can be empty personal attributes, as Elvis Presley told us in his 1960 song of the same name, in this case they are a droll reminder of the necessity for research support and for communicating research findings.

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themselves. Still, at a successful research university they are vital, and they represent a sizable portion of the overall institutional budget.

We celebrate grants when they are awarded, and we'll typically quote the entire award amount, "Professor Famous just received a $1M grant from the NIH to study a promising cancer treatment." What this doesn't say is that it might be a five-year grant at, say, $200,000 per year, and it might be split among several universities collaborating on the work.[4] Also, research grants are not the only kind of grants and contracts coming in to the university—they fund instruction and public service too. These complications make it difficult to track research revenues alone, but more importantly they are quite uneven from year to year: large grants can arrive all in one award year or be unevenly spread over the multiple grant years they are intended to cover. And, you shouldn't be shocked to learn that sometimes the money arrives late.

So, to avoid these issues, the convention is to track research expenditures instead. Research expenditures include not only expenditures on government agency-funded research grants that make up the biggest category, but they also include research funded by private sector, state and local, and institutional sources. The latter includes staff and facilities costs for research centers and institutes, the central research and/or sponsored programs office, research compliance, and so forth. Note that research expenditures do not account for faculty time allotted to research during the regular semesters (a potentially large number given that this may be as much as half of the faculty's effort at an R1 school; see Section 6.10 on faculty effort), but faculty summer salaries paid on research grants are included in research expenditures.

To make the above distinctions plain, Figure 8.1 illustrates grant and contract revenues versus research expenditures by institution type. Several things are immediately apparent: the R1 schools are by far the dominant players in terms of sheer dollars of either kind; federal funds comprise the lion's share; and, for the reasons cited above, research expenditure totals do not equate neatly to grant and contract revenue (although they are nonetheless closely related). At the beginning of Chapter 3 we observed that, across all university types, research expenditures comprise about 8% of the budget. At R1 institutions, those with the greatest focus on research, the budget share for research expenditures is about 20% and second only to instruction.

Which universities are the biggest players nationally? The go-to data source for research expenditures is the National Science Foundation (NSF) Higher Education Research and Development (HERD) survey, and the top 25 institutions are shown in Figure 8.2. These are, by definition, among the most prominent research institutions in the country (and the world). For most of them the dominant share of research expenditures is associated with health sciences and funding from the National Institutes of Health (NIH); see more on NSF and NIH funding later in this chapter. Note, for example, that the University of Texas MD Anderson Cancer Center is, on

4 Professor Famous might be the lead principal investigator (PI), but she could be a co-principal investigator, a co-investigator, a subcontractor, etc., and her role may or may not correlate with the proposed budget share allocated to the work done by her individually or by her lab.

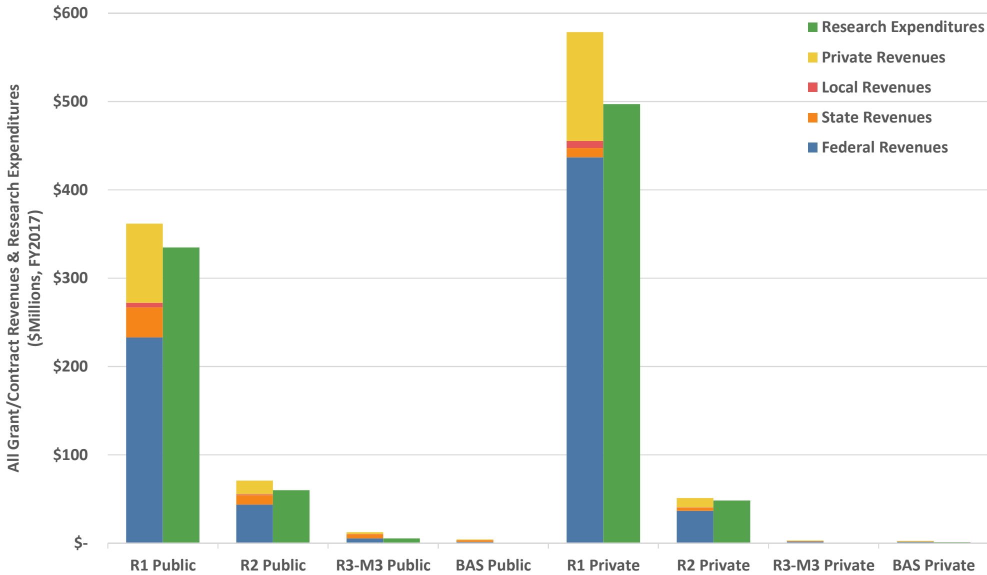

Figure 8.1. FY2017 revenues from all grants and contracts (research and non-research) by source, and expenditures on research from all sources (external and institutional), by Carnegie classification and control. Source: IPEDS (2020).

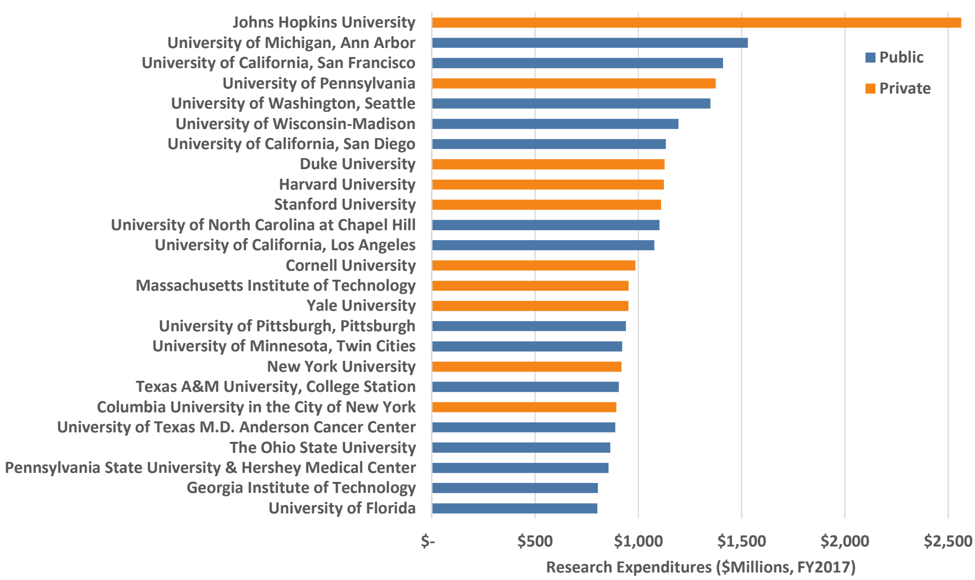

Figure 8.2. FY2017 total research and development expenditures for the 25 highest-ranked institutions. Source: NSF HERD (National Science Foundation, National Center for Science and Engineering Statistics 2018a).

its own, ahead of the regular UT Austin campus (which is number 35). Counter to the health sciences point, Johns Hopkins University, at the top if the list, includes its Applied Physics Laboratory (APL), a huge research center with over 6,000 employees that receives funds from the Department of Defense (DoD) and NASA. Much like the point I made in Chapter 2 about university budgets sometimes including hospitals and sometimes not, the same goes here for hospitals as well as the units that carry out DoD-funded research and development—some of the latter are part of the university, like APL at Hopkins, and some are independent entities such as the MIT Lincoln Laboratory. Over half of Hopkins' $2.6B research expenditures ($1.4B in FY2016) are associated with APL (National Science Foundation, National Center for Science and Engineering Statistics 2018a).

In addition to clarifying that the research expenditure totals are not always an apples-to-apples comparison, there are a couple of other issues related to research expenditures in general that are worth clearing up. First, while faculty members bring their unique and specialized expertise to bear on a research project, and they do the intellectual heavy lifting of applying for grants and carrying out the research, some novice faculty members are surprised to learn that the grant is not "theirs." The funding agency awards the grant (or contract) to the institution (or its board) and the faculty member (in the role of principal investigator) carries out the work as an employee of the institution. Technically, if the faculty member cannot complete the work for some reason, the institution can substitute another suitable researcher to do so or return the remaining funding to the agency. In practice, and in most cases, should a faculty member move to another institution, most universities will work with the funding agency to enable the grant to follow the investigator. For its role, the institution handles the mostly invisible but nonetheless essential administration of the research including accounting, contracting, compliance processes, legal issues, etc. that are paid for through overhead charges (see Section 8.4).

The second issue is one of terminology and public perception. Research expenditures as a term makes sense in the context outlined in this section, vis-à-vis incoming grant awards, but it is easily confused by those outside the university. Consider, for example, that the latest research rankings are released, and our university proudly puts out a press release about how its research expenditures have risen. If not explicitly stated, there will be some commentators or politicians who are unaware that we really mean separately-funded revenues (most of which are externally-funded) when we say expenditures; so, in fact, when we say expenditures, we really mean income, the exact opposite. "There goes that university again," they might say, "wasting our precious tuition or tax money." Moral of the story: whenever you mention research expenditures outside of a research audience, always append a comment to the effect that they mostly reflect outside investment that the university has brought to the community. If you are talking with politicians or business people, you can further underline that most of those dollars are spent in the community on salaries, goods, services, and taxes (see also Section 14.3 on economic impact).

8.2 What are the trends in research expenditures?

University research expenditures from all sources have increased steeply for over sixty years. Even after adjusting for inflation, research expenditures at all universities have been doubling every twenty years, with about 5–6% annualized growth (Figure 8.3). Each of the major meanders in this unprecedented expansion of research investment has a story that we can unpack by funding source. Figure 8.4 shows the relative share of this research funding trend by source. Note that the National Institutes of Health (NIH) are part of the Department of Health and Human Services (HHS) and, for our purposes of university research funding, HHS and NIH are synonymous. The predominance of federal funding is clear, and we can see the increase due to the 1960s space race, several decades with episodes of slowing and growth, the effects of the NIH budget-doubling in the early 2000s (naturally, expenditures lagged the 1998–2003 appropriation increases by a couple of years), the Great Recession, and immediately thereafter a brief spike from the stimulus.[5] The federal share trends slowly downward for much of the record, not because federal spending has shrunk, but because institutional investments by universities have grown steadily as well, thereby increasing in share over time (it's not shown in the figure, but if we exclude institutional investments, all external funding sources have maintained relatively steady shares

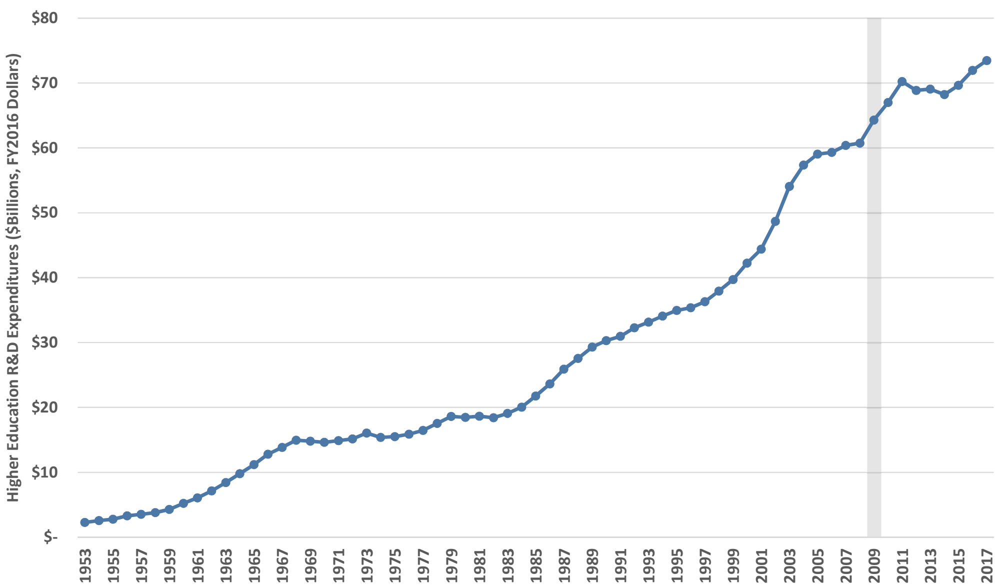

Figure 8.3. Trend in higher education research and development expenditures from all sources, in FY 2016 dollars by fiscal year. Source: NSF HERD (National Science Foundation, National Center for Science and Engineering Statistics 2018a).

5 The American Recovery and Reinvestment Act of 2009 (ARRA) was an economic stimulus package enacted in response to the Great Recession. It included federal research funding increases of almost 25% focused in FY2009 and FY2010.

over time, with the federal share between 70% and 80%). The institutional investments comprise the university's infrastructure to help carry out research, and as mentioned in the previous section they include staff and facilities costs for research centers and institutes, the central research and/or sponsored programs office, and research compliance (the expense of which has been increasingly borne by universities; see Section 8.6 on research compliance costs). By comparison, research funding from state and local governments, from private business, and from nonprofits and other sources has increased only modestly over time, with their shares each staying under 10% of total research expenditures.

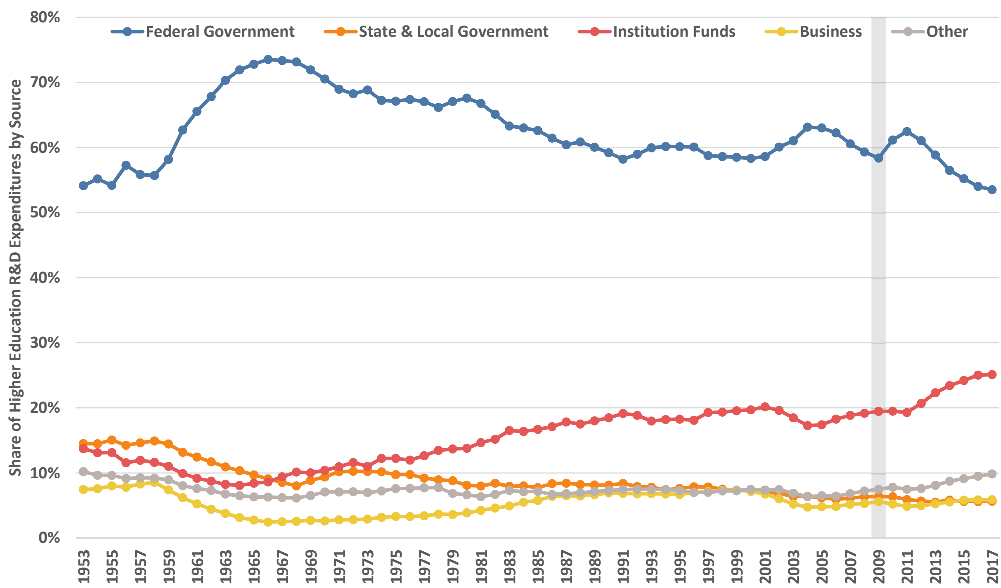

Figure 8.4. Trends in shares of higher education research and development expenditures by source, in FY 2016 dollars by fiscal year. Source: NSF HERD (National Science Foundation, National Center for Science and Engineering Statistics 2018a).

Figure 8.5 delves deeper into the federal portion of the research funding trend, illustrating financial support to universities by agency. Note that these are funding allocations and not expenditures, and thus the inflections in the trend lead those in the preceding figures by a couple of years. Again, the space race, NIH doubling, and the stimulus are quite clear. After its initial growth in the 1960s, federal research funding was flat through the 1970s in real terms, and then doubled in the two decades from the early 1980s to the early 2000s. Except for the stimulus, the inflation-adjusted trend in federal research funding to universities has been downward to flat in the last fifteen years. Despite this recent trend, the competition among universities for those resources continues unabated, as seen in the growth of institutional expenditures noted above and in diminished funding success rates for those faculty members and other researchers writing the proposals (see Box 8.1 on Research Grant Funding Success Rates).

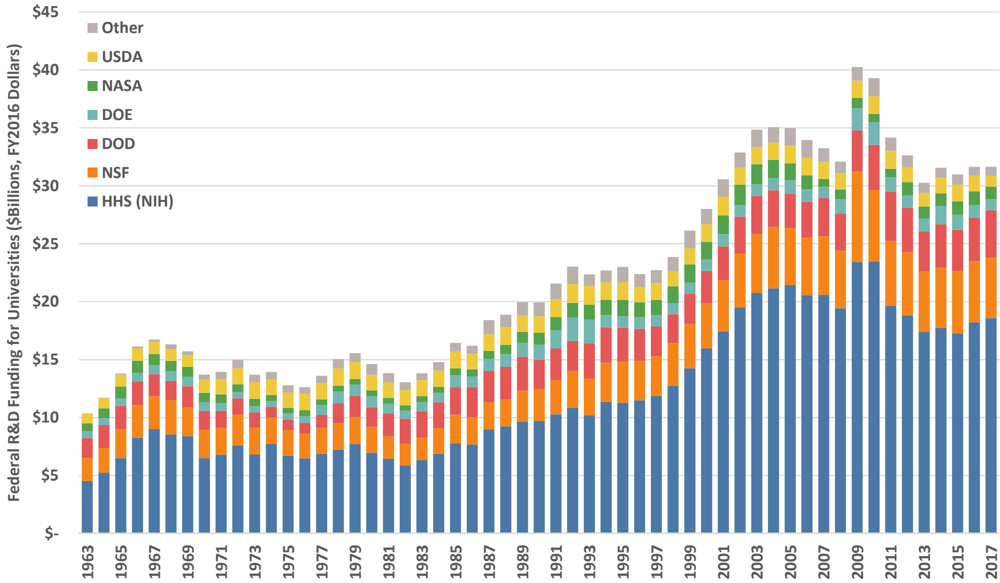

Figure 8.5. Trends in federal science and engineering research and development funding to universities by agency, in FY2016 dollars by fiscal year. Agency acronyms are for the Department of Health and Human Services (HHS, which includes the National Institutes of Health, NIH), the National Science Foundation (NSF), the Department of Defense (DOD), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), and the US Department of Agriculture (USDA). Source: NSF Federal Support (National Science Foundation, National Center for Science and Engineering Statistics 2018b).

Looking at the funding mix by agency in Figure 8.5, perhaps most the notable feature for the uninitiated is the relative size of NIH funding, about three times that of NSF and over half of all federal research funding to universities. Incidentally, this is why it is tough for a university without health sciences to rise into the top ranks of research university funding. DoD funding to universities is slightly less than that from NSF, followed by the Department of Energy, NASA, USDA, and other agencies that fund smaller amounts. The relative sizes of federal agency support amounts have waxed and waned over the decades, albeit dominated by NIH that moved from about 50% to about 60% of the total during its doubling phase. The DoD more than doubled its share of federal research funding from 7% in the 1970s to over 15% in the mid-1980s before declining again in the 1990s;[6] NASA's peak share was in the 1960s, as one might expect, but the USDA's share has dropped from about 11% in the mid-1970s to just 3% of the total in FY2017.

6 Defense funding to universities is generally non-classified and non-military, and it covers the gamut one might expect from a large government organization, including not only technology but also health and biosciences, environment, economics, and game theory, to mention just a few examples. Many universities prohibit classified work on campus; some are affiliated with independent organizations for that purpose.

Box 8.1. Research Grant Funding Success Rates

Success rates for competitive peer-reviewed research grants average about 20% nowadays, about half what they were a generation ago when today's senior researchers were starting out (Figure B8). At NIH the number of proposals has quadrupled over a half-century while awards doubled, and at NSF applications almost doubled over a quarter-century while award counts stayed about the same. We know that the numbers of faculty and principal investigators (PIs) have increased at a far slower rate than proposals based on data from IPEDS (2020) and NSF (National Science Foundation, National Center for Science and Engineering Statistics 2018a), and thus proposals per person have also increased. Of course, grant budgets have increased over time to cover rising labor and other costs, so we have more PIs submitting more proposals per person, all vying for limited funding (Lauer 2018). The number of grant awards per PI has not changed markedly over time, they are not going disproportionately to the successful few, and the number of applications per PI does not correlate with the percentage of funded applications (Rockey 2011; 2012). Therefore, declining funding success rates are largely a problem of our own making, a symptom of intensified competition for research funding.

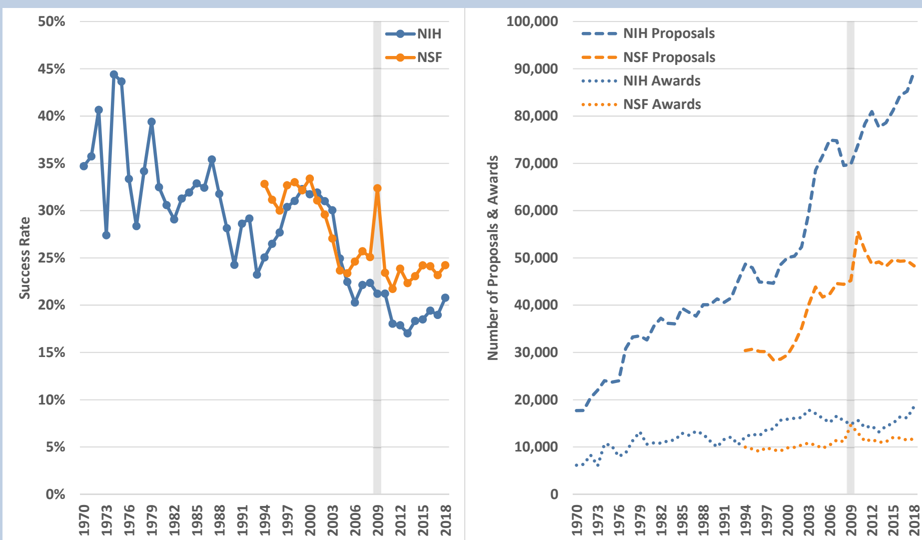

Figure B8. Overall research grant funding success rates at NIH and NSF (left) and associated proposal and award counts (right). NIH data show similar patterns for research project grants and all R01-equivalent grants, therefore they are combined here. Sources: NIH (National Institutes of Health 2018) and NSF (National Science Foundation 2018).

8.3 What is the research funding mix by discipline?

Academic disciplines and fields differ enormously in their levels of extramural research funding. Not only do they differ in the level of support necessary to enable productive research (labs, equipment, etc.) but they also differ in funding level accorded them by funding agencies (based on topic, strategic priority, history, etc.). Figure 8.6 illustrates federal research funding by field and by agency, grouped into several science subfields, engineering, and non-science and engineering fields.

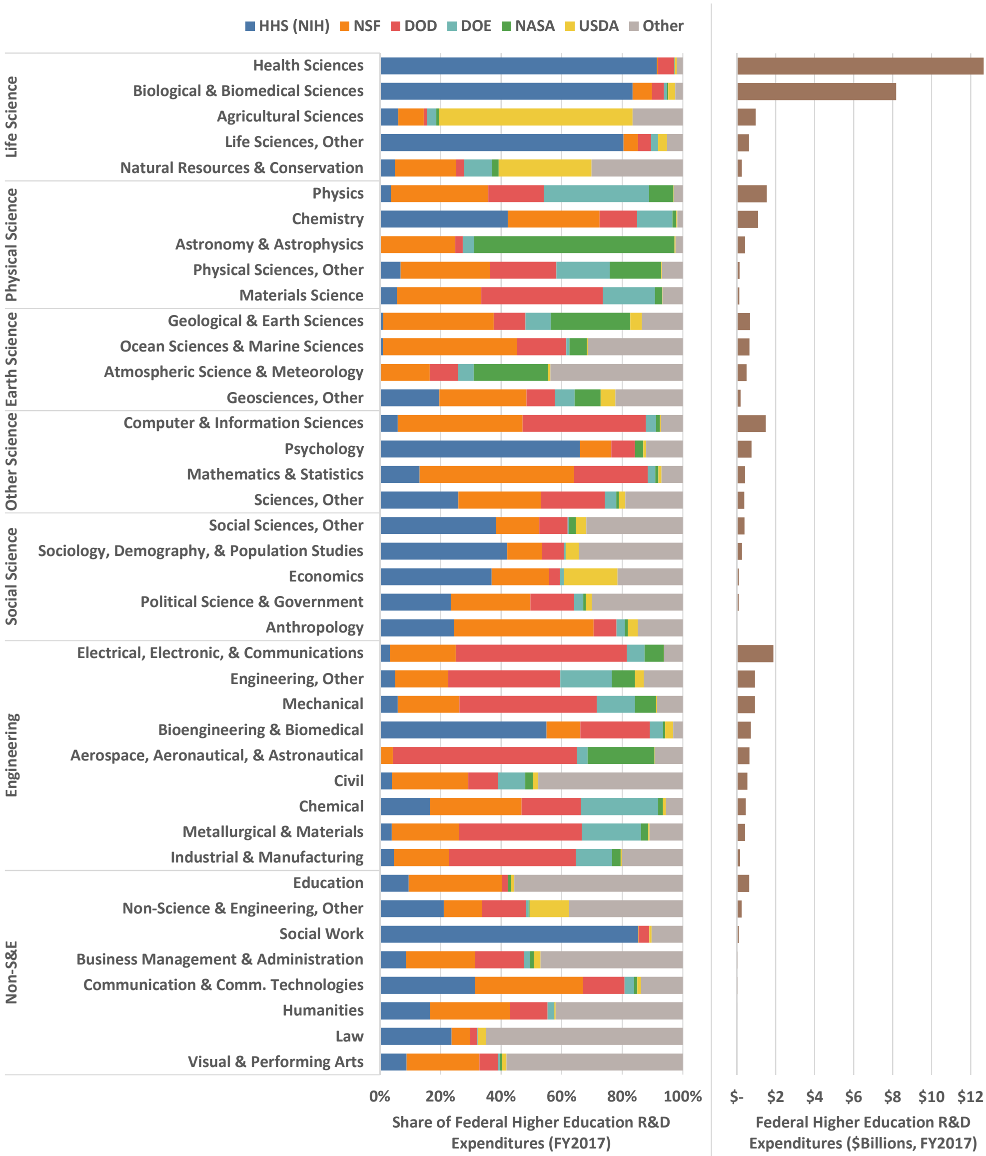

Figure 8.6. FY2017 federal higher education research and development expenditures as shares (left) and total dollars (right), by agency and field. Source: NSF HERD (National Science Foundation, National Center for Science and Engineering Statistics 2018a).

We saw the dominance of NIH funding in the previous section, and it is clearly visible here in the amounts for health sciences and biosciences. Unfortunately, these NSF

Higher Education Research and Development (HERD) survey data do not distinguish between the many disciplines in these two large fields,[7] which exaggerates their relative size. All other fields total roughly the same as the combined health sciences and biosciences funding levels. Among the other fields, the next largest are electrical engineering, computer science and physics, with most remaining fields receiving far smaller amounts of federal research funding.

Separately from whether disciplinary research funding levels are high or low, the mix of agency funding across fields varies by relevance of the topic to the agency, as expected (Figure 8.6). NIH funds are prominent in social work, psychology, bioengineering and several social sciences. The largest fields of support for the NSF are computer and information science, biosciences, physics, and electrical engineering. For the DoD, it's not surprising that electrical and computer engineering is top, but health sciences is its second largest funding area, followed by computer and information science, mechanical and aerospace engineering, and the biosciences. The DoE's funds go in large part to physics, as well as chemistry and several engineering fields. NASA funding is largest in astronomy, of course, but is also important in geological and atmospheric sciences, aerospace engineering, and physics. Unsurprisingly, USDA funding goes predominantly to agricultural sciences, biosciences and natural resources.

8.4 Why do universities lose money on research?

When Professor Famous brings in that $1M research grant it certainly supports more research but, counterintuitively, it costs the university money. For all the effort put into research as a major mission area of the university, and for all the grants awarded, most faculty members are shocked to hear that research actually loses money for the university. How can that be, and why do we keep doing it? The answer to the latter question is simple—the quest for knowledge is fundamental to the university mission and, especially for research universities, high levels of research are synonymous with quality, strong graduate programs, productivity and prestige. Like so many other things universities do, we cross-subsidize critical activities in research from other sources for the benefit of the whole institution.

To understand why the financial support of federal agencies, private foundations and others generally doesn't cover the full cost of research, we need to examine what is known variously as overhead, facilities and administrative (F&A) costs, or indirect cost recovery (ICR). Let's work through a simplified example research grant budget to help explain things (Table 8.1).

7 The health sciences include dentistry, clinical research, gerontology, medicine, mental health, nursing, optometry, pharmacy, public health, radiology, rehabilitation, veterinary medicine, and others. The biosciences include animal biology, biochemistry, biophysics, bioinformatics, biotechnology, plant biology, cellular biology, epidemiology, genetics, immunology, molecular medicine, neuroscience, pharmacology, toxicology, physiology, and more.

Table 8.1. Example of a simple one-year research grant budget, showing major categories including direct and indirect costs. See text for explanations.

Line	Item	Detail	Amount ($)
1.	**Salaries**		
2.	Principal Investigator	*Dr. V. Famous, 1 month, summer*	11,000
3.	Graduate Research Assistant	*0.5 FTE, 9 months Fall & Spring*	25,000
4.	**Fringe Benefits**		
5.	Faculty @ 32%		3,520
6.	Graduate Assistants @ 11%		2,750
7.	**Other Direct Costs**		
8.	Equipment (>$5K)	*Real-time rapid cycling PCR system*	34,000
9.	Materials & Supplies	*Lab glassware, tools, chemicals, etc.*	8,000
10.	Travel	*Conference registration, airfare, hotel, food*	2,000
11.	Tuition Remission	*2 semesters, in-state amount*	12,000
12.	**TOTAL DIRECT COSTS:**		**98,270**
13.	**Indirect Costs (F&A)**		
14.	Modified Total Direct Costs	*Excluding equipment & tuition: $52,270*	
15.	Indirect Cost	*Negotiated rate @ 50% of MTDC: $26,135*	
16.	**TOTAL INDIRECT COSTS:**		**26,135**
17.	**TOTAL COST:**	*Direct plus Indirect costs*	**124,405**

Starting with the salary section (line 1), we have just the PI and a grad student (lines 2 and 3) on this proposal. In the fringe benefits section (line 4) we calculate those amounts at the applicable rates (lines 5 and 6). The section for other direct costs (line 7) includes equipment, supplies, travel, and tuition for the grad student (lines 8 through 11). Together, the total direct costs for this grant proposal are $98,270 (line 12).

Now, here's where it gets interesting: so far, this is a bare bones budget for just the actual research activity and it does not include necessary supporting activities such as accounting, janitorial services, lab safety, regulatory reporting, space, utilities, hazardous waste disposal, internet services, and more. All of those are facilities and administrative (F&A) costs that also should be covered by the research sponsor. Rather than itemizing them for each grant, F&A costs are calculated using an overall rate that is negotiated with the Federal Government (and which universities often use for external grants with other sponsors too). In our example budget, we use a 50% F&A rate that is applied to something called MTDC or modified total direct costs (lines 14 and 15). MTDC includes all the allowable direct costs (according to federal regulations) that can be included in the base amount to which the rate is applied;

items such as major equipment and tuition remission are excluded from that base. The total indirect costs (line 16) are added to the total direct costs (line 12) to obtain the overall proposed total grant cost of $124,405 (line 17). Note that our institutional F&A rate of 50% is not the same as the effective rate, which is a little over 26% in this example because of the M in MTDC—the modified costs can be quite a bit less than the total direct costs.

The F&A rate varies from institution to institution (typically 40–60%) and from year to year (typically fractions of a percent), and it is calculated using audited amounts that detail the myriad costs associated with research. A university proposes a fully-accounted rate (often with the help of consultants) to its cognizant federal agency (either the Office of Naval Research or the Department of Health and Human Services, which stand in for all federal agencies); that agency's accountants go through the proposal and a final reimbursement rate is set. If you were paying attention in the previous sentence, you will have noticed that I said reimbursement—that's because the university pays these indirect costs from institutional funds until it gets the money back from the sponsor. There are separate F&A rates established for sponsored instruction, special facilities, on or off campus, and so on; we'll stick with research here to keep it simple.

A common misconception is that F&A rates somehow represent a margin or profit on research (the colloquial use of the term "overhead rates" may fuel that misunderstanding). Quite the opposite: they are, as their other name states, a means of indirect cost recovery, and for most institutions the negotiated rate is less than the full set of indirect costs. The administrative portion has been capped at 26% since 1991, although compliance and other administrative mandates have increased over time, moving more of the cost burden to universities (Council on Government Relations 2019). It is not unusual for the overall F&A differential between the proposed and negotiated rates to be on the order of 5%. So, in our example above, the negotiated rate is 50%, but the true indirect cost might be 55%, a difference of $2,600 in this case. Taken across all sponsored projects at an R1 university, that structural shortfall of a few percent can add up to millions of dollars annually.

Furthermore, many private foundations stipulate that they will only pay a greatly reduced F&A rate (often zero or 10%, sometimes 15% or 20%). The logic, explicit or implicit, is that they want to stretch their nonprofit philanthropic dollars, and/or that they like to see a cost-sharing contribution from the university. Certain foundations will allow some kinds of F&A costs to be listed as direct costs. On the other hand, some contracts with private companies can be fully costed so that the indirect costs are all included as direct costs. University sponsored project offices typically have policies and procedures to enable proposals that are in line with institutional and other regulations when the regular F&A approach is not applied.

While it is in the university's best interests to recoup F&A costs to the full extent possible, historically this reimbursement logic has been poorly communicated to the faculty at many institutions. From a PI perspective, if a grant agency has a fixed pot of dollars available to fund projects, the higher the F&A amount, the less there is to fund the direct research costs. Even though winning proposals are selected on quality rather than price, keeping the price down in a grant competition is a deeply rooted instinct. At many institutions there is a steady stream of requests to the vice president or vice chancellor for research for F&A cost waivers on grant proposals, often with compelling arguments as to why a waiver is worth it to win the award. Each time, though, the financial decision is about shifting the costs from the individual project to the institution (i.e., all the other projects and revenue sources).

There is a further angle to how the funds returned to cover indirect costs are handled on campus: F&A recovery funds (that are a type of revenue, even if reimbursed) enter the institutional coffers as a different "color" of money to the funds that may actually pay for the various items making up F&A costs. These are unrestricted funds (see Section 2.11) and the practice on many campuses has been to return a portion of the F&A recovery to the college and/or department and sometimes the lab of the PI. The good intentions here are to incentivize further grant-getting and to provide local funds in the unit to cover many of the smaller costs in support of research. But those good intentions also help pave the road to hell, as the saying goes, by creating an implied sense that the funds somehow "belong" to the PI or to the local unit doing the research, contributing to the myth of margin or profit from grant awards.

Many sponsored projects are grants, but some come in the form of contracts. There are numerous technical differences between the two for government funders and in the private sector, most of which are not worth detailing here. But one form of contract, the fixed-price contract, is worth a mention in answering the overarching question of this section on why research loses money. For most research grants and contracts, if some portion of the grant activities cannot be carried out or amended to satisfy the original scope, the relevant funds and any others remaining at the end of the project must be returned to the sponsor ("use it or lose it"). However, a fixed-price contract is not bound by any alteration that lowers or increases the cost to the contractor (the university). This kind of contract carries high risk and can obligate the institution to unforeseen and unrecoverable costs, but for the savvy project director who budgets well and knows how to save a buck, the opportunity exists to perform the work for less than the agreed budget and for the institution to pocket the difference. The latter is an enticing prospect to some on campus; needless to say, the associated risks mean that special permissions are typically required.

We've now reviewed how research grants generally cost the university money in a net sense, because of F&A reimbursement shortfalls. You will recall from previous sections that the university also invests institutional funds in research infrastructure such as centers and institutes. The point is to advance research, after all, and not make money. Still, there is yet one more way in which universities make massive investments in underwriting research. At R1 and R2 institutions especially, a standard faculty member's workload includes a large portion of their time for research and scholarship (see also Chapter 5). Thus, a truly complete description of the full costs of university research must include the tens of millions of dollars in salaries and fringe benefits necessary at research universities to support faculty research time during the academic year. Those funds must come from some source, and it's not research-specific revenue like grants—it's many of the other sources we reviewed in Chapter 2, including state appropriations or investment/endowment income at public or private institutions respectively.

Lest I give the impression that research is a burdensome cost to be paid, let me conclude this section with an acclamation of the vital importance of the research mission. To be sure, research is expensive, and it is important to be informed about what it really costs and the business model that pays for it all. That said, for the better part of seventy years, the US has tended a unique partnership between the government (as well as the private sector) and higher education that has produced the finest quality and quantity of research in history, by any measure. This system has produced more Nobel prizes, more life-saving and life-changing discoveries, more critical insights, than any other. Furthermore, research and graduate education are inextricably bound together in the quest for new knowledge, and their combination in the US has produced the best system of graduate education in the world. Certainly, there are costs to performing research, but its value far outweighs them.

8.5 Which are costlier to support, graduate assistants or postdocs?

One of the key elements of graduate education (see also Section 6.7) is the intimate link between it and research. Many graduate degrees, and the PhD in particular, in fact require the student to learn and demonstrate production of original and new knowledge (i.e., to do professional-level research). In practice, this educational model is a modern-day apprenticeship—in addition to advanced coursework, graduate students learn their craft by training with faculty members and other researchers for several years. The culture and practice of this critical element of graduate education varies considerably across the disciplines, and even across faculty advisors within individual graduate programs. In some disciplines (e.g., many in the humanities) the core day-to-day work is solo scholarship, while in others (especially in the sciences) the work necessitates working in small or large teams that are likely funded by a research grant. Either way, the student's direct experience of the process of knowledge creation is key to advanced graduate education and, at universities, is also a critical component of the research enterprise.

Postdoctoral scholars are another important part of the research enterprise, and they are found most frequently across the sciences.[8] Importantly, postdocs are

8 The biosciences have long had postdoc positions and over the last few decades many other sciences have followed suit. The role and nature of postdocs has expanded into the social sciences and even the

simultaneously research staff employees (unless supported by independent fellowship funding) as well as being trainees (National Postdoctoral Association 2019). Ideally, postdocs bring their expertise to the lab that they join while they also learn additional fields and skills in the new setting. Thus, both postdoc positions and graduate assistantships have an educational component to their research role that distinguishes them from regular research technician and staff scientist jobs.

For a principal investigator deciding on the kinds of position on a research grant, questions arise as to the costs and benefits of graduate assistants versus postdocs. There are obviously important educational and research considerations that must be included in the decision, such as the need to support students in a graduate program, the specific expertise needed for the project, and so on. Still, this decision is often boiled down to hiring a less-experienced graduate assistant versus a more-experienced postdoc. In this simplified view, the graduate assistant will need to be trained but then will likely remain in the lab for a longer period, while the postdoc can get up to speed fast and will require less oversight, but will likely depart after a couple of years. The question is often oversimplified even further to ask whether graduate assistants or postdocs are more expensive to fund. There isn't a single answer, because it depends on who is paying for the various associated costs, and that mix varies by institution.

Table 8.2 shows a comparison of basic costs for graduate research assistants at public and private institutions (separated because tuition can be so different) and postdocs. Line A details the cost of a twelve-month appointment for each, using the typical 0.5 FTE (half-time) rate for the graduate students and the full-time rate for postdocs. I've included fringe benefits at 20% in Line B, which is likely a higher rate than many institutions use but it's a neutral term here because we're assuming it is equivalent across positions for simplicity (both types of position can have lower fringe benefit costs than regular employees, but this can vary widely). If we stop the calculation here, Line C shows that graduate assistant costs are about 60–70% of postdoc costs. However, tuition is included with an assistantship at most institutions, so we add that amount in Line D. As we saw in Section 2.6, non-discounted tuition and fees are substantially higher at private institutions, and institutions will generally charge the grant sponsor for that amount. Thus, the fully-costed totals in Line E completely change the cost implications depending on the type of institution. Some institutions will charge tuition at a special rate, such as in-state only at some publics (as assumed here), or otherwise waived or discounted. Postdoc salaries and graduate stipends can be slightly higher at private institutions, but they do not make as significant a difference as tuition in this comparison.

humanities in recent years, with some in novel forms such as a teaching postdoc. I focus on the most common research-type postdoc in this section.

Table 8.2. Example comparative annual costs of graduate research assistants (for public and private institutions) and postdoctoral scholars. Round-number estimates of tuition are from Figure 2.8 with graduate and postdoc stipends rounded from FY2018 NIH rates (twelve-month).

Line	Item	Grad Research Assistant		Postdoc
		(0.5 FTE; Public)	(0.5 FTE; Private)	(1.0 FTE)
A.	Stipend (twelve-month)	24,000	29,000	48,500
B.	Fringe Benefits @20%	4,800	5,800	8,800
C.	***Subtotal***	***$28,800***	***$34,800***	***$52,800***
D.	Tuition	10,000	45,000	-
E.	***TOTAL***	***$38,800***	***$79,800***	***$52,800***

As an aside, one can do a very similar set of calculations for graduate teaching assistants versus instructors. In that case, the department will typically pay the stipend and the college or institution will account for the tuition, so that the discussion is also about cost to whom. So, for all graduate assistantships, who pays tuition and how much are both determinative in assessing comparative costs. Returning to research assistants, principal investigators have certainly noticed the increased tuition in recent decades—anecdotal information suggests that principal investigators have shifted to employing postdocs instead of graduate research assistants, although that trend is hard to document explicitly.

8.6 How much does research compliance cost?

Many faculty members, especially those outside the life sciences and hi-tech fields that are subject to a greater range of compliance activities, know the Vice President (or Vice Chancellor) for Research (VPR) principally as (i) the person who invests institutional funds in support of research, such as for faculty startup funds or centers and institutes, and (ii) the person responsible for F&A rates and the sponsored projects office that processes grant proposals. However, the VPR is also responsible for making sure the university is in continual compliance with complex federal and state regulations that govern the conduct of research by faculty, staff and students. At an R1 university, research compliance functions include these areas:

- Human subjects research via the Institutional Review Board (IRB), often with multiple IRBs for clinical or social and behavioral sciences, plus health data privacy for the Health Insurance Portability and Accountability Act (HIPAA);
- Animal welfare for laboratory and other animals via the Institutional Animal Care & Use Committee (IACUC);

- Laboratory safety, radiation safety, and biosafety (e.g., involving recombinant nucleic acid molecules, stem cells, or select agents/pathogens);
- Export compliance for high technology items and information deemed to be of a sensitive nature for national security;
- Conflict of Interest (COI) disclosure and management, both for individual researchers and for the institution;
- Responsible conduct of research promotion through training and ethics education;
- Research integrity and allegations of misconduct involving falsification or fabrication of data, plagiarism, or other kinds of unethical research conduct, overseen by a research integrity officer;
- Research data management, retention, and repository requirements;
- Financial oversight of sponsored grants and contracts, pre-award and post-award, including accounting, effort tracking, and subcontracting.

Regulations and policies are, of course, absolutely necessary for the appropriate and safe conduct of research, but over time the associated administrative burden and costs of unfunded mandates accumulate. While regulatory costs to universities are undoubtedly increasing over time as they are incurred over and above the 26% F&A administrative cap (see the trends in share of university research spending in Figure 8.4), there are surprisingly few studies that systematically detail the costs of research compliance. Broad surveys have consistently shown that faculty members spend 42% of their research time on meeting requirements rather than doing research itself (Schneider et al. 2014). The relative time commitment on each compliance responsibility is illustrated in Figure 8.7, and it is clear that faculty members working with animal or human subjects and clinical trials spend substantial time on compliance in those areas, while financial and personnel-related compliance is time-consuming for most faculty (given that those roles are ubiquitous across almost all projects). A study across 13 institutions of varying sizes found that research-related compliance costs ranged from 11–25% of research expenditures, with a negative scale effect such that the highest relative amounts were at institutions with the lowest research expenditures (i.e., there are economies of scale in handling research compliance costs); also, consistent with the discussion above, research institutions doing more biomedical research experienced higher associated compliance costs (Vanderbilt University 2015).

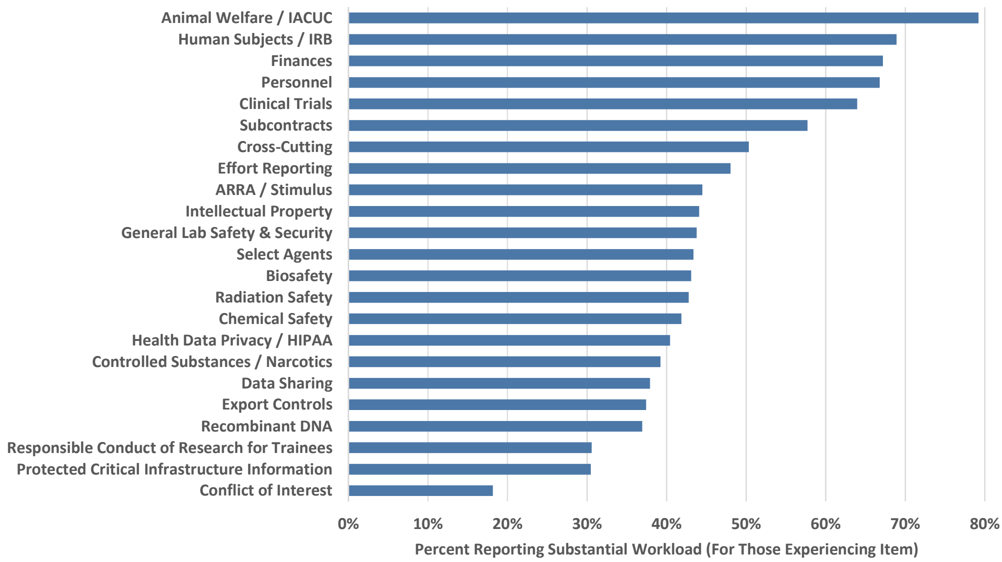

Figure 8.7. Percent of faculty respondents reporting a substantial (some to very much) workload for those that experience the listed research compliance responsibility. Source: FDP (Schneider et al. 2014).

8.7 How does the university earn money from technology transfer?

The Bayh-Dole Act of 1980 incentivized the development of economic benefits from government-funded research and subsequent patents, which had been stagnant prior to its enactment, by awarding universities and other recipients of federal research funding ownership of their intellectual property (IP or, simply, inventions) and the right to license it. In the decades since the act's passage, research universities have grown sophisticated technology transfer and commercialization offices to develop and earn revenue from their inventions.[9] This is an area where a relatively small number of blockbuster successes have led to fabulous financial rewards for a handful of universities. Some of these outliers have become household names (e.g., Warfarin, Gatorade, Google)[10] while other lesser-known pharmaceuticals and engineering

9 University technology transfer, licensing and commercialization operations are often performed by an associated foundation or similar entity. I'll refer to the parent university for consistency and clarity in this section.

10 Warfarin is a blood-thinning drug discovered in the 1930s at the University of Wisconsin, known widely today by its trade name, Coumadin. The research was funded by the Wisconsin Alumni Research Foundation (WARF), established in 1925 as the first university office for what would become known as technology transfer—its name was used as the first four letters of the new drug (Pirmohamed 2006). Gatorade was created in the 1960s at the University of Florida and named for its football team, the Gators. The University initially turned down the patent rights, but in 1973 it and the faculty inventor were part of a settlement that awarded annual royalties (Kays and Phillips–Han 2003). Google's co-founders famously invented the PageRank algorithm while they were graduate students at Stanford. In the late 1990s they and the University patented the technology, which Google licensed for 1.8M shares in the company. Stanford sold its shares for $336M in 2005; if it had waited another week it would have received twice that amount (Krieger 2005).

inventions have been similarly lucrative, earning their parent institutions tens to hundreds of millions of dollars annually (Merrill et al. 2016). However, the odds of that kind of windfall are like winning the lottery and cannot be relied upon to turn around a university's finances—the FY2017 median gross license revenue for R1 universities was a comparatively modest $4.6M (AUTM 2020).

The majority of university technology transfer activity takes place at R1 institutions; activity at R2 schools, for the under half of those that report it, is typically 20% or less than at R1 schools depending on the metric and negligible at smaller schools (AUTM 2020). Licensing income is a widely-used financial metric in technology transfer. A university's gross license revenue typically includes a set of annual payments from companies using its inventions. Occasionally, rather than annual payments, a university may sell all or part of a license depending on circumstances, such as when Northwestern sold portions of its Lyrica license to Pfizer for over $1.1B in 2008–2010 before the fibromyalgia pain-relief and epilepsy drug went off-patent (Tech Transfer Central 2011). Consequently, licensing income can be highly variable from year to year.

Figure 8.8 illustrates gross license income by quintiles across R1 institutions, averaged for public and private schools within each quintile for three years. Licensing revenue is exponentially larger in the upper quintiles, by a factor of about 100 between the top and bottom quintile, and it is relatively higher at private versus public universities. NYU, Columbia, the UC System and Northwestern are consistently among the very top earners (Merrill et al. 2016; DeVol et al. 2017) and they, like many of the most active schools, have a large presence in the health sciences and biotechnology.

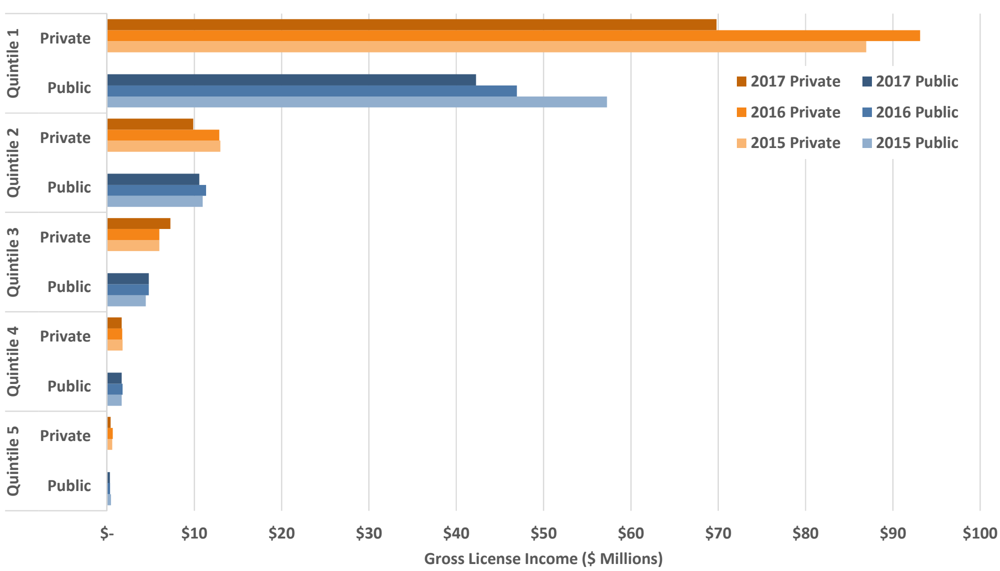

Figure 8.8. Gross license income averaged for public and private institutions by quintile of all R1 institutions in FY2015, FY2016 and FY2017 (current dollars). Source: AUTM (2020).

Institutions spend their licensing dollars on covering the costs of technology transfer and on strategic investments such as internal funds for commercialization and patenting, research equipment and facilities, or endowing graduate fellowships. These revenues don't flow only to the overall institution, they are typically shared with the department, individual lab and the inventors (faculty members, postdocs, and graduate students who were employed by the university at the time). Institutional rules regarding the ownership and licensing of IP (federally-funded or not) and its proceeds are set out in each university's IP policy. Not all university IP is commercialized or held by the institution: some work is released to the public domain (research software code is a common example) while other IP is almost universally assigned to the individual, such as lecture content or books produced by the faculty.

Among the earliest steps as an idea transitions from research into something that might be commercialized is the requirement for new inventions to be disclosed to the university, an obligation of the Bayh-Dole Act. A subset of inventions is suitable for perfection into patents, which are the formal means by which inventions are made public and protected. Patent applications are filed (in the US and often internationally too, both at some expense) and a further subset of those pending patents is subsequently issued. Figure 8.9 shows trends in these three metrics increasing steadily over time as commercialization activities have expanded on campuses. Invention disclosures have more than doubled since the early 1990s and now average 200 per year. Patent applications have increased from about 25 per year to over 100 per year in the same period, with issued patents rising from about 20 to 60 per year. If a patent is infringed and the university litigates then large settlements can result, such as the $750M that Carnegie Mellon received in 2016 regarding its technology for data transfer accuracy in hard drives (Stempel 2016).

License agreements are made with established companies as well as with new start-up companies. A license option agreement is used when a company wants to evaluate the technology before licensing it. Many start-up companies are spun off from the university by the inventors (e.g., as with Google), usually with the assistance of the technology transfer office and sometimes via an associated small business incubator or accelerator. Figure 8.10 shows the rising trends in licenses and options, gross license income, and the number of start-up companies formed at R1 institutions. The increase in licenses and options is relatively smooth when compared to the more volatile annual figures for gross license income, as mentioned above. Universities saw a run-up in their inflation-adjusted licensing income before the Great Recession; since then these revenues have been comparatively flat despite the increases in underlying activity. The number of startups formed has also increased steeply, from about 2 per year in the mid-1990s to an average of 9 per year in FY2017.

In addition to licensing technology to a start-up company, a university may also take equity in a spinoff (i.e., a share of ownership). It's often easier for a cash-strapped fledgling company to offer a share of its potential future success along with a reduced license payment, and this gives the university an incentive to keep initial license costs

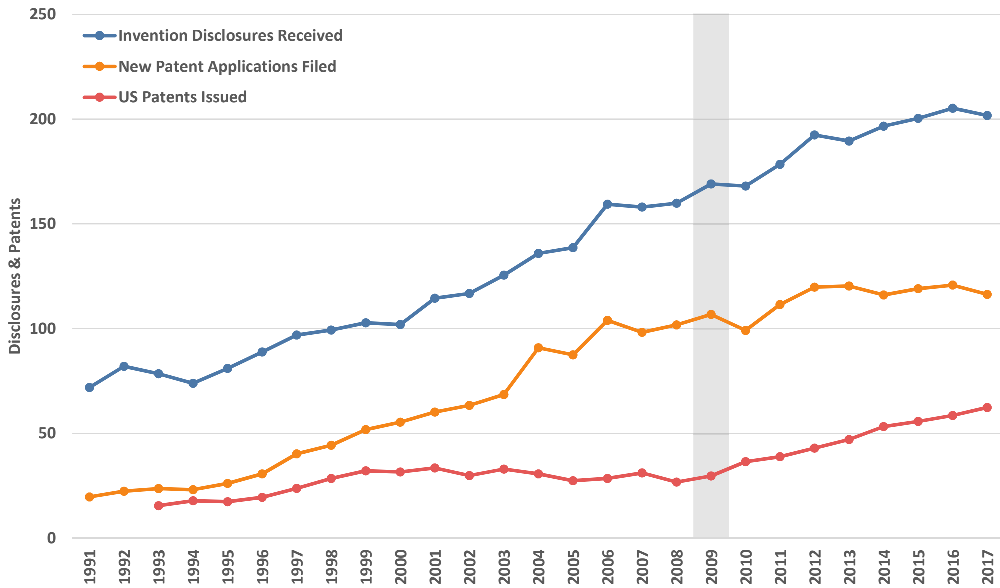

Figure 8.9. Invention disclosures, new patent applications and patents granted, averaged across R1 institutions by fiscal year. Source: AUTM (2020).

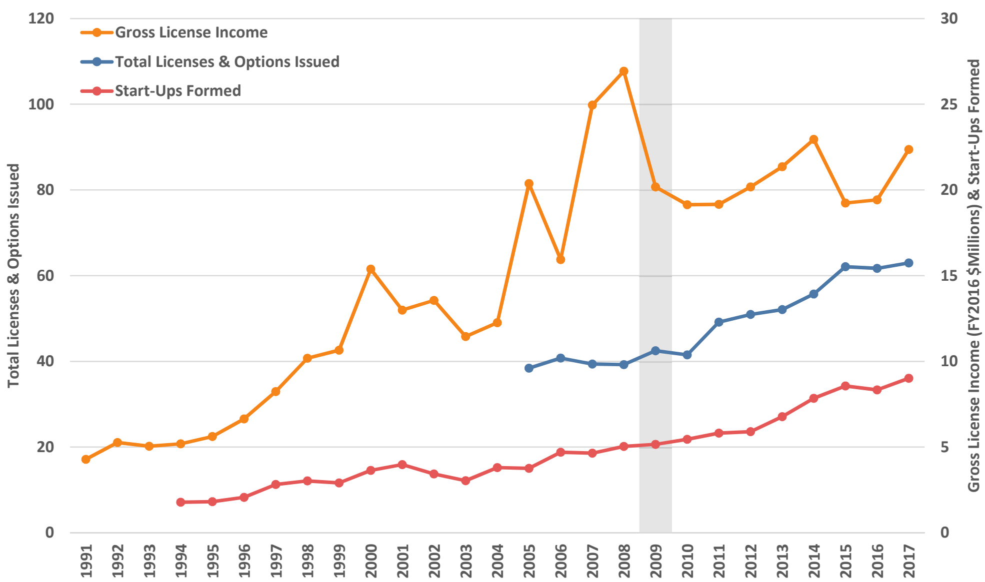

Figure 8.10. Total licenses and options, gross license income in FY2016 dollars and new start-up companies formed, averaged across R1 institutions by fiscal year. Source: AUTM (2020).

down and advance the success of the company while retaining a stake if the company becomes successful.

While universities certainly have a self-interest in advancing technology transfer, it's important to note that the growth in these programs has produced broader economic and health benefits from university research, just as the Bayh-Dole Act intended. Because university IP is protected, business and industry are prepared to make high-risk investments to turn discoveries into products, creating wealth and jobs in the process. Not all applaud these and associated industry partnerships: some critics take a dystopian view and charge that corporate priorities have undermined the role of the academy (Lazerson 2010; Perry and Katz 2018). Still, technology development at universities has become inextricably linked to their mission of public service because community and public investment in higher education is predicated in part on the expectation of innovation and economic development. Talking of public service, that's the perfect segue to the next chapter.

9. Public Service, Cooperative Extension, and Community Engagement

9.1 Where's the land grant money, and how does it fund cooperative extension?

Public service is the third of the three core university mission areas and, relative to teaching and research, it is the least funded. Public service goes by a variety of names, including outreach, community service, community engagement, extension services, and even social impact. The core idea is that a university should be connecting with its community through knowledge in ways that go beyond for-credit instruction and academic scholarship. While the Cooperative Extension Service is the quintessential example of public service in higher education, there are many other forms including performing arts, museums, public lectures, K-12 outreach programs, open libraries, and university presses. All of these have in common that they are principally supported by funds other than those from tuition or research. A few in this set have interesting business dimensions and we'll examine them in subsequent sections; first, let's look at the one that started them all, cooperative extension.

The Cooperative Extension Service is a national outreach program that was formalized by the Smith-Lever Act of 1914, mounted in partnership with the land-grant universities that were established with the proceeds from selling designated federal lands (See Box 9.1). Contemporary funding for cooperative extension is complicated: in addition to iterations of land grant acts over a century ago, some with funding and some without, there is associated legislation from 1967, 1972, 1994 and 2008 that added, amended and reorganized which institutions are included and the basis for how much funding they each receive. Some funds are equally allocated to the states, others are based on farm population or total population, and yet others are for specific kinds of land grant activity.

It's called "cooperative" because the funding was originally split three ways in a cooperation among federal, state and local (county) governments, some requiring a match to the federal funds. These same three revenue sources are still important today, along with grants, contracts, fees and gifts. As a result, every university cooperative extension service has a different amount and mix of revenue (and incidentally there

https://doi.org/10.11647/OBP.0240.09

is no national database containing those data). Figure 9.1 illustrates an example university extension budget at a state land grant university. These are R1 or R2 institutions, and all of them are public with just a few exceptions. For this example, we assume a mid-range federal amount of $8M and we assume it is a quarter of the total budget of $32M, also a mid-range estimate. The state appropriation is typically the largest component, and for our example we've assumed a 40% share ($12.8M). County shares can be zero or substantial depending on the state, and we've assumed a 10% share ($3.2M). Rounding out the remaining 25% of revenue are other types of sources including one-time grants and gifts as well as any fee revenue. These latter sources and a portion of the appropriated federal, state and county funds are restricted funds for targeted projects, so perhaps one half to two thirds of the total budget can be used for unrestricted payroll and operations expenses. For a sense of scale, this unit might have a payroll of several hundred employees spread across the main campus and county extension offices; smaller states might have an extension budget of half or less this size and the biggest states have extension budgets more than double this size.

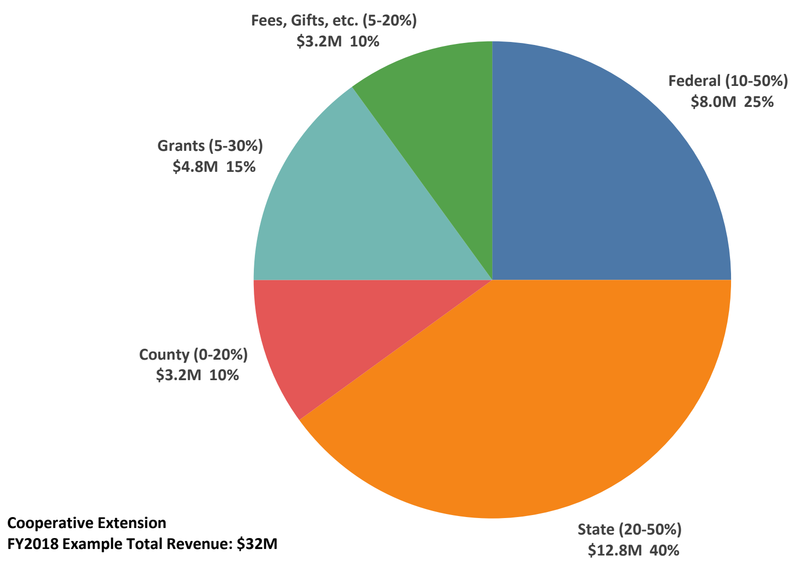

Figure 9.1. Example revenue sources budget for a typical cooperative extension service at a land grant university. Percentage ranges in parentheses are from APLU (Association of Public & Land-Grant Universities 2019).

Recent trends in federal and state funding for cooperative extension are illustrated in Figure 9.2. The US Department of Agriculture (USDA) administers the relevant federal funds to the universities through the National Institute for Food and Agriculture (NIFA) via what were previously known as formula funds (now capacity grants), earmark funds (now special needs), and competitive funds that also include substantial research funding. Federal extension funds total about $550M annually, about two thirds from formula/capacity mechanisms and one third from other mechanisms. While federal support has been roughly flat overall but highly variable (plus/minus 20% or more in several years), both in extension-only funding and in extension plus research (that has a longer record). In contrast, state support for extension underwent a major decline of about one third post-recession. The state to federal extension funding ratio has recently been about 67:33, but historically it was as low as 40:60 in the mid-1930s, about 60:40 in the postwar years through about 1980, and then it ascended to a high of 80:20 in the early 2000s (Wang 2014).

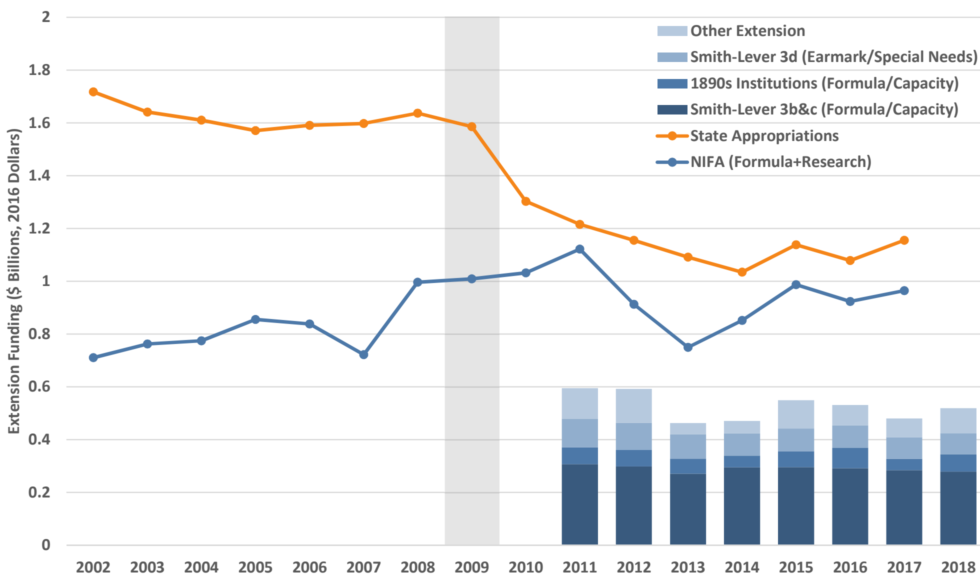

Figure 9.2. Recent trends in federal and state funding for cooperative extension, including funding mechanism (stacked columns) and total expenditures (extension plus research) at the National Institute of Food and Agriculture (NIFA), by fiscal year. Sources: NIFA (National Institute of Food and Agriculture 2019a; 2019b).

Box 9.1. Land Grant Universities

It's hard to overstate the significance of land grant universities in US higher education's rise to global preeminence during the twentieth century. The seeds sown in the 1862 Morrill Act, the Hatch Act in 1887, the second Morrill Act in 1890 and the 1914 Smith-Lever Act created the contemporary US university with its three-part mission of teaching, research and service. The first Morrill Act authorized a public university in every state and territory by providing federal land that was sold or put in trust to start the new institutions, 30,000 acres for each senator and representative. For example, New Hampshire received 150,000 acres, Arizona 60,000, and Wisconsin 240,000, the latter selling for $1.25 per acre (University of Wisconsin Madison 2018) and netting $300,000 or roughly $7M today. The act was passed during the Civil War; land prices were depressed, and the new colleges were underfunded from the start.

Antebellum institutions catered to the elite and taught the classical liberal arts and theology, with little emphasis on science and technology. The industrial revolution and democratic ideals stimulated education reform, and the push for higher education that taught practical subjects for the working classes is widely credited to an Illinois educator, Jonathan Baldwin Turner. Even so, Morrill's language and the motives of Congress in authorizing the land-grant institutions were all about economic benefit and increasing wealth (Young 2000).

Initially, these "cow colleges" suffered from snobbery and quality issues as they began to teach "agriculture and the mechanical arts." To provide the necessary new knowledge, the Hatch Act enabled the establishment of so-called experiment stations (research and demonstration farms) as well as funds for agricultural research based on state population size and the number of farms, and which required state matching funds. The second Morrill Act addressed two issues: it was primarily intended to correct the lack of federal funding for the system and it effectively created a second set of land-grant colleges in the Southern states. To obtain the 1890 funds those states had to avoid race-based admissions, which they could do by including separate colleges that served African Americans. Funding across institutions was not as equitable as the law intended and many of these schools essentially became teacher's colleges (Young 2000). Furthermore, Hatch Act funds went only to 1862 institutions and not to 1890 colleges.

Extension work was already underway at both types of land-grant when the Smith-Lever Act formalized extension at the 1862 colleges in 1914, making it a cooperative service by requiring a state match. In the half-century that followed there were various

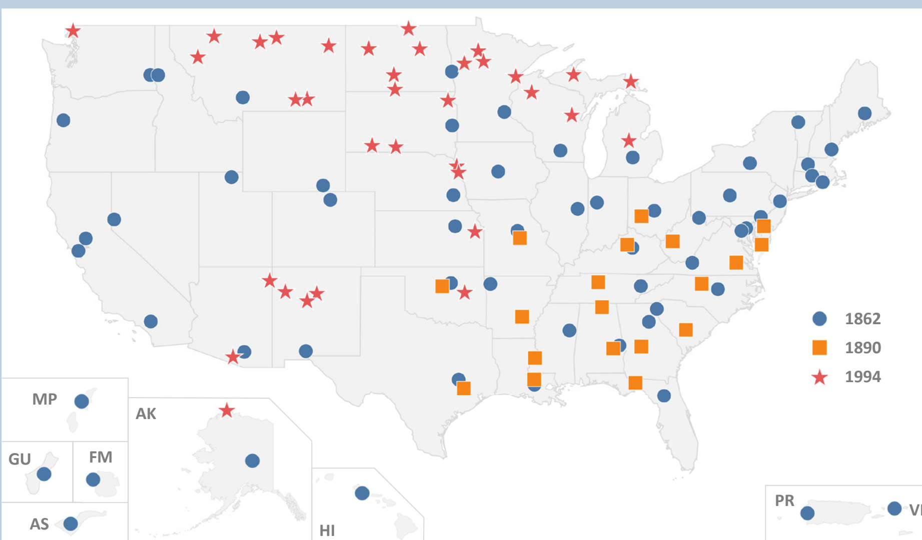

Figure B9. Land-grant universities and colleges in the three legislation-year funding groups. Note that these year groups do not necessarily correspond to year of establishment or authorization of land-grant status. Alaska and the Pacific and Caribbean island states and territories are not to scale. See Appendix B for a detailed listing. Sources: IPEDS (2020) and National Institute of Food and Agriculture (2019c).

additional laws passed to improve funding, further development, and provide financial aid (Association of Public & Land-Grant Universities 2012). In the late 1960s and 1970s, land-grant status was awarded (using appropriated endowments rather than land) to the District of Columbia and several Pacific and Caribbean island territories, with further Pacific island territories added in 1990 (Young 2000). A major addition to the land-grant system occurred in 1994, when Native American tribal colleges were added to the list with a $23M endowment (Young 2000). Today there are 57 1862s, 19 1890s, and 35 1994s, for a total of 111 land-grant universities and colleges, as illustrated in Figure B9 and listed in Appendix B (the three California institutions count as one because the University of California System is the designated land-grant institution).

As imperfect as the implementation of land-grant universities undoubtedly was, the seeds it planted nonetheless grew into dozens of saplings, leading to a large and unparalleled nationwide system of state universities that were founded on the integrated three-part mission. Especially after World War II, those saplings grew into large trees as they were fed by postwar economic growth, the GI Bill, and massive federal research investment, producing many of the best public universities in the world.

9.2 What is the business model for performing arts centers?

Most universities host a performing arts center that, apart from major athletics events, can otherwise be the most visible and visited element of the institution for community members. Campus performing arts venues are often major landmarks of their local cultural landscape, metaphorically and physically. Even in large cities, campus performing arts centers can be part of a vibrant, top-tier arts scene, while in smaller cities and towns they are frequently the leading arts presenter in the community. Bringing the creative and performing arts to the public is as important a public service role as bringing science to the community, especially because performing arts events engage many people who otherwise would be unconnected with the campus. However, public funding for the arts is low and campus performing arts centers must rely on other kinds of funding to carry out their public service mission.

Now, like many other parts of the public service and outreach mission, the performing arts are deeply connected to the teaching and research missions (research being creative activity in this case). If the university has academic programs in music, theatre or dance, those departments may have their own performance spaces, or they may work in a joint arrangement to use the main venue or the combined set of large and smaller venues. The distinction to be made is that, while student concerts, shows and recitals may (and should) be integrated into the programming of a campus performing arts center, to mount a regular season of professional artists the center needs to operate as a separately managed unit with goals and finances and a business model that are distinct from regular academic programs. Furthermore, the business of running an entertainment facility is unfamiliar to many in academic administration, with unique personnel issues, atypical procurement and bidding processes, special contracts, licensing, and large sums of money having to change hands fast (Henley 2016).

It turns out that, of all the business models on a campus, the performing arts center arguably has the most gut-wrenching: every new season is an "if we build it, they will come" exercise in managed risk that puts a large portion of its budget on the line each year, often several years in advance. As a director or lead programmer for a performing arts center, here is your challenge: take half (or more) of your budget; spend it on contracts with a set of artists to create a season portfolio that balances cultural value, cost and anticipated audience; invest in marketing and fundraising; sell tickets; mount the shows successfully, and hope you break even. Rinse and repeat each year, hoping that you make a margin in more years than you incur a loss.

There's a lot that goes into balancing cultural value, the cost of the act, and likely audience attendance. The acts that make money aren't necessarily the ones that your (segmented) regular audience wants to see. Broadway blockbusters may fill the house and bring in new patrons, but they are expensive with large casts, sets and crew. There's more donor support for classical music, ballet and opera but those audiences are often smaller. Exciting new artists emerge from contemporary genres, but it can be hard to sell tickets for lesser-known or avant-garde acts. A popular comedian will attract an audience and needs only a microphone and a spotlight. Aging rock-and-roll groups can bring yet another crowd. Yet, as the presenter, if you slide too far into commercial presenting to pay the bills you risk drifting from your core arts and culture focus and connection to the university, losing your audience and the financial backing of donors and organizations (and possibly the institution). In addition to curating and presenting a season yourself, you can also rent out your facility to third-party promoters of touring Broadway shows, comedy acts or pop groups. Less common, but in keeping with the university connection, you can also produce shows and/or commission new work.

A good executive director and her team will artfully blend all the above with the goal of creating deeper connections with different sectors of the community and the university, building value to drive participation and support (Webb 2016). The unit will do so with a limited financial support from the institution and be expected to generate most of its own revenue; it may report to a dean, vice president, provost or president, or it might be a separately incorporated entity; and, it may be required to provide campus units with facility usage below cost as well as block out times for graduations and other university events (Henley 2016; Brown 2017).

While there is a wide variety of organizational structures and programming arrangements across university performing arts centers, they have core business elements in common that are best illustrated with an example. I've provided a model of a typical performing arts center budget in Table 9.1 and in Figure 9.3 to make both detail and relative proportions easier to appreciate. Naturally, the overall budget will scale by the size of the center in each case, and the relative share of each item will shift with programming scope. The proportions presented in the example are based on results from an industry survey (Hager and Pollak 2002), and I've assumed dollar amounts that reflect a medium to large contemporary university performing arts center. Also, this is an annual operating budget and it doesn't include major capital and facilities activities, such as fundraising for a new performance hall or paying for major renovations.

Table 9.1. Example operating budget for a moderate to large university performing arts center. Note that major capital and facilities costs are excluded.

Line	Item	Amount ($)
1.	**Revenues**	
2.	Ticket Sales	2,000,000
3.	Hall Rentals	1,000,000
4.	Gifts	1,000,000
5.	Institutional Support	1,000,000
6.	Grants	500,000
7.	Investment	300,000
8.	**TOTAL Revenues**	5,800,000
9.	**Expenditures**	
10.	Artist salaries, fees, travel	2,400,000
11.	Management & General	1,500,000
12.	Stage & Production	700,000
13.	Marketing	700,000
14.	Fundraising	350,000
15.	**TOTAL Expenditures**	5,650,000
16.	**NET Operating Margin**	150,000

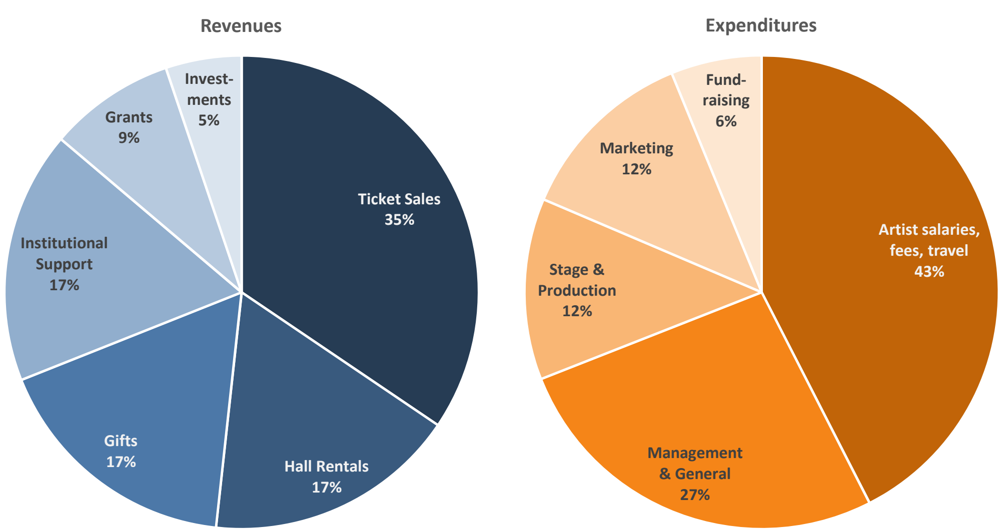

Figure 9.3. Shares of example revenue and expenditure budgets for a moderate to large university performing arts center. Note that major capital and facilities costs are excluded.

We start with revenue sources (line 1), where ticket sales are the single largest item (line 2). They may be rivaled or exceeded by rental revenues from, say, a Broadway promoter (line 3) or rentals may be a minor item, depending on the core business model. Gifts (line 4) are an essential part of the revenue stream, such as for show sponsorships and special programs for patrons or schools. Support from the university (line 5) can also vary substantially by institution, although for most it is a small but enabling and highly-leveraged part of the overall budget. Many centers will apply for grants to support young performers, special outreach, and other initiatives, but these are generally not large and are one-time restricted funds (line 6). Some performing arts centers may be fortunate to have an endowment from when they were established, and/or that they have diligently grown over time. Those investment returns (line 7), because they can be relied upon, are also enabling and leveraged. Looking at total revenues (line 8 and Figure 9.3), we can see that earned income is primarily from ticket sales and rentals and comprises roughly half of all income.

Moving to expenditures in the lower half of the budget (line 9), we see that paying the artists and associated costs (line 10) is the largest expense, approaching half the total and exceeding ticket sale revenue. Management (managers, front of house, accounting, security, etc.), staging and production (back of house including lighting, tech, stagehands, etc.), marketing and fundraising expenses all include labor and supplies; all these areas support the performances as well as operating the venue for other events (lines 11–14). The proportions of total expenditures (line 15 and Figure 9.3) are quite different to most other university unit budgets, where in-house labor costs make up the bulk of expenditures; here, the main budget dynamic is around artist costs and the large revenues from ticket sales required to offset them. Finally, this example has a small net operating margin (line 16), ideally for investment in future activities if it isn't needed to cover past deficits.

A successful university performing arts center will manage this budget model adroitly, by sharing risk with partners, combining safer and riskier bets across the portfolio of acts and genres discussed earlier, and developing diverse income streams from fundraising and other sources. More importantly, a flourishing performing arts center brings cultural richness to the community, connects it with the campus, and adds broadly to the quality of life by making the city more attractive and livable.

9.3 How are university museums paid for?

Over one quarter of the nation's art museums are located at colleges and universities (Association of Art Museum Directors 2019). While museums of art constitute the majority of campus museums, some institutions are home to museums of natural history, culture, archaeology, botany, zoology, minerals and more. The functions of a university museum are archival (de facto, they house collections of academically significant objects), scholarly (curatorial staff and faculty study the objects), educational (they are resources for teaching students) and engaging (they serve the broader community). Importantly, they are not simply venues to go and see beautiful or interesting things with a consumer mindset. Ideally, these museums are a vital part of campus and community life, infusing and inspiring young and old with an appreciation of art and science (Cotter 2009). For donors, university museums provide the opportunity for their collections to be seen rather than overshadowed as they might be in major civic museums, and some smaller museums have found that universities can be valuable stabilizing partners (Kiley 2013; Grant 2019). While those in the trade proclaim that "Great Universities Have Great Museums" there are critics who think that campus museums may have gone too far with extravagant commissions and extraordinary exhibits (Urist 2016; The Association of Academic Museums and Galleries 2020).

Museums are typically started and continue to grow through donations (and bequests) to the collection from private or scholarly enthusiasts. The gift of a private art collection or the need to conserve a set of scientific specimens, if of sufficient cultural or academic value, enables the development of a museum while also creating the need to support the people, programs and facilities necessary to run it. Business models for university museums differ widely, but virtually all of them rely on some combination of direct support from the parent institution, endowment proceeds, and philanthropy for the bulk of their support.

Figure 9.4 illustrates the revenue mix for four example university museum budgets: a small museum ($1.5M annual budget) at a public institution; two medium museums ($4M budget), one at a public school and one at a private school; and, a large museum ($20M budget) at an elite private university. Comprehensive data on university museum budgets are not available, but fortunately some campus museums publish their financials in an annual report; these simplified examples are drawn broadly from those reports.[1] Small museums are heavily dependent on their parent institutions, which supply about two-thirds of the revenue; gifts and membership are the next largest revenue category at about 20%, while endowment income, grants and earned income are relatively small. Earned income includes admissions, museum store and merchandise proceeds, space rentals, as well as restaurant and catering income (typically only found in larger museums). At medium-sized museums the university allocation comprises about half of the revenue (a bit more at the publics and a bit less at the privates) while endowment income might contribute 10–20% along with several percent each from grants and earned income. The biggest university museums are supported by large endowments and their endowment earnings can be well over half the revenue budget, even exceeding three quarters in some cases.

1 Acknowledgements to the David Owsley Museum of Art at Ball State University, the Stanley Museum of Art at the University of Iowa, the McClung Museum of Natural History & Culture at the University of Tennessee-Knoxville, the Jordan Schnitzer Museum of Art at the University of Oregon, the Spencer Museum of Art at the University of Kansas, the Block Museum of Art at Northwestern University, the Nasher Museum of Art at Duke University, the Princeton University Art Museum, and the Museum of Comparative Zoology at Harvard University.

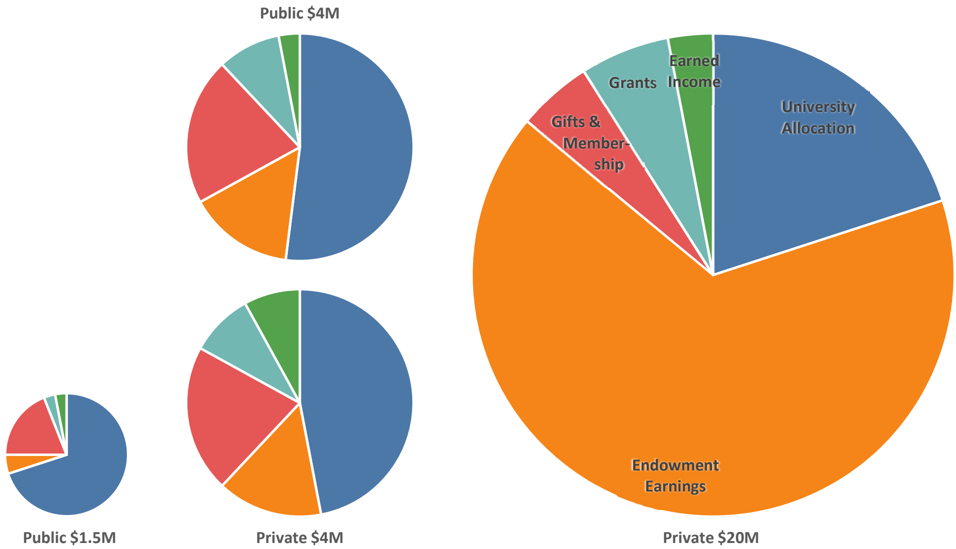

Figure 9.4. Revenue mix for four example university museum budgets. See text for details.

Small museums may see 15,000 to 50,000 visitors per year, while that number can exceed 100,000 at some medium-sized museums and rise over 200,000 at large museums. Virtually all university museums will have thousands of students visiting through classes as well as providing students with part-time paid internships and volunteer opportunities. Such positions serve a critical staffing as well as educational role and may include dozens of students at small museums and over 100 at larger ones. At smaller museums the regular staff may number from less than 10 to more than 20, with 30–40 at medium-sized museums and well over 100 staff at the largest museums.

It's no surprise that payroll is the largest item in the expense budget of university museums—they are labor-intensive units just like the rest of the university. Curators, assistants, security attendants, conservators, IT staff, financial administrators and managers are all on the staff in addition to the many part-time assistants, not to mention volunteer docents. In Figure 9.5 we can see that personnel expenses range from just over half the budget at large museums to about two thirds at medium-sized museums (a bit more at the publics and a bit less at the privates) to almost three quarters at small museums. Non-personnel spending on collections-related items (exhibitions, acquisitions, education programs, and collections care and conservation) is the next biggest category at 20–30% of the budget, and about 60% of that portion goes to exhibitions. Non-personnel investments in revenue-generating activities such as fundraising development, marketing and communications comprise 4–5% of the budget. Non-personnel expenses in administration, information technology, security, facilities maintenance and other operations round out expenditures, scaling with museum size from 3–8% of the budget. An important note: these budgets exclude utilities and building costs (an additional 10–20%) as these are often covered by the university.

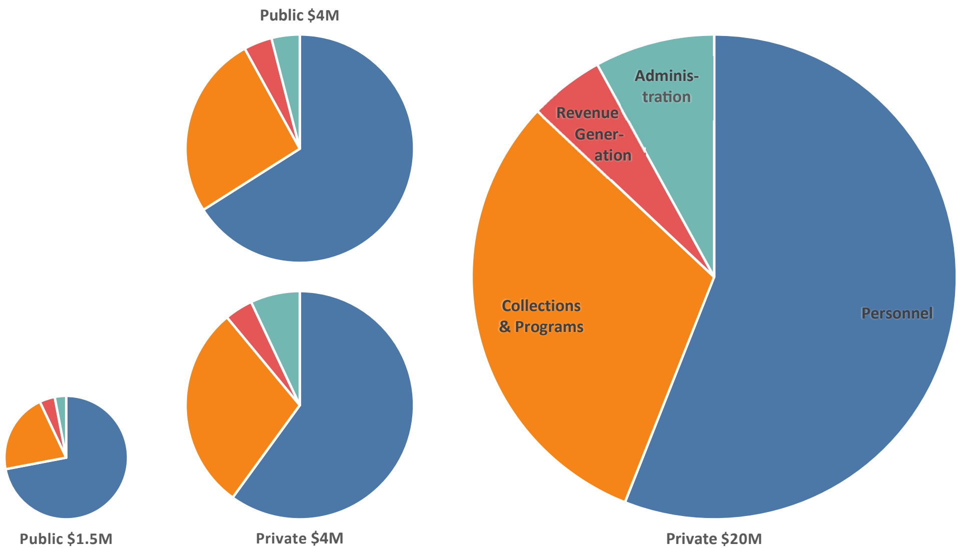

Figure 9.5. Expenditure mix for four example university museum budgets. See text for details.

An illuminating metric used by some museum directors is direct revenue versus overall expenditure per visitor. Average direct revenue per visitor at university museums is low, no more than $2 or $3; many university museums are free to the public, although some special exhibitions may require a fee, and visitors may sometimes spend a little on merchandise. Average expenditure per visitor is many times that amount, in the $50 to $100 range. This is a crude way to reflect monetary value for something that is intrinsically non-financial, yet it underlines the level of commitment that university museums have towards their communities.

A section on university museum finances, particularly art museums, would be incomplete without mention of the ultimate taboo: selling valuable pieces of the collection to pay the bills. There isn't a single museum that doesn't endure challenging budgetary conditions from time to time, whether that is a budget cut from the parent university or a drop-off in philanthropic support. There are stories, not all apocryphal, of administrators, board members or politicians suggesting that the director could solve the museum's financial woes by selling a prominent piece. Here's one story:

> I was invited for a dinner at the president's house… the trustees are all kind of bantering around and one of them sort of grabbed me and said, "Well you could sell your Picasso and solve all your financial problems. That would be a good solution, wouldn't it?" And I said, "Would you fire your only Nobel laureate to have a bunch of teaching assistants?" (Glesne 2012, 22)

The most notable recent example was the 2009 recession-induced attempt by Brandeis University to close its Rose Art Museum and sell off the collection. The decision was later reversed following an uproar from the broader art community, alumni and faculty members and an accompanying lawsuit (Shea 2011). The Brandeis case also illustrates two important points: (i) the university broke the trust placed in it to look after the donated items, and (ii) many such donations build in a failsafe that stipulates the piece or collection cannot be sold, or that it will revert to the donor if the institution does not have sufficient funds to care for it and share it with the public (Glesne 2012).

9.4 How is a university press supported?

This chapter is about the university's public service mission and you may be wondering why a section on the university press fits here rather than, say, with libraries in the academic affairs chapter. While a university press is run by the university, it serves the broader academy (i.e., scholars at other universities) and to an extent the general public. Perhaps surprisingly, university presses have little direct connection to teaching and research on their own campuses, and instead they succeed and serve their role by publishing authors from many other institutions, often in specialty areas particular to each press. The imperative to spread knowledge beyond the confines of campus was recognized from the beginning: "It is one of the noblest duties of a university to advance knowledge, and to diffuse it not merely among those who can attend the daily lectures—but far and wide." So proclaimed Daniel Coit Gilman, who founded Johns Hopkins University and who, just two years later in 1878, started what is now the oldest continually operating university press in the country (Givler 2002). He and many of his peers at other universities around that time also appreciated that specialized scholarly research would not see the light of day if left to the commercial presses (Givler 2002).

There are nearly 100 US university presses that both belong to the Association of University Presses and appear in our dataset of four-year colleges and universities (Figure 9.6). Except for a small number that publish through a consortium, these presses bear the moniker of the principal institution (rather than branch campuses) and serve as its scholarly publishing arm. The substantial majority are at R1 institutions, about 60% of which have a press. There are a handful at R2 schools, public and private, plus a further handful at the smaller private campuses.

As nonprofit entities, university presses benefit from non-commercial mailing rates and, importantly, their inventories are not subject to tax—nonetheless, they are subject to the other business challenges faced by all publishers (Givler 2002). The bulk of university press net revenue is generated from book sales, over three quarters on average, as seen in Figure 9.7. While book sales include a portfolio of activity such as edited volumes, textbooks, reprints, and translations, the quintessential university press book is the monograph: one that is written by one or more scholars and that is

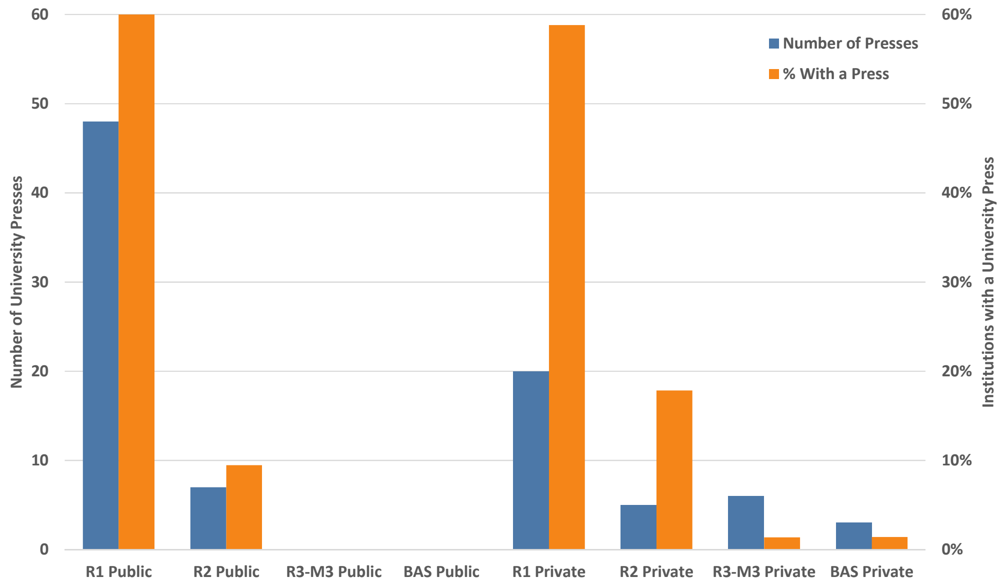

Figure 9.6. Number of university presses and percentage of institutions with a university press, by Carnegie classification and control. Sources: Association of University Presses (2019) and IPEDS (2020).

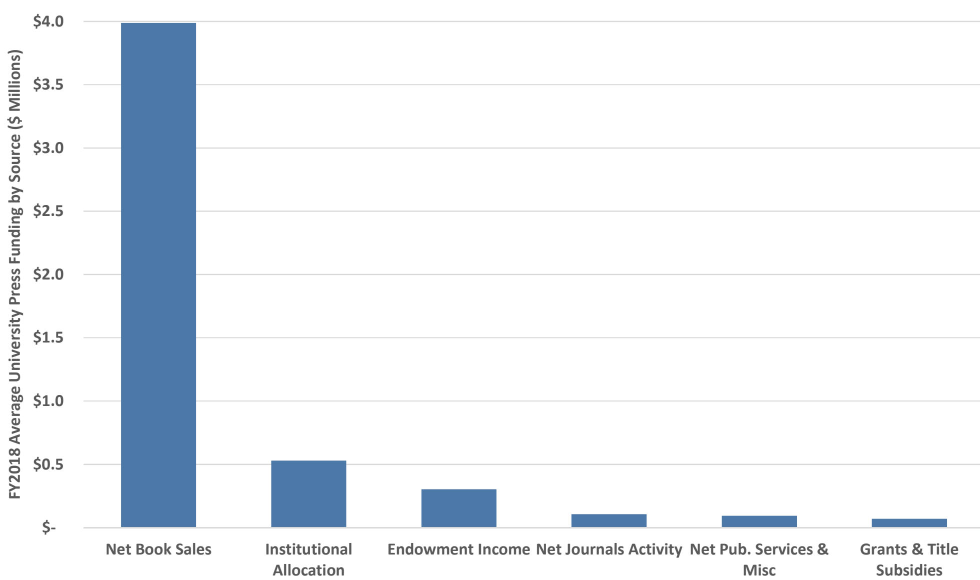

Figure 9.7. FY2018 sources of university press funding. Source: AUP (Association of University Presses 2019).

expected to be read predominantly by other scholars (Maron et al. 2016). Institutional allocations (i.e., university subsidies) average about 10% of press net income, with successively smaller shares from endowment income, journal publishing, other services, and grants and title subsidies (from authors and their institutions). Sales to university libraries have historically been a cornerstone of this market (although that is changing, as we saw in Section 6.13); while print and e-book sales dominate these revenues at most US university presses,[2] it is worth noting that scholarly journals constitute nearly half or more of library sales at a few of the very largest university presses such as Chicago, Duke, and the University of California (Daniel et al. 2019).

It's useful to understand university press expenditures by examining costs per monograph, which total nearly $30,000 in directly attributable expenses and over $40,000 when full costs are accounted for (Maron et al. 2016). Figure 9.8 shows a breakout of staff and non-staff costs per monograph for the five core press departments from acquisitions through editorial, production, design and marketing, as well as for other general and administrative costs. Acquisitions are the most expensive part of the process in labor and total cost terms. This is where the intellectual qualities of the press's book list are shaped, and it includes author recruitment, topical expertise in selection, communication, and managing a thorough peer review process. Despite the switch to digital copy and the automation of some parts of production, the majority of expenditures in other parts of the process are also on labor. This is true even for general and administrative costs that include staff in accounting and information technology (Maron et al. 2016). Considering that monographs on obscure topics in small fields may sell only a few hundred copies and more popular titles might do more than a thousand (Berlatsky 2014; Barclay 2015; Straumsheim 2016), the margins are small overall. To ensure financial sustainability of their university presses, astute directors and editors are continually seeking the balance between their curatorial role and hoped-for prestige, the relevance and likely popularity of book topics, and the realities of their business model.

That business model is shifting too, with reductions in library purchases, multiple distribution models including print and electronic forms, and the advent of open access (Maron et al. 2016). In the latter, much wider readership is possible with a low or zero cost to the reader in electronic form and payment for print-on-demand as a conventional paper book; the difference is that the press must cover its costs via other funding sources (e.g., the author or the author's institution, grants, crowdfunding, institutional support).

As we saw above, those costs amount to tens of thousands of dollars at conventional university presses—can they survive with such a high cost structure, and will university libraries and individuals continue to pay a premium for that model when lower-cost and alternative business models are becoming available? A quick online search reveals a convenient lower-end cost benchmark: the basic cost of self-publishing a book with

2 Oxford University Press (OUP) and Cambridge University Press dominate the overall academic press landscape. In a recent study of US university library purchases, each of the two British presses has book sales that approach ten times those of the biggest US university presses. Together OUP and Cambridge book sales to US university libraries represent 77% of all US university press book sales combined and 11% of total book sales from all publishers to university libraries (Daniel et al. 2019).

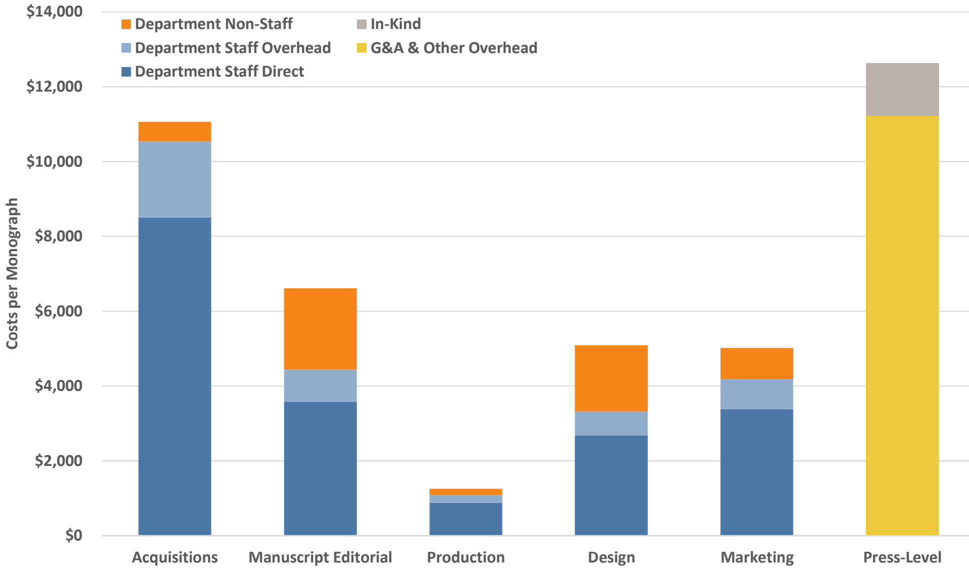

Figure 9.8. FY2014 average staff and non-staff costs per monograph by core department, as well as general and administrative (G&A) costs, other overhead costs, and in-kind costs (e.g., contributed staff time, author-paid fees and office space) at the press level. Source: Ithaka S+R (Maron et al. 2016).

a quality of editing, cover design, formatting and marketing comparable to a press-produced book is on the order of $6,000 (Reedsy 2020). Most university press editors wouldn't let me finish that last sentence without interjecting, rightly, that their presses offer far more than those basic services in the academic and production quality of their books (e.g., peer review, an established platform, the stamp of authority from a prestigious press, technical editing and production, targeted marketing). Still, the potential to expand reader access and lower cost structure by implementing business models that are not sales-based continues to drive the development of open access publishing in academia. Book production costs at presses created specifically to produce open access material are typically under $10,000, while they are $15,000 and more at existing presses that have started open access imprints and consortia (Willey 2019; Champion 2020; Luminos 2020; Penier et al. 2020). Such entities can lower their costs through labor savings due to technology and leaner approaches to, for example, acquisitions. It's important to appreciate that open access books are not necessarily cheaper to produce—the different underlying business philosophy and necessary associated infrastructure are what distinguish it from sales-driven publication (Grimme and Watkinson 2020).[3]

3 Full disclosure: this book is published under an open access model. In this particular case, the born-open and born-digital approaches meant that including roughly 200 color figures did not greatly affect the sales or production costs. In contrast, many of the university presses that I approached shied away from that much color and the prohibitive cost. It seems anachronistic to be limited to the

Open access is still evolving, and there are multiple business models in the ecosystem (Speicher et al. 2018) that are often combined in practice:

- *Article/book processing charges:* the dominant model, in which upfront fees are paid by the author (or the author's institution) to offset a portion of the publishing costs, that vary considerably by publisher;
- *Collaboration/coalition:* organizations and institutions combine assets (e.g., technical skills, funding sources) to support open access;
- *Community:* some academic-led presses use volunteers from their intellectual community, not only for peer review, but also for editing and other tasks;
- *Endowment:* endowment income can support open access as well as regular publishing;
- *Freemium:* a model adapted from the software world, whereby an online version of the publication is provided for free while other formats (e.g., e-reader, regular print) are available for a charge;
- *Grants:* some foundations will support projects to make publications open access, or support open access costs within a research project;
- *Institutional:* the university may include support for open access as part of the institutional support for its university press;
- *Library funding:* libraries may participate in a contribution arrangement with publishers to ensure open access to certain kinds of publications, such as in the arts, humanities and social sciences;
- *Sales revenues:* the press may sell print copies and other formats while also running an open access imprint;
- *Services revenues:* in addition to their regular publishing activities, some presses offer publishing services to other institutions.

As can be seen, libraries are active in this space, as are academic and professional societies, and also academic-led presses. Interestingly, open access is in many ways further developed in Europe and the UK than in the US, and it continues to develop actively at presses both small and large on both sides of the Atlantic.

Shifting back to other business model issues, another concern is the university allocation, the most visible recent example being that of Stanford University Press, where the institution proposed and subsequently delayed eliminating the press's $1.7M bridging allocation, relative to its $5M in book sales (Kafka 2019). Some on campus expressed dismay at the full financial sustainability argument, noting it isn't applied to athletics, while the wider university press community were alarmed at

legacy of almost 600-year-old black and white printing technology as we enter the third decade of the twenty-first century.

the potential domino-effect of such a decision at a well-endowed institution (Jaschik 2019b). Yet further business model concerns for university presses include the decline in long-form reading, shifting scholarly modes of writing and communication, and of course the implications of the evolving digital revolution in print and online media.

10. Facilities & Finance

10.1 What do campus buildings cost?

It depends. Of course, there is no such thing as a typical campus building and they vary by size, purpose, intended lifespan, local labor and construction costs, as well as by the precise definition of cost. That said, numbers from $50M to $100M are not unusual for construction of a new medium-sized campus building with a few floors totaling, say, 100,000 square feet, while smaller buildings the size of large houses might cost just a few million dollars and massive laboratory complexes can cost hundreds of millions. Let's dig in a little further.

It's easy to focus only on direct construction costs (a.k.a. brick-and-mortar or hard costs paid to a contractor) and not on the total project cost, which also includes associated design costs, permit fees, local taxes, legal fees, cost of land, utility expansion/connection, roadway alterations, landscaping, interior furnishings and specialized equipment (some or all of which are counted as soft costs depending on the definition). Together, these other items add 20–50% on top of basic construction costs, as can be seen in Figure 10.1.

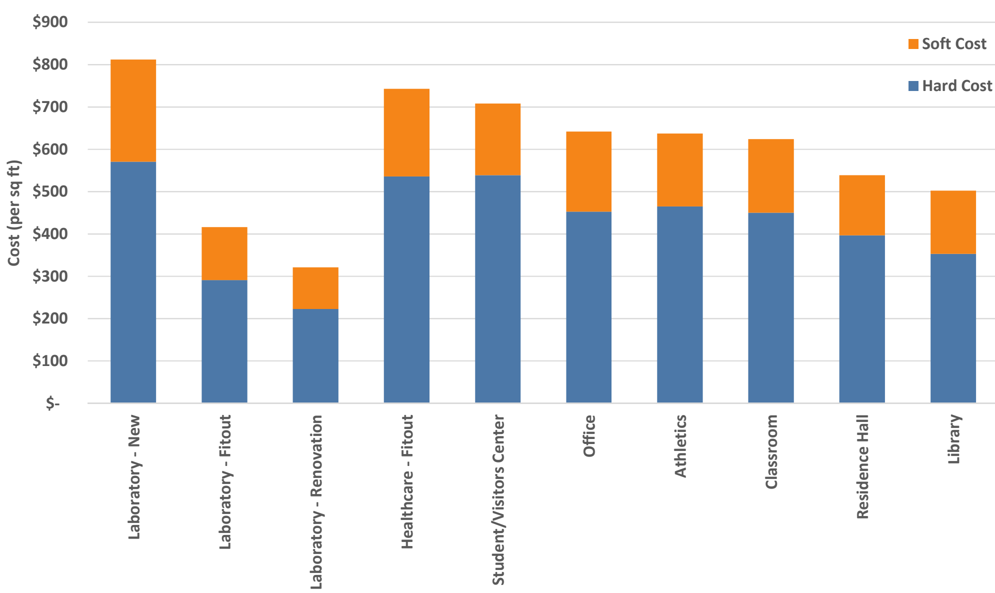

Figure 10.1. Hard costs (construction and construction contingency) and soft costs ("everything else") per gross square foot for a variety of campus building types from a 2016 study. Source: D'Angelo (2016).

https://doi.org/10.11647/OBP.0240.10

Figure 10.1 also illustrates the differentiation in hard and soft costs across a range of campus building types. New "wet labs" (and high acuity healthcare) are the most expensive kinds of space because of specialized needs: heating, ventilation and air conditioning (e.g., fume hoods, positive/negative pressure, air filtering); extra plumbing for purified/contaminated water; supplementary electrical and IT infrastructure; laboratory gas handling; additional sprinkler and fire safety equipment, and special rooms for delicate or large equipment. Fitting out and renovating such space costs somewhat less than new construction, as with most space (except for historical or other unique buildings). So-called "dry labs" (simple teaching laboratories, computer laboratories, sorting rooms, etc.) can cost substantially less. Multi-use structures such as student centers with a mix of catering, hospitality, meeting, retail, etc. space can cost almost as much as an average laboratory on a per square foot basis. Offices, classrooms, and residence halls are more moderate in cost, while the lowest costs are associated with large box-like spaces typified by libraries (and open-plan floors of office cubicles).

It is not uncommon for those who know commercial construction costs to balk at the perceived cost of new university construction. Universities tend to cite project costs, which as we've seen can be substantially higher and are easily confused with basic construction costs. Also, universities usually build for a facility lifespan of fifty to one hundred years, far longer than the typical commercial building. Figure 10.2 shows a comparison of cross-sector construction costs using consistent definitions and data collection. It is clear that, in fact, higher education construction costs are very much in line with commercial construction costs as well as other sectors similar to higher education such as healthcare and K-12 education. Laboratories and acute healthcare spaces are the most expensive, academic/classroom and administration spaces are on a par with mid-rise commercial space, while residence halls and K-12 spaces have a similar cost to single-story commercial space.

This is a convenient point to explain the distinctions between gross square footage (GSF, essentially the entire structure), net assignable square footage (NASF, all rooms and usable areas), and unassigned or common space such as hallways and stairwells. Construction cost calculations are generally made on gross square footage, while internal space and cost allocations (such as for a department or college) usually use net assignable square footage.

Total GSF on a campus ranges from under 1 million GSF at small colleges to more than 15 million GSF at the largest universities. Space per student varies substantially across type of institution with, for public and private schools combined, baccalaureate colleges (that are predominantly private) averaging about 650 GSF per FTE, R1 universities averaging about 500, R2 about 350, and R3-M3 institutions about 300 GSF per FTE (Cotter 2009). There are economies of scale from smaller to midsize institutions, with research space adding to overall space totals at R1 schools.

I've occasionally been asked about the total value of all facilities on campus, a number that is tough to quantify. University financial statements will list older buildings as

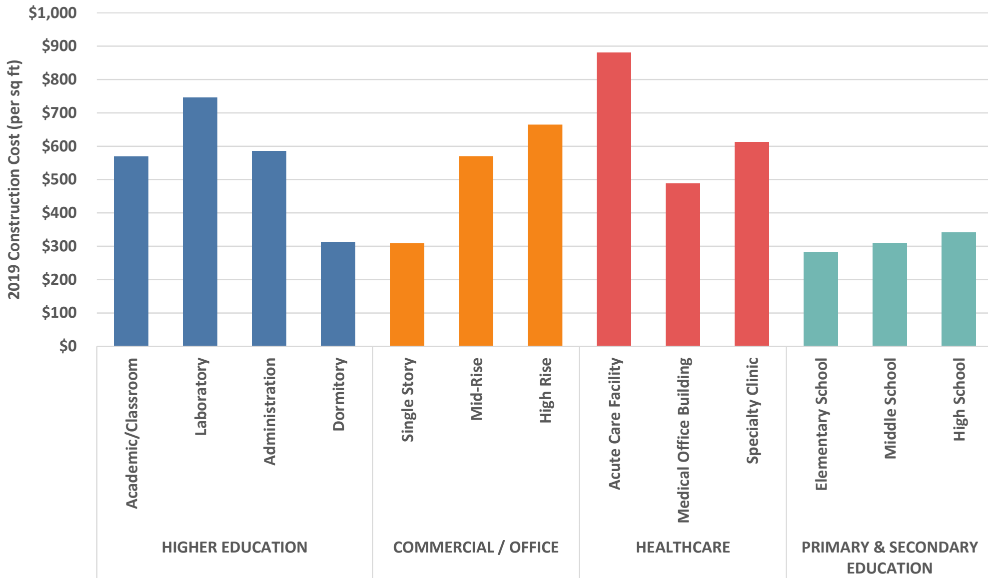

Figure 10.2. 2019 construction costs per square foot of gross floor area for selected sectors, calculated as the average of high and low values within the city limits of 20 US cities. Land, permits and other soft costs are excluded. Source: Cumming Corporation (2019).

depreciated assets, but that kind of book value doesn't necessarily align with value for practical purposes (what a university might spend on functionally similar space) and it certainly isn't the same as replacement value. In any case, the total value of all facilities naturally scales with the overall size of the institution, and the figures are clearly in the hundreds of millions on smaller campuses and in the several billions of dollars for large R1 schools.

10.2 What are the trends in campus construction and deferred maintenance?

As any homeowner knows, once a building is built it still needs regular maintenance, which will eventually involve major outlays as essential components age and need to be updated or replaced (e.g., roofs, mechanical systems, windows, interiors). And, just like at home, it's easy for cash-strapped institutions to put off those costs for just another year or two, leading to a mounting and ever more expensive backlog of deferred maintenance projects.

Industry benchmarks suggest that institutional investments into maintenance of campus facilities should be 2–3% of total asset value, a target not met by most campuses (EAB 2017). For a $50M building of 100,000 GSF that's about $1M to $1.5M per year, or about $10 to $15 per GSF. Of course, this guideline is not per building, but for the entire portfolio of campus facilities, some new and many older. The average deferred maintenance backlog in 2015 was $88 per GSF at private institutions and $108 per GSF at public institutions, both of which grew faster than the inflation rate since 2007 (EAB 2017).

Major maintenance expenses rise around twenty to thirty years after a building is built. Of course, there are few campuses with an even mix of building ages and fewer yet that have dutifully kept up a consistent maintenance schedule amid other budget pressures. On many campuses the result is that major maintenance costs tend to surge. Figure 10.3 illustrates the century-plus age profile of campus buildings as a share of national higher education GSF. On top of the overall growth trend, we see two big surges in construction: the 1960s and 1970s, and the 2000s into the 2010s. Each of these had, or will have, an echo in major maintenance costs a few decades later.

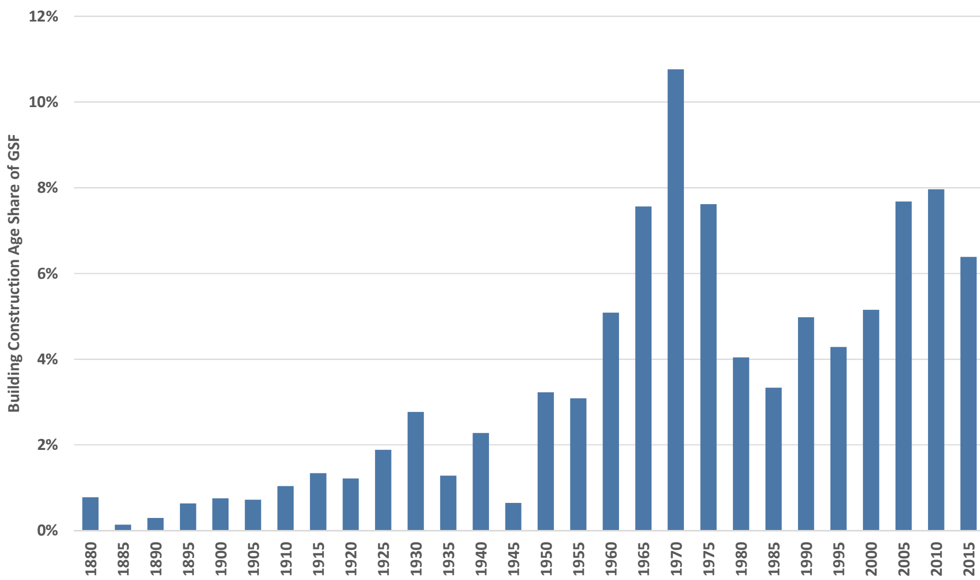

Figure 10.3. Building construction age as a share of total gross square footage (GSF) across US higher education. Source: Gordian (2018).

The first surge is easy to understand as a response to massive sustained enrollment growth during that time (as we saw in Section 4.6). The recent surge is a combination of pre-recession investments and response to post-recession enrollment growth, both taking place in an environment of intense competition for additional students. Paying for this recent wave of construction and the associated major maintenance will become extremely challenging in the next ten years, especially for institutions that have not managed to grow enrollments at the same time. The early signs of that challenge are clear in Figure 10.4, which shows the mismatched growth curves for space and enrollment across research, masters and baccalaureate institutions since 2007. The two rates are comparable at research schools, masters' institutions saw the largest cumulative space growth along with weak post-recession enrollment growth, and baccalaureate colleges grew space while seeing several years of flat or negative enrollment growth. These are troubling patterns for all but the research campuses. Not only will it be challenging to pay off the associated debt with modest or declining enrollment revenues, but also the major maintenance bills will start to hit in the coming decade, requiring additional debt if those schools don't have adequate maintenance funding built into their budget plans.

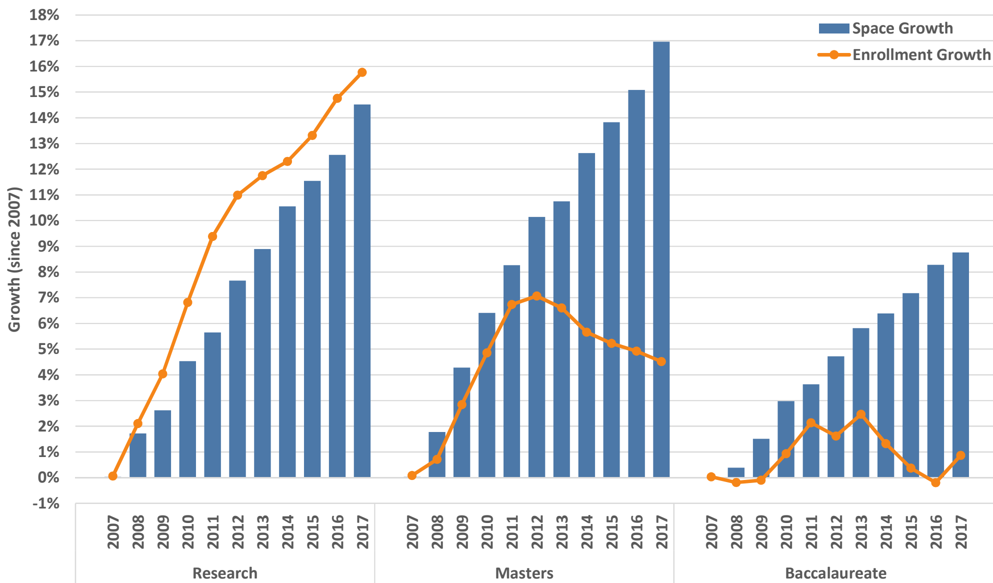

Figure 10.4. Recent trends in rates of space expansion and enrollment growth across US higher education. Source: Gordian (2018).

10.3 How much is the university's "mortgage" and debt payment?

Universities borrow money for large capital projects, much as homeowners obtain a mortgage to buy or build a house, enabling large one-time costs to be spread over many years. Mortgages are issued in the residential loan market by lending institutions based on the creditworthiness of the buyer and use of the property as collateral. In contrast, like other corporations, universities generally issue bonds to finance large capital projects. Direct borrowing from banks tends to be costlier and more restrictive than selling debt on the bond market. While bonds do not use collateral, universities are rated by independent agencies as to the likely reliability of the institution to repay them.

Unlike most homeowners with a single mortgage for a single home, universities typically have multiple bonds that cover many capital projects of various ages, some from years ago that are about to end and others that are more recent. Thus, a university's overall debt portfolio can extend its interest payments several decades into the future, and the institution has to weigh any consideration of new debt against those obligations.

So, just how big is university debt at any one time and how much are the interest payments? Figure 10.5 shows average debt by type of institution and the matching interest for FY2018. Both amounts scale with institution size, much as one would expect, with the annual interest across institutions in a consistent range of 3.5–4.5% of the total debt. Average debt is about $800M at R1 public institutions and over double that amount at R1 privates, almost $1.8B. The smallest institutions average less than $100M in debt, public and private. Debt service, the interest that universities pay on their bonds and other loans, averages about $35M annually at R1 public universities and over $60M annually at R1 privates, while it is under $5M annually at smaller colleges and universities. Making those bond payments is a financial priority for the institution because not doing so would make any future borrowing much more expensive. Thus, bond defaults are rare and they occur only if the institution is undergoing significant financial distress. For example, as universities lost all or part of their anticipated residence hall revenue in FY2020 due to COVID-19 effects, most will find ways to cover the revenue shortfall gap from other sources rather than defaulting on the related debt.

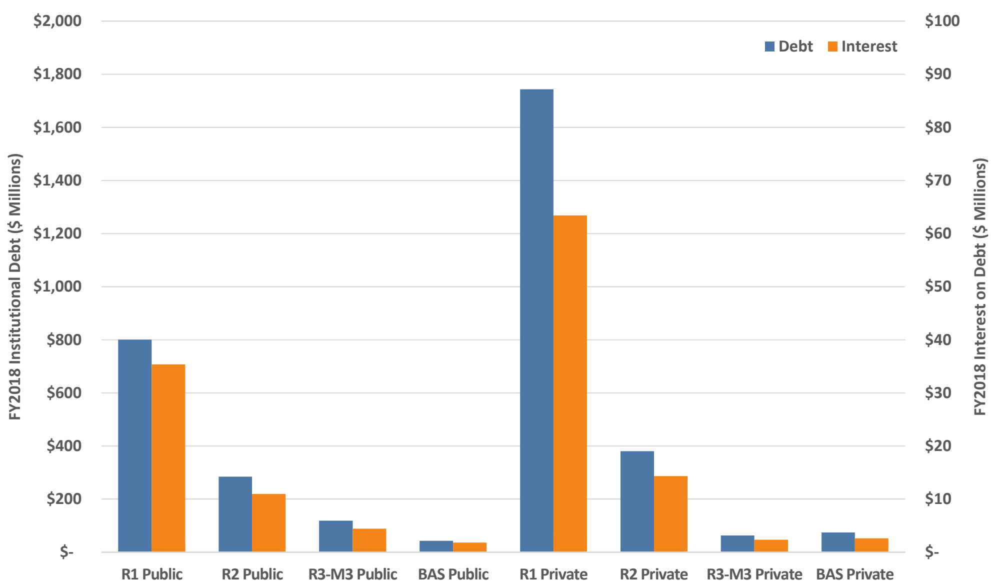

Figure 10.5. FY2018 institutional debt (left axis) and interest on debt (right axis, note narrower scale) by Carnegie classification and control. Source: IPEDS (2020).

Those annual interest payments account for 2–3.5% of the university budget depending on the type of institution, generally lower at public universities and higher at private institutions. Figure 10.6 illustrates the trend in debt service as a share of expenditures over three decades for public and private universities. While that share has remained in a narrow band for private institutions, at public institutions it almost doubled during the 2000s driven largely by non-R1 schools, in synchrony with increasing enrollment growth across all institutions. Worryingly, for the small group of BAS public colleges, their enrollment growth subsequently flattened and then declined in the 2010s, meaning that they will be challenged to meet their debt obligations in the coming years if enrollments and revenues continue on their current path.

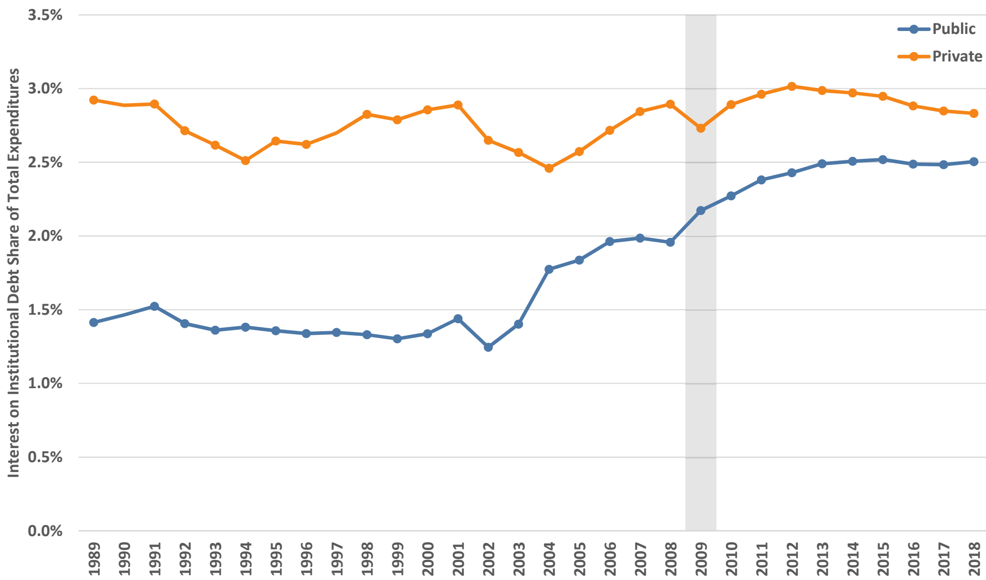

Figure 10.6. Trends in interest on institutional debt as a share of total non-hospital expenditures, averaged across Carnegie classifications for public and private institutions. Source: IPEDS (2020).

The major rating agencies (Moody's, Standard & Poor's, and Fitch) rate the creditworthiness of higher education institutions. For example, Moody's uses a scale of A (low risk), B (speculative, medium to high risk) and C (very high risk as well as near or in default), with nine subdivisions and three further modifiers for a total of 21 categories (Moody's Investors Service 2020c). The range of ratings for four-year institutions is illustrated in Figure 10.7, which also shows that public institutions generally receive better ratings than private ones. Overall, the upper categories are typically dominated by elite private universities as well as major public universities or systems; remember also that the medium and smaller schools make up the majority of all institutions. To develop their ratings, the agencies examine multiple business-related metrics, including many covered in this book, to gain a comprehensive picture of each institution's financial health. Agencies offer annual outlooks for the whole higher education sector, and in recent years they have varied between negative and stable, reflecting overall concerns about enrollment and net tuition revenue, state support, and endowment performance among other factors (Seltzer 2019e; 2020a).

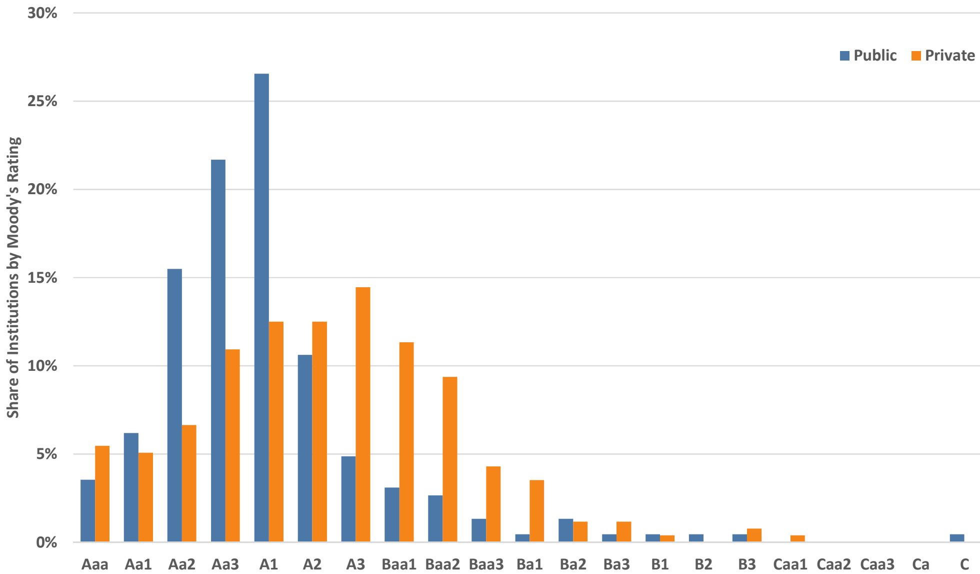

Figure 10.7. Moody's credit rating distribution for 226 public and 256 private four-year institutions, as shares of each for December 2018. Source: Moody's Investors Service (Shaffer 2019).

10.4 How much is the campus energy and utility bill?

The national average for the cost of utilities (natural gas, steam, electricity, water & sewer) in 2018 was about $2 per GSF (Gordian 2018). That translates into an annual utility bill of tens of millions at a large R1 university down to single-digit millions at smaller colleges. For example, FY2018 utility expenditures were $84M at UNC Chapel Hill (R1 public), $103M at Stanford (R1 private), $10M at Creighton (M1 private), $1.1M at Henderson State University (M2 public), as well as $3.5M at Goucher and $1M at Juniata which are both BAS privates (University of North Carolina at Chapel Hill 2019; Stanford University 2017; Creighton University 2018; Henderson State University 2018; Goucher College 2018; Juniata College 2018). Utility expenditures thus account for a few percent of the overall institutional budget.

Utility activity by type of utility also scales with campus size (i.e., GSF), as illustrated in Figure 10.8. Consumptive metrics (energy use, carbon footprint, electricity use and water use) are generally higher at large schools and they decrease with smaller type, such that BAS colleges consume at 30–50% of the rates at R1 universities. Across all institutions, natural gas comprises over 85% of all fossil fuel usage with emissions per GSF declining at about 2% per year (Sightlines 2014). Productive metrics (garbage and recycled waste) show the reverse pattern in Figure 10.8, with the highest rates at small campuses and the lowest rates at large campuses, dramatically so for recycling. The unusual water-use and recycling values for R2 institutions in particular may be a result of small sample size.

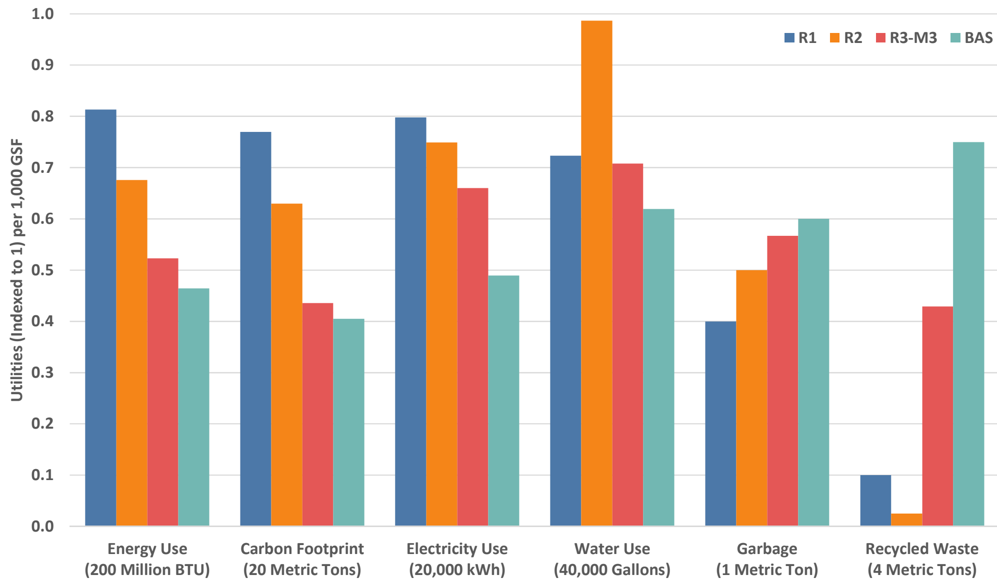

Figure 10.8. FY2018 utility activity per 1,000 gross square feet (GSF), with the scale for each indexed to 1 for comparison, by Carnegie classification of 172 institutions. The R3-M3 values are a weighted combination based on response count. Sources: NACUBO (2019) and APPA (2019).

10.5 Does the university have a rainy-day fund?

Yes. Institutions in sound financial shape keep cash on hand to cover unexpected revenue shortfalls or unforeseen emergency expenses (such as the financial impacts of COVID-19). You won't typically find a specific fund to which money is allocated; rather, the institution will have cash accounts and cash equivalents (e.g., short-term investments) that can be liquidated almost immediately. There are many measures of liquidity, most of which reflect available cash relative to expenses, with variants depending on how those two figures are accounted for. One easy to understand example is "days cash on hand" that Moody's uses in its ratings reports, and which is sometimes mentioned in a university's annual financial report. It represents the number of days that the institution could cover operating expenses from cash. For example, starting with some public institutions, FY2017 days cash on hand was: 210 at Indiana (Moody's Investors Service 2018a) and 68 at New Mexico (Moody's Investors Service 2018d) that are both R1; 241 at Kent State, an R2 (Moody's Investors Service 2019); 64 at Texas Southern (Hilltop Securities 2018), an R3; and 134 at Midwestern State (Hilltop Securities 2018), an M2. Examples from private institutions include: 620 at Vanderbilt (Moody's Investors Service 2018f) and 954 at Notre Dame (Moody's Investors Service 2018e) along with 187 at USC (Moody's Investors Service 2020b), all R1 schools; 457 at Loyola University of Chicago (Moody's Investors Service 2018b), an R2; 205 at Rollins College (Moody's Investors Service 2018c), an M1; 534 at Kalamazoo

College (Moody's Investors Service 2020a) and 644 at Lafayette College (Prager & Co. 2019), both BAS colleges.

From these examples we can see that while there are differences in liquidity across all schools, there is also a differentiation between public and private universities. Public institutions can typically cover a portion of a year while private institutions are

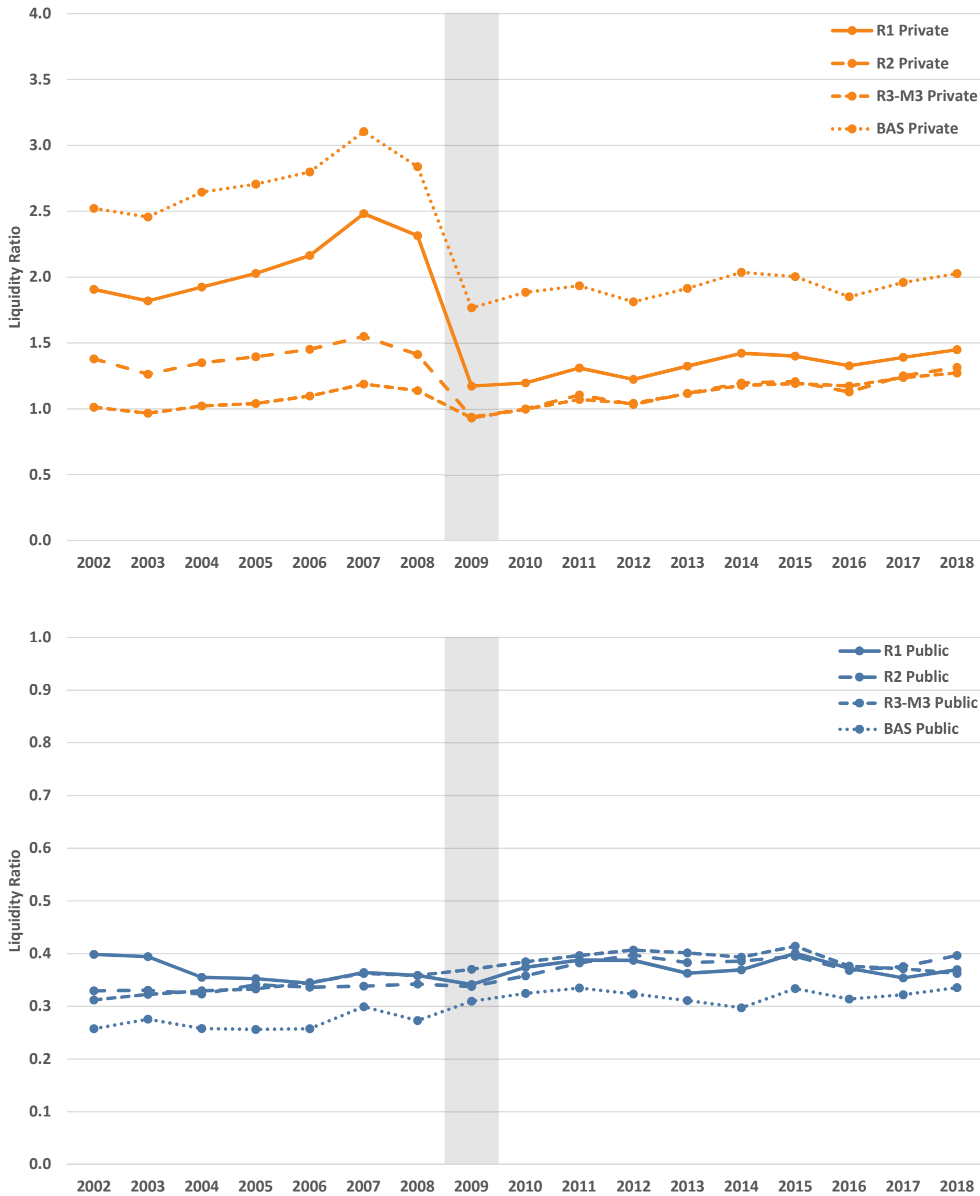

Figure 10.9. Trends in simple liquidity ratios averaged by Carnegie classification and control. Note that the vertical scale in the upper panel (Private) is 4X the lower panel (Public); see text for details. Source: IPEDS (2020).

usually able to cover hundreds of days and some even several years. The reason for the distinction is that private institutions typically keep a portion of their endowment as cash in addition to other operating cash reserves. This is not typically an option at public universities where an outside foundation holds the endowment and those funds are restricted. While endowment-related funds at a private university can fill a hole in the short run, if they are used, they will of course deplete the long-term resources of the institution. This public-private difference can be seen in Figure 10.9, which illustrates trends in simple liquidity ratios.

Unfortunately, while the data to calculate days cash on hand are readily found in individual university financial statements, sufficiently specific information to properly calculate days cash on hand for all schools is not publicly available, nor is it recorded in IPEDS. However, IPEDS does contain certain asset and liability data, from which simple liquidity ratios can be computed. In Section 1.4, I mentioned that we could generally handle technical accounting differences between public and private institutions in our comparisons, but this is one of the topics where those differences are marked. In the case of public universities, this simple IPEDS-based liquidity ratio is calculated as total current assets over total expenses, while for private universities it is calculated as total unrestricted net assets over total expenses. The numerator for the privates is a far broader quantity than that for the publics, which leads to two different scales as seen in Figure 10.9. Despite the resulting much higher ratios for privates versus publics, there are still some interesting differences among each group and some overall trends worth noting. At public universities, liquidity is similar across all sizes of institution except the group of small baccalaureate colleges that have lower cash reserves. Before the Great Recession there was variability in liquidity trends among the publics, but institutions made modest improvements to their liquidity post-recession. The privates, especially R1 universities and baccalaureate colleges, had distinct profiles pre-recession and they experienced dramatic reductions in liquidity as their endowments shrank. Interestingly, because endowments are relatively low at the smaller private research and master's institutions the impact of the recession on their liquidity was comparatively muted. Post-recession, liquidity improved slightly across all types of private institution.

In fact, it was the recession that prompted far more attention to liquidity across all of higher education: some institutions had to borrow money to meet debt obligations because their investments were inaccessible, and the credit rating agencies cited liquidity concerns in numerous cases as they downgraded institutions (Kiley 2011). Of course, liquidity is just one of many indicators used to assess institutional financial health, and composite financial indices are made available by the US Department of Education and in rankings exercises published by the media (Coudriet and Schifrin 2019; Seltzer 2019d).

10.6 Why isn't parking free?

A university is a series of individual faculty entrepreneurs held together by a common grievance over parking. This much-repeated witticism is attributed to Clark Kerr, and like many good jokes it contains just enough truth to be amusing. Because thousands and even tens of thousands of people flow on and off a typical campus every day, there is never enough parking for all of them and it's only natural that the tensions between convenience and congestion make for regular grumbles about parking and transportation. Chief among those are questions about why parking fees are so expensive, and why parking can't be free. Companies don't charge their employees or their customers for parking, as the argument goes, so why do universities do it? Besides this rhetoric being partially untrue (many businesses in urban downtown settings don't have onsite parking and expect their employees and customers to figure out their own public or private transportation and parking needs), the bigger point is really about who pays.

We all know the economic truth that there is no such thing as a free lunch, so either the costs of providing parking or alternative transportation solutions are absorbed centrally and paid for by all whether they use the service or not, or they are paid by those who use the service. Individual faculty and staff members might consider parking fees a tax on wages while students may complain that it should be included in tuition; all have an interest in externalizing the cost away from the individual to the institution. On the other hand, many campuses have physical space constraints that severely limit parking availability, and even if they don't, the university community still has an interest in reducing congestion and the physical costs of providing parking. Therefore, universities typically charge individuals for parking permits, often using a portion of parking fees to offset costs of other transit options such as free shuttles, bus passes, and the like.

Surface lots are the cheapest to construct although they are the least efficient use of space, while multi-level parking garage structures enable higher density parking but they can cost an order of magnitude more to build; both require additional maintenance. Construction cost estimates range from $2,000 to $3,500 per space for surface parking, and between $12,000 and $25,000 per space for a parking structure (UNC Charlotte 2019; Texas A&M University 2020). Operations and maintenance expenses include custodial, repairs, staffing, and security. A back-of-the-envelope calculation that spreads construction and financing costs out over thirty years (assuming the university issues a bond for the project) and includes an allowance for maintenance puts the annual cost at a few hundred dollars per surface space and $1,500-$3,000 per garage space, an amount that needs to be recovered from parking charges or other sources (such as tuition). Because the faculty and students are not all on campus all the time, typical annual parking charges can be less than these numbers if the university issues more permits than there are physical spaces—the hunting license analogy. As an indication of the seriousness and emotion attached to campus parking issues, it is interesting to note that at UC Berkeley the ultimate academic recognition is being awarded a special reserved parking spot for winning the Nobel Prize (Figure 10.10).

Figure 10.10. The ultimate academic accolade at UC Berkeley, winning a special reserved parking space along with the Nobel Prize. Source: De Comité (2017), Flickr, CC BY 2.0, https://www.flickr.com/photos/fdecomite/34688401634.

10.7 Do public-private partnerships and outsourcing save money?

They can save money, but that should not be the sole reason that a university enters into a public-private partnership (P3) or similar form of privatizing or outsourcing. There are several important aspects of P3s that institutions should assess and manage to avoid non-financial (e.g., academic and reputational) as well as financial risks. We'll cover those items below, but first let's describe what we're talking about. Outsourcing is a slightly older term that carries negative connotations for some. The P3 term is now widely used, although it is technically a misnomer for private universities that use these agreements as much as public institutions. Whatever we call them, the essence of such agreements is that the university contracts with a third party to deliver a service rather than the institution providing that service itself.

P3s are not new and universities have been contracting out functions such as food service, vending and bookstores for decades (Bushman and Dean 2005; Phipps and Merisotis 2005). These areas are not close to the core academic mission and can often be delivered more effectively by a company with specialty expertise and economies of scale. Since the late 2000s, however, higher education has seen strong increases in P3s for facilities construction and/or operation as well as those much closer to the core academic mission, such as student services and online program management. Table 10.1 shows the extensive range of functions and services that may be provided by private partners. Across the country, higher education P3 deals now total in the billions of dollars annually (EY-Parthenon 2017), with a growing literature that describes them (Leeds 2019).

P3 agreements differ depending on the level of control and risk for the company and the university, financial elements such as whether there are fixed payments or a revenue-sharing agreement, and timing. Depending on the needs of the institution the P3 could be a short-term contract or it might be a long-term partnership over many decades. A seemingly straightforward example might be a contract for janitorial services, where the university pays a certain amount to a company instead of hiring and managing its own janitorial staff. Clearly the university will want the costs to be lower, but it also has to consider how integrated it wants the "outside" staff to be and how the arrangement fits with union agreements. Furthermore, will the cost savings come from efficiencies or will the company workers be paid less than if they were university employees, and will they receive fewer benefits? These can be critical issues for a campus community.

A facilities example might involve the construction and operation of a residence hall, where the institution provides a ground lease to the company, which in turn fronts the cost of construction and receives a significant portion of the student housing revenues. From the company's point of view, it can rely on the captive audience of students for a relatively reliable tenant income to recoup its investment, while the university gets a building financed and built quickly without having to borrow. Concerns abound: to list just a few, can the university ensure that the construction quality meet its usual standards, will maintenance problems be dealt with to the satisfaction of students and parents, and will the university or the company be handling student behavior and support issues? If such issues are anticipated and managed well, then the project can work well for all, but poor revenue or management arrangements can severely undermine the hoped-for benefits. Also, for capital projects, universities can typically borrow money (through bonding) at lower rates than commercial developers, so the premium paid for that aspect of the project must be offset by other benefits such as speed to completion, level of service, or risk avoidance.

A third example is online program management (OPM), which has received a lot of press over the last decade as higher education moved into online instruction. I mentioned OPMs briefly in Section 6.11 when discussing online programs, and it's worth emphasizing again just how poorly structured many of these OPM deals have been for the universities (Hall and Dudley 2019). In their rush to get help recruiting online students and delivering instructional content, some institutions more-or-less sold their academic souls (Carey 2019), ceding over half the revenue and much of the academic control to the OPM partner. As universities gain more experience in the online space the nature of these deals will hopefully become more balanced. Nonetheless, in a recent survey of campus leaders the desire for OPM P3s came in second, right behind facilities and infrastructure P3s (Blumenstyk 2019a).

Table 10.1. Examples of institutional functions and services that may be provided through public-private partnerships.

Academic Affairs	Enrollment & Student Support	Campus Services	Information Technology	Facilities & Maintenance	Other Administration
Instructional Content	Online Program Management	Food Service	Enterprise Systems	Student Housing	Payroll
Course & Program Development	International Student Recruiting	Bookstore	Information Systems Management	Academic Facilities	Human Resources
Instructional Design	Career Services	Copy Center	Document & Data Storage	Sports Venues & Concessions	Legal Services
Academic Advising	Non-Credit Programs	Computer Store	Desktop Help	Hotel & Conference Center	Debit & Credit Cards
	Coaching & Mentoring	Vending	Instructional Technology	Energy & Steam/Ice Supply	Finance & Accounting
	Enrollment Management	Janitorial & Custodial		Parking	Marketing & Communications
	Student Health & Support	Laundry		Transportation	Mailroom
	Financial Aid	Residence Hall Management		Security	Endowment Management
	Student Loans	Recreation Center		Mechanical & Electrical	Development & Fundraising
	Student Data Analytics			Grounds	
				Office Equipment	
				Laboratory Support	
				Overall Facilities Management	

11. Health Sciences, Hospitals & Medical Schools

11.1 How do hospital budgets compare to main campus budgets?

Some of the health sciences operate on a completely different financial basis to the rest of campus because of their reliance on clinical revenues. Nowhere is this truer than in medical schools, although it can also be a factor across nursing, pharmacy, dentistry, public health and veterinary medicine. We'll get to medical school funding in the next section, but first, let's get a feel for the basic numbers.

In earlier chapters I was careful to point out where hospital revenues or medical employees needed to be excluded from our campus comparisons. That's because (i) most universities don't have hospitals or medical schools, (ii) of those with medical schools, at more than half the hospital partner is an independent corporation rather than the hospital being incorporated within the university, and (iii) hospital budgets can be as big or bigger than the universities with which they are directly or indirectly affiliated. The Association of American Medical Colleges (AAMC) lists 155 accredited member medical schools in the United States (Association of American Medical Colleges 2020), 115 of which are spread across our comparison data set of nearly 1,200 four-year higher education institutions, as illustrated in Figure 11.1 (the rest are largely stand-alone specialty or for-profit schools). Of those, 45 (39%) report in-budget hospitals on IPEDS.[1]

Unsurprisingly, R1 universities are home to most medical schools and in-budget hospitals, with fewer of each down the size scale. We can get a sense of hospital budget sizes by breaking out the hospital and non-hospital (i.e., university) revenues for those institutions with in-budget hospitals, as shown in Figure 11.2. Three quarters of these hospitals are at R1 universities and their budgets average about 40% of the total budget or, put differently, hospital budgets approach the size of the regular university budget. Financially and organizationally, it's like adding a second university to the main campus. There are no publicly-accessible comprehensive statistics on the budgets of

1 Technically, IPEDS lists the Penn State College of Medicine separately for academic data, while the finances of Penn State Health are included in main campus financials. For Rutgers, IPEDS reflects the medical school and hospital on the New Brunswick campus plus two small hospitals at the Camden and Newark campuses although they don't have separate medical schools.

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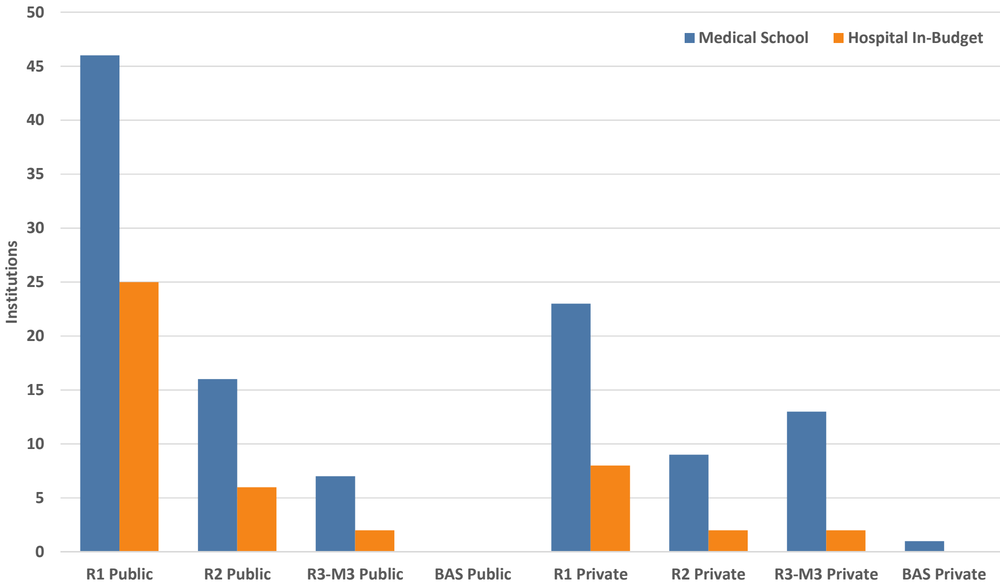

Figure 11.1. FY2018 numbers of higher education institutions with medical schools and with hospitals included in the reported institutional budget, by Carnegie classification and control. Source: IPEDS (2020).

other independent teaching hospitals that work with the remaining medical schools, although from individual examples it is clear that they have not dissimilar financial scopes of in-budget hospitals and sometimes more.

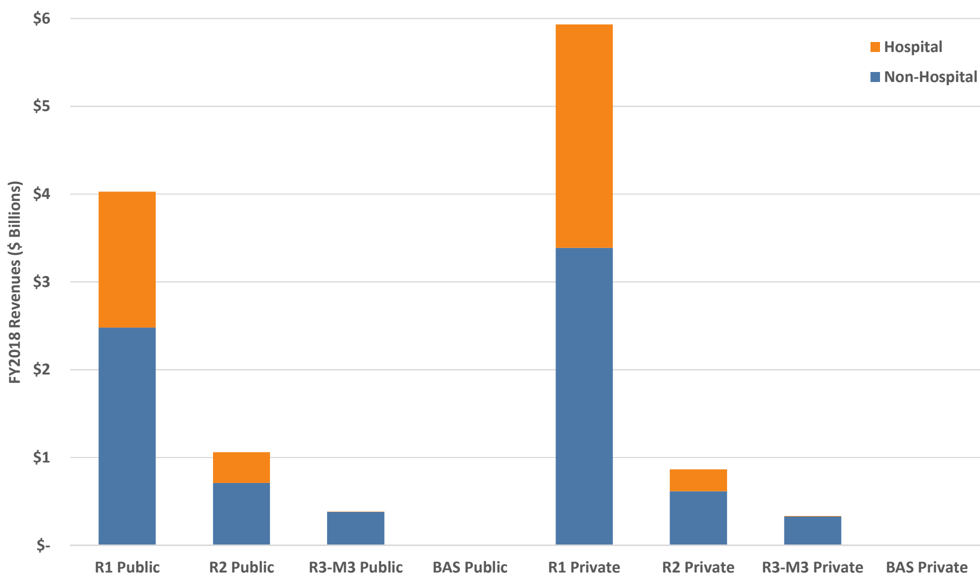

Figure 11.2. FY2018 hospital and non-hospital portions of total institutional revenue for the 45 institutions reporting in-budget hospitals, by Carnegie classification and control. Source: IPEDS (2020).

11.2 How are medical schools funded?

Most medical schools don't exist in financial isolation in the way that other campus professional schools do. Business schools, law schools, engineering programs and colleges of education all connect to their domains of professional practice to ensure that students can learn through hands-on experience, like medical schools, but none of those require the level of *financial* integration with clinical activities necessary to support a contemporary US medical school. Put more pointedly, with the exception of the few that focus exclusively on teaching medical students, medical schools rely overwhelmingly on clinical revenues to support themselves with tuition playing only a minor role.

How does that work? The necessary combination of medical education, research and clinical practice is enabled by organizational and financial elements of what is called an academic medical center, which is typically comprised of the medical school, its affiliated hospital (historically university-owned but also independent), and the faculty practice plan. Practice plans originated as organizations to handle clinical revenue collection and compensation for the faculty as practicing physicians, much like a group private practice. While this is still their core function nowadays, practice plans have evolved into organizations that also promote patient care, manage the various medical specialty practices, recruit and retain quality physicians, and ensure an adequate number and range of patients for research and teaching. These activities are aligned with the mission of the academic medical center.

The practice plan looks after the interests of faculty physicians, as distinct from those doctors and other health professionals without academic appointments who work directly for the hospital. Faculty practice plans are usually separately incorporated, meaning that the academic medical center is a three-way partnership between the university, the practice plan, and the hospital. Each brings something to the table: the university and medical school need clinically active professors and a means to compensate them from the practice plan, plus the physical and organizational infrastructure of the hospital; the hospital desires the prestige of being a specialized institution with renowned experts and the latest treatments; and, the practice plan needs them both while providing a vehicle for the academic and clinical activities of faculty physician scientists.

As you will have surmised by now, successful academic medical centers therefore involve the exchange of large sums of money among the three parts, in particular to support the medical school. The practice plan contributes substantial clinical income while the hospital contributes payments for medical services as well as additional investments into the teaching, research and clinical care missions. These latter investments, which are typically tens of millions of dollars annually, are known as "mission support" and they essentially provide a cross-subsidy of teaching and research.[2] Figure 11.3 illustrates the critical role of practice plan and hospital revenues

2 Mission support funding has to be carefully structured to avoid kickback and ethics laws because the medical school's physicians refer patients to the supporting hospital (Bulleit et al. 2017).

for medical schools, in a roughly two thirds/one third split that together comprise 63% of the total support. Research grants and contracts are the other large source of medical school revenue, with federal and other sources accounting for a combined 22% of medical school revenue on average.

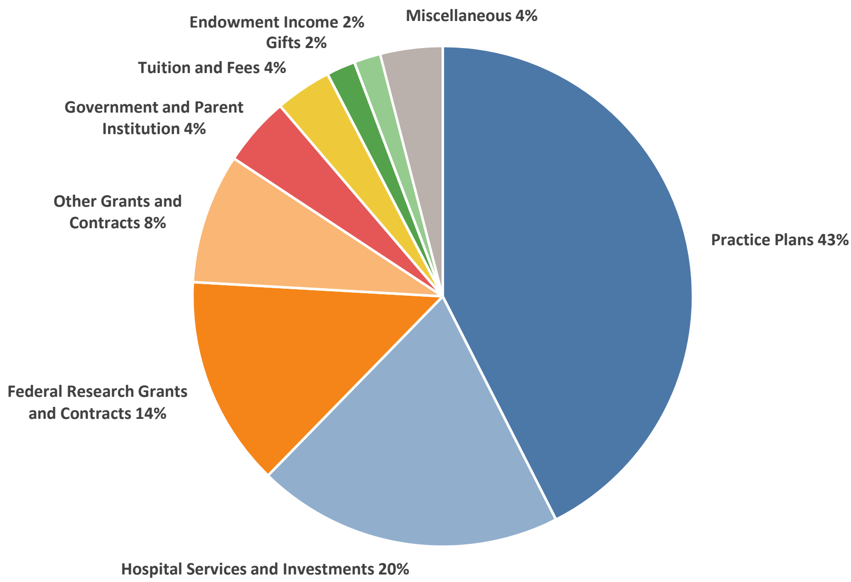

Figure 11.3. FY2018 shares of revenue sources supporting 141 US medical schools. Source: AAMC (Association of American Medical Colleges 2019b).

Figure 11.3 also shows that the remaining sources of medical school income are all much smaller, each making up just a few percent of the total. Support from state and local governments and from the parent institution (i.e., the university) and revenue from tuition and fees each average about 4% of the total although, as we'll see next, these two categories differ across public and private institutions. Gifts, endowment income and other miscellaneous costs round out the revenue portfolio.

The average dollar amounts for each of these sources at public and private medical schools are illustrated in Figure 11.4. While the general profile is similar, the revenues supporting private medical schools are approximately double those at public universities. There are two noteworthy departures from this overall pattern though; public medical schools naturally receive relatively more via state and local government support, while private medical schools generate almost three times more in gift income on average.

To appreciate the magnitude of total dollars required to fund a medical school, the level of funding is on the order of ten times the budget of a regular college at an R1 university. That contrast makes it instructive to return for a moment to the cross-subsidy of teaching and research by mission support and other funds. Tuition revenues are insufficient to cover the substantial infrastructure, operational and labor costs of the

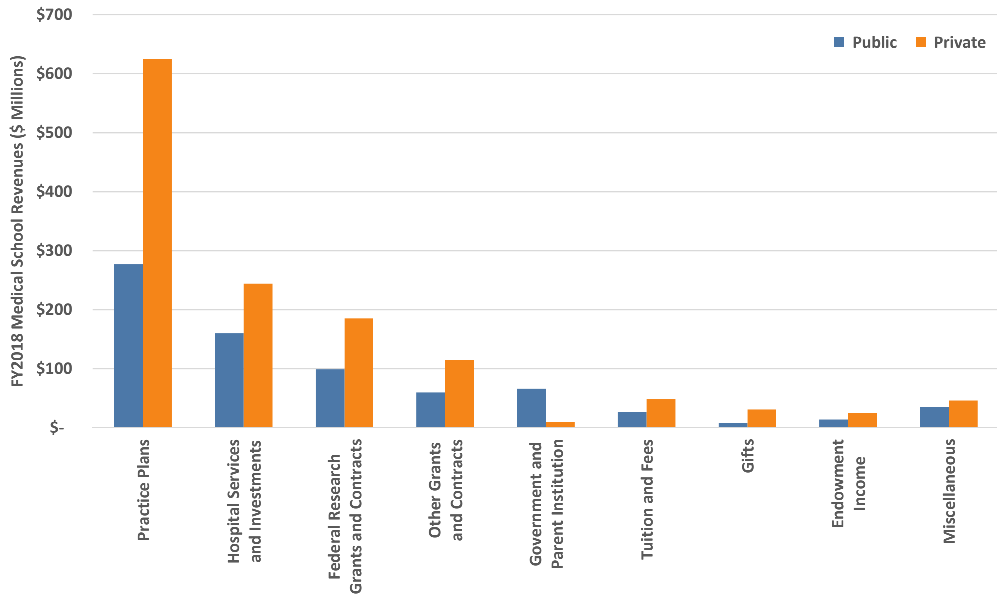

Figure 11.4. FY2018 supporting revenue sources averaged across 85 public and 56 private US medical schools. Source: AAMC (Association of American Medical Colleges 2019b).

whole enterprise associated with educating medical students.[3] At most major medical schools, the faculty will outnumber the students and they will be among the highest salaried professors in the university (see the next section). Thus, even from this limited example, and with perception of medical school tuition as high, it is clear that tuition alone will not come close to covering the institutional costs of education. Regarding research, remember that we saw in Section 8.4 how research actually loses money because facilities and administration costs are not fully recovered. This is especially true for medical schools because biomedical research support and compliance costs are among the highest across campus. We'll examine health science research funding in Section 11.4.

As with general university funding, the relative roles of revenue sources have changed over time for medical schools. Figure 11.5 illustrates the trends in relative shares of clinical revenues (also known as medical services), state and institutional funding, and tuition and fees since FY1977. Tuition and fees have stayed consistent around 4–5% of budget over the entire period, and other sources have stayed flat or decreased slightly in share over time (not illustrated; FY2018 values were 14% federal research, 13% other income, and 2% other federal revenue). However, clinical income

3 Note that medical schools offer not only medical degrees but also training programs required for physicians to be able to practice, i.e., residencies and fellowships. Confusingly, these latter programs are known as Graduate Medical Education (GME). GME is funded largely by the Federal government through Medicare with small amounts from states and hospitals. Federal GME funding has essentially been capped since the Balanced Budget Act of 1997, creating a bottleneck for residency slots.

rose from a 20–60% share of the budget over the last four decades. Because state funding stayed about the same over time in inflation-adjusted dollars, its relative share decreased from 30–5% of the total budget over the same period. Of course, the world of healthcare finance was completely different back then—Medicare and Medicaid started in the 1960s, and various successive forms of health insurance emerged over the decades too. Understanding the changes in the complex healthcare business would take a book of its own, but do recall that healthcare has many of the same underlying economic drivers of cost increases as higher education, as we saw in Section 3.7 and Box 3.1. Those costs are anticipated to grow faster than revenues in coming years, creating a vulnerability for medical schools that are dependent on clinical revenues and transfers from the other parts of the academic medical center (Guadagnolo 2018).

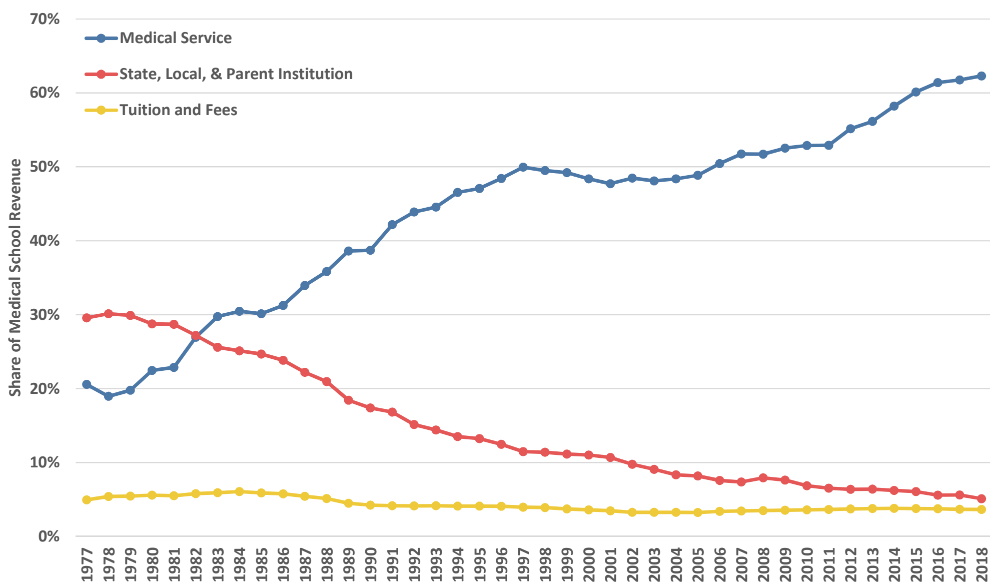

Figure 11.5. Trends in the shares of three revenue sources for US medical schools, FY1977 to FY2018. Source: AAMC (Association of American Medical Colleges 2019c).

11.3 How much are medical school faculty salaries?

Medical school professors are the highest compensated faculty members in the university, earning roughly three times more on average than their colleagues elsewhere on campus. Figure 11.6 illustrates total compensation by rank and medical specialty. Across all departments and specialties, assistant professors earn about $300,000 per year and full professors almost $400,000, while department chairs average $632,000. Across the departments, salaries in the basic medical sciences (i.e., those without a clinical component such as immunology, microbiology, and pharmacology) are the lowest, although they are comparable to some of the higher-earning disciplines in the arts and sciences. Surgery is the highest-compensated set of medical specialties, where instructors earn $300,000 to $400,000 annually and the average chair of surgery makes almost $1M per year. The other specialties cover a broad range in between. Assistant professors earn 70–90% of full professor compensation across most specialties, whereas in the basic medical sciences that figure is just over 50%, reflecting the absence of clinical revenues and the structure seen elsewhere in the university.

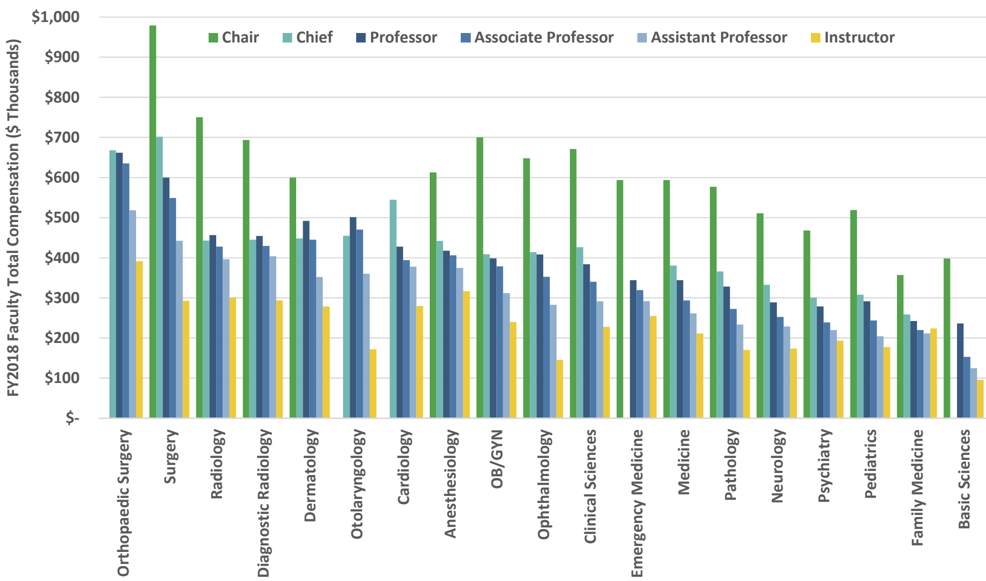

Figure 11.6. FY2018 total compensation averages for medical school faculty members (MD or equivalent) by rank and sorted by decreasing department/specialty average. Source: AAMC (Association of American Medical Colleges 2019a).

Why are medical school salaries so high? There are at least two factors at work: (i) as is true elsewhere in the university for fields that have a practice component with high market rates, such as computer science or accounting, that market drives the academic salaries higher; and (ii) medical professors are at the pinnacle of clinical care by virtue of their academic and technical expertise, thus they are the top earners in their profession overall (unlike computer science and accounting). If you are diagnosed with a hard-to-treat disease or you were in an awful accident, you will want to seek out the "top" medical expert in the necessary specialty—that doctor is in all likelihood a professor at a leading medical school. Likewise, many leading cancer centers, heart institutes, etc. are part of academic medical centers. Thus, the confluence of eminent technical expertise with elevated market rates, which in turn are enabled by the way the US healthcare system is set up, lead to the high compensation we see in US medical schools. In fact, at many of these universities, it's not unusual to have a dozen or more individuals in the medical school earning more than the university president.

Box 11.1. Relative Value Units (RVUs)

Clinical revenues are a key part of academic medicine. Medicare payments for medical services provided by physicians across the US are accounted for using a system that assigns relative value to each of more than 10,000 distinct services. Relative value units (RVUs) largely reflect the total time necessary to perform the service (before, during the service, and after) as well as skill, complexity, judgment, etc. So, for example, the RVU to remove a foreign body from an eye is 0.49 while it is 1.95 to repair a minor eye wound, meaning that the latter is four times the work of the former (AAPC 2020b). This is known as the work RVU and it is used with two others in the Medicare payment formula, practice expense (PE) RVUs and malpractice (MP) RVUs; the average shares of each across all payments are 51%, 45% and 4% respectively (AAPC 2020a). There are geographic practice cost indices (GPCI) used to weight each kind of RVU as well as distinctions based on the place of service (e.g., a physician's office versus a hospital). Medicare sets an annual per-RVU dollar conversion factor (CF), which has been close to $36 in recent years (AAPC 2020a), enabling the payment to be calculated as follows according to the US Centers for Medicare and Medicaid Services (2020):

$$Payment = [(RVU_{work} \times GPCI_{work}) + (RVU_{PE} \times GPCI_{PE}) + (RVU_{MP} \times GPCI_{MP})] \times CF$$

Using the minor eye wound repair example, for a physician in Arizona doing the procedure in her office in 2020, the numbers look like this:

$$Payment = [(1.95 \times 1.0) + (5.86 \times 0.961) + (0.13 \times 0.846)] \times \$36.0896 = \$277.58$$

In San Francisco, because of two higher GPCI values reflecting the higher expenses of the area (1.076, 1.327, and 0.44 respectively), the Medicare payment for the same service would be $358.43. If the procedure was done at a hospital, where the physician does not have to incur the overhead costs, then the physician payment amounts are $140.59 in Arizona and $169.26 in San Francisco because the practice expense RVU decreases from 5.86 to 1.91.

While this sort of calculation is far from a perfect representation of the work involved, it certainly beats its simplistic predecessors such as number of patients seen. Of course, because of their key connection to revenue generation, RVUs are extensively used to measure physician productivity. Ask almost any doctor about this and you'll hear plenty of criticism, including: it is imprecise because each case is different, no allowance is made for challenging cases, experienced physicians can handle complex cases more efficiently, the system can be manipulated, it incentivizes physicians to break procedures into parts, it doesn't include patient satisfaction, and much more.

In academic settings, the pressures to deliver on RVUs are in direct tension with, and exclude consideration of, research and teaching. While that tension cannot be fully removed, it can be minimized if administrators and faculty design clear workload expectations and implement effective multidimensional and holistic evaluations.

11.4 What is the mix of health science research funding?

We saw in Chapter 8 that support from the National Institutes of Health (NIH) provides more than half of all university research funding. NIH funds virtually all federal health sciences research and we also saw that it spends about three times more than NSF, which covers all the other sciences and engineering. In addition, we saw how NIH funding doubled in the early 2000s via a program of increased appropriations by Congress. But to which diseases and conditions does NIH funding go, and to which universities?

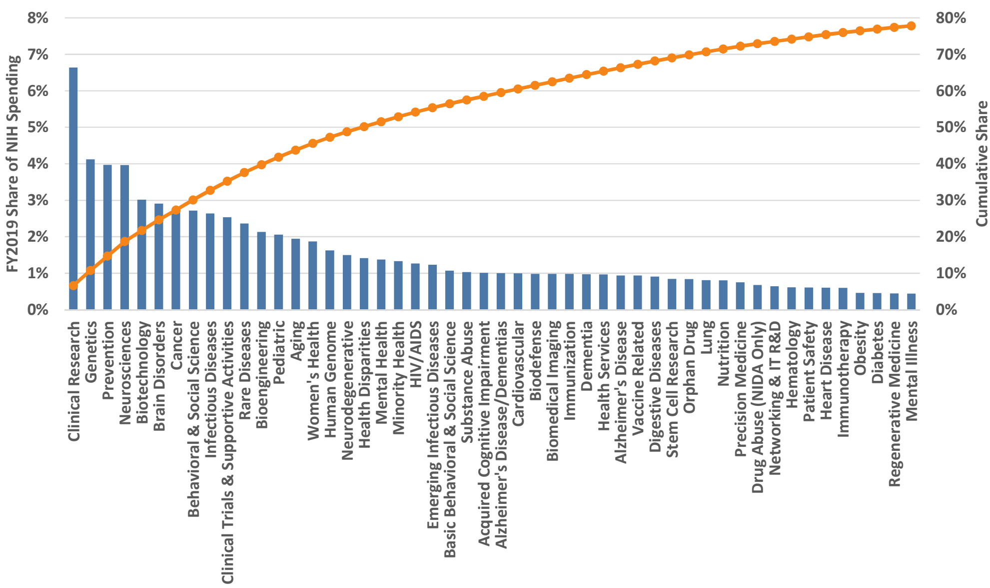

Figure 11.7. Share and cumulative share of FY2019 NIH spending on specific diseases and conditions for the top 50 of 292 categories. Source: NIH (National Institutes of Health 2020b).

As the plural in its name indicates, the NIH comprises over 20 major institutes and centers, organized largely around disease areas, through which most of its funding flows. Of the $39B total NIH budget in FY2019, more than 80% was awarded for extramural research. Over half the funding was awarded through just five institutes: the National Cancer Institute (16%); the National Institute of Allergy and Infectious Diseases (14%); the National Heart, Lung, and Blood Institute (9%); the National Institute on Aging (8%); and the National Institute of General Medical Sciences (7%).

While institute-level funding provides a broad sense of the fields supported, the NIH produces a list of how much is spent across almost 300 diseases and conditions. It specifically includes multiple counting of research projects because a particular project could be addressing several topics (e.g., the genetics of brain disorders in the elderly, which covers at least three areas). The top 50 funded categories are illustrated in Figure 11.7 and they provide a sense of the wide range of research funded by the NIH.

Clearly, many studies involve clinical research, a theme that is associated with $16B in research funding at 6.6% of the total. Among the higher-funded diseases, cancer, infectious diseases and rare diseases all receive similar levels of support at around 2.5% of the total (about $6B) annually. Half of the funding goes to the first 18 diseases, and three quarters to the first 45.

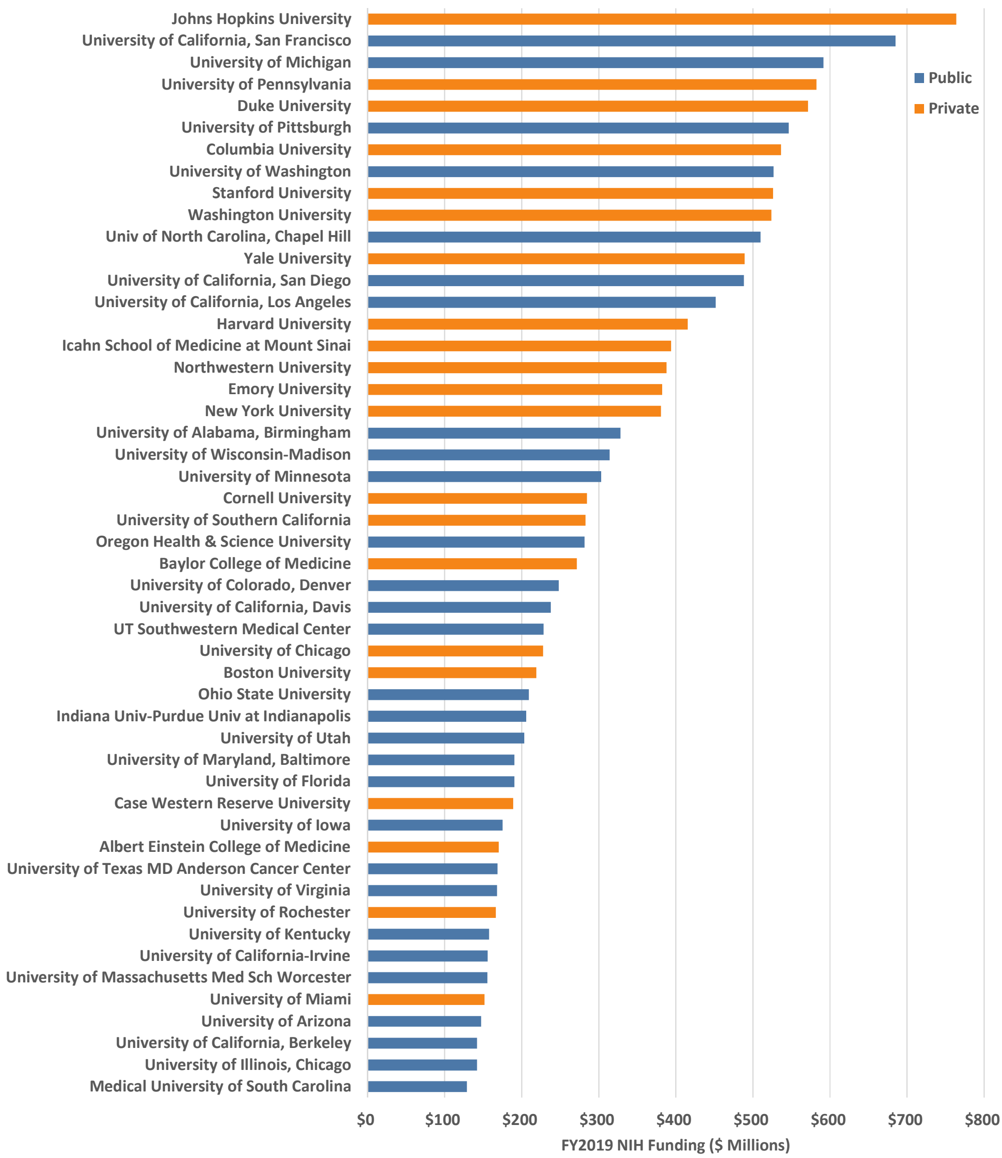

Figure 11.8. FY2019 NIH funding awarded to higher education institutions, for the top 50 of 516 listed institutions. Data for multiple units on the same campus have been combined. Source: NIH (National Institutes of Health 2020c).

Looking down the list, each university will naturally have its own strengths across the spectrum of health research, with the highest-funded institutions being active across multiple areas. Those universities are ranked in Figure 11.8, which shows the top 50 institutions nationally. The first 23 on the list win half of all higher education NIH funding. That group includes 10 public universities and 13 private ones, and in the top 50 there are 29 publics and 21 privates. The amount of NIH research funding awarded to all higher education institutions exceeded $22B in FY2019, accounting for over half of the $39B total (National Institutes of Health 2020a; 2020c). It is important to note that more than 500 US higher education institutions receive NIH funding although there are only about 150 medical schools. Thus, many institutions are awarded support across a wider set of biomedically-related sciences and social sciences than just the clinically-oriented and basic medical science departments found in a medical school. Of higher education institutions receiving NIH funding in FY2019, the average was $43M and the median was just $3.6M. Thus, while NIH research support is concentrated at high-profile institutions with medical schools and extensive biomedical programs, the effects of NIH funding extend far more widely than just those institutions with medical schools.

12. Athletics

12.1 How big is the business of college sports?

Lucrative contracts, high visibility, and college rivalries cause much to be said about how the money works across the variety of sports and types of schools involved in intercollegiate athletics.[1] The total athletics budget across all schools in our dataset[2] exceeded $18B in FY2018 (Office of Postsecondary Education 2020). That's about 4.2% of the $435B total non-hospital revenues for all of the nearly 1,200 institutions (IPEDS 2020). More interesting is that 57% of all athletics revenue is accounted for by just 124 of those institutions, the NCAA Football Bowl Subdivision (FBS) schools (see Box 12.1) with the highest-profile teams, celebrity coaches and rich sports media contracts (Office of Postsecondary Education 2020). Thus, it's unsurprising that these prominent sports programs garner the lion's share of headlines for game news and sports finances, especially in football and basketball. Some schools go so far as to privatize their athletics departments (Jarvis 2019), and some conferences may be looking to attract private equity investment (Bauer-Wolf 2019).

Let's digress briefly to address a common question up front: do college sports provide an overall financial win to universities? No, they do not. With the exception of extraordinarily few schools in Division I of the NCAA that can cover virtually all their athletics costs, plus one or two rare rags-to-riches stories, university and college athletics programs are subsidized via student fees and institutional funds as part of a financially unsustainable "arms race" for greater standing (Cheslock and Knight 2015). We'll delve into further details about athletics revenue sources, including subsidies, in Section 12.2.

Returning to the size of the athletics budget, Figure 12.1 illustrates the difference in revenues by type of institution (expenses essentially equal revenues, as they do elsewhere in the university). Apart from the obvious budget scaling by institution size, perhaps the most remarkable feature of these data is the anomaly of the R1 Private

1 The first intercollegiate sporting event was held in 1852, a four-mile rowing race known as the Harvard-Yale Regatta that marked the first of many US college sports rivalries and continues today.

2 IPEDS holds very little financial data on athletics programs, and several other data sets deal only with public institutions. Fortunately, the US Department of Education provides data from the Equity in Athletics Disclosure Act (EADA) that includes detailed information on the public and private institutions in our data set (Office of Postsecondary Education 2020).

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universities that, on average, spend far less on athletics ($47M) than their public counterparts ($89M). The "on average" aspect is important here, a direct consequence of the relatively few R1 Private universities participating in expensive top-tier football and basketball (see Box 12.1). If, instead of using the Carnegie classification, we stratify institutions by athletic subdivision (Figure 12.2), then the expected pattern emerges: FBS public schools have an average athletics budget of $80M while FBS private schools are at $92M. That 16% difference in public-private athletics budget in the FBS is relatively small compared to the more than 40% public-private difference in the rest of NCAA Division I and the Division II football schools. Remarkably, while the dollar amounts for public institutions are lower in NCAA Division III and still lower in the NAIA, private schools in the NAIA Division I spend three times more than their public counterparts, and twice as much in the NAIA Division II. For FBS institutions, the athletics department is roughly equivalent, budgetarily speaking, to a major academic college.

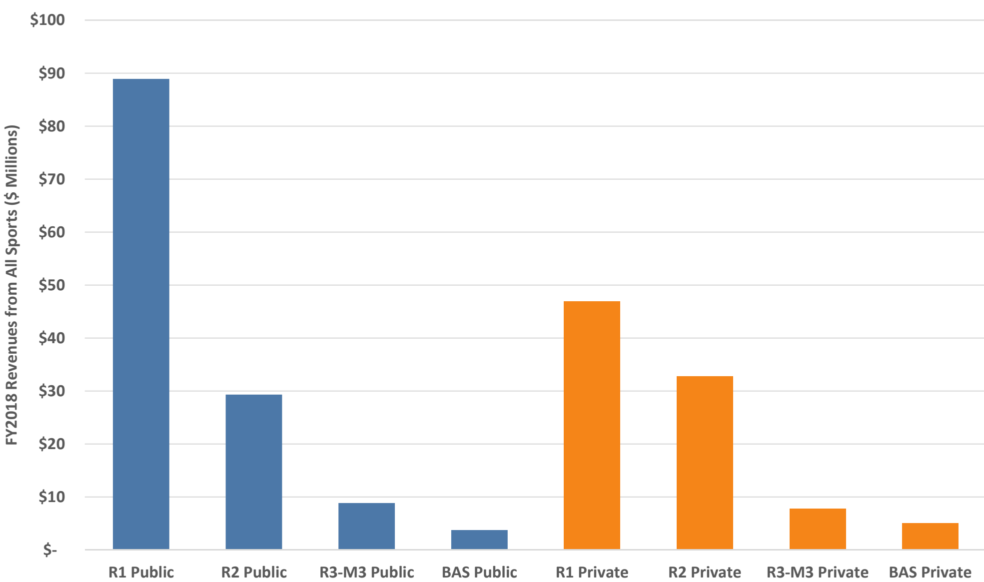

Figure 12.1. FY2018 total athletics revenues from all sports per institution, averaged by Carnegie classification and control. Source: EADA (Office of Postsecondary Education 2020).

What kind of investment in athletics are all these schools making relative to their overall institutional budgets? It turns out that it's about 5% of overall non-hospital revenue for most Carnegie classifications, with a few exceptions: a little over 7% at public baccalaureate colleges and the R3-M3 Private universities, and just 1.5% for R1 Private universities (Office of Postsecondary Education 2020) due to a combination of a low numerator (smaller average budget because of lower FBS participation, mentioned above) and a high denominator (large institutional budgets). When stratified by subdivision there are some stark differences, however, as seen in Figure 12.3. In the

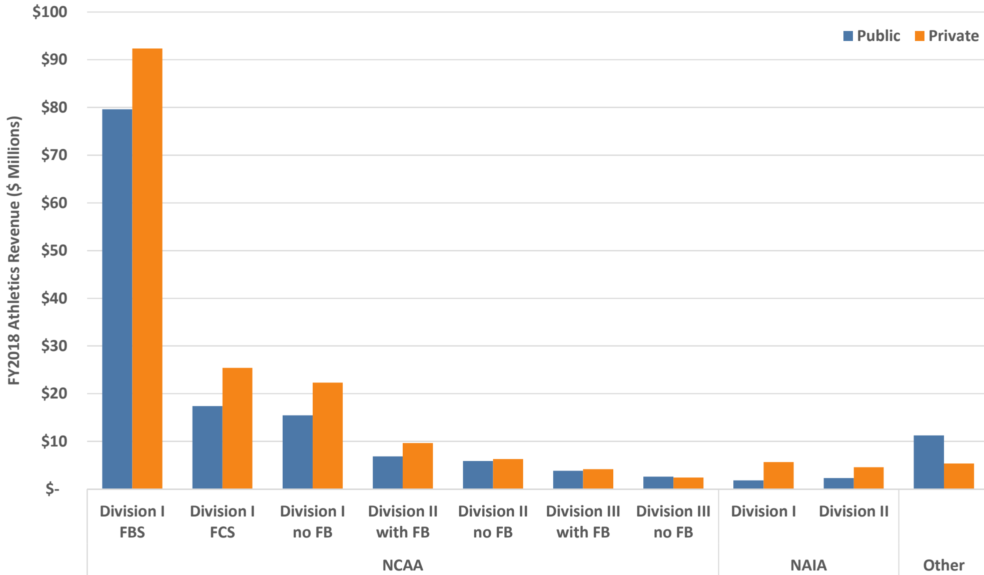

Figure 12.2. FY2018 total athletics revenues per institution averaged by athletic association, division, subdivision and control. Source: EADA (Office of Postsecondary Education 2020).

FBS, publics and privates aren't too different in relative share of the institutional budget for athletics, but in the FCS the publics run athletics budgets at twice the share of the privates. That arrangement is flipped for NCAA Division I non-football schools and all schools in NCAA Division II, where the privates run athletics budgets that are

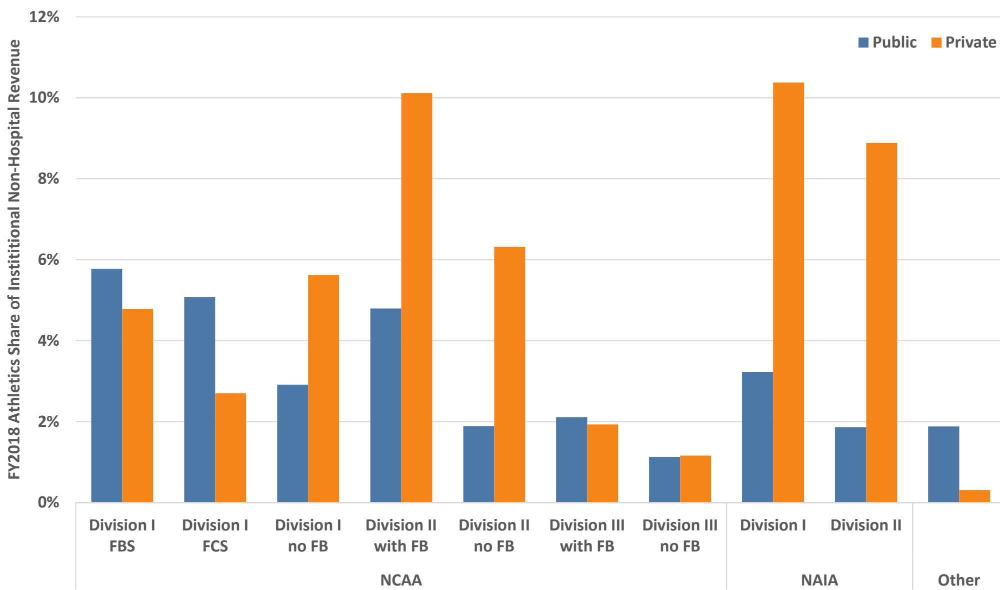

Figure 12.3. FY2018 total athletics revenue share of overall institutional non-hospital revenues by athletic association, division, subdivision and control. Source: EADA (Office of Postsecondary Education 2020).

two to three times the relative size of those at the publics. It's even more the case in both divisions of the NAIA with athletics budgets at the private schools being three to five times larger in a relative sense.

All the above data focus on revenues flowing to the universities, but there is a bit more money to account for in the overall enterprise of college sports: the funds going to support the associations and conferences themselves. The associations and the individual conferences are separately incorporated nonprofit organizations, which also means that they each file a Form 990 summarizing their annual revenues (Schwencke et al. 2020). For FY2018, the NCAA's budget was $1B, the budgets for the Power Five conferences ranged from $374M at the Big 12 to $759M at the Big Ten with the ACC, Pac-12[3] and SEC in between those, while the other conferences in Division I ranged between $28M and $78M. Not included here in the bigger college sports business are the media companies, logo wear manufacturers, etc. who pay the NCAA and its members but who also make a profit of their own.

Box 12.1. Athletic Associations, Divisions and Conferences

Here's a quick guide to the structure of intercollegiate athletics for readers who are not sports fans; to be precise, that's 44% of US adults who are not college football fans and 62% who are not college basketball fans (Jones 2017). Most institutions (95%) belong to one or more intercollegiate athletic associations (IPEDS 2020) that serve as the national sanctioning (i.e., quasi-regulatory) organizations. By far the largest and best-known is the National Collegiate Athletic Association (NCAA), although the National Association of Intercollegiate Athletics (NAIA) serves small colleges and universities, and there are others that serve community colleges, religious schools and some individual sports. It's worth noting the distinction between the selective nature of individuals and teams playing sanctioned sports versus the non-selective recreational and intramural club sports that any student can join; we are talking about the former here, those that are under a formal campus athletics department with a budget, coaches, facilities and, in the higher tiers, scholarships for designated student athletes.

The larger associations have hierarchical divisions and subdivisions, many of which are further divided into leagues known as conferences; these are the groups of ten to fifteen teams among which the regular-season games are played. Figure B.10 illustrates where the various types of schools in our data set belong by association, division and subdivision. We can see that the NCAA has three divisions, each including subdivisions for programs with football and without football (because having a football program skews the resources available to other sports). Division I of the NCAA, in addition to a non-football subdivision, has two subdivisions for football, the Football Bowl Subdivision (FBS) that includes the major (i.e., most well-resourced) football schools and the Football Championship Subdivision (FCS) that includes the other Division I schools

3 The Pac-12 has two entities, the Pac-12 conference and the Pac-12 Networks, that had respective FY2018 revenues of $370M and $127M for a consolidated total of $497M.

with football programs. The three NCAA Divisions are differentiated by regulations regarding number of sports fielded per school, the balance of teams for men and women, financial aid amounts and more. FBS schools have a higher scholarship requirement than FCS schools and they must average 15,000 people or more per home game.

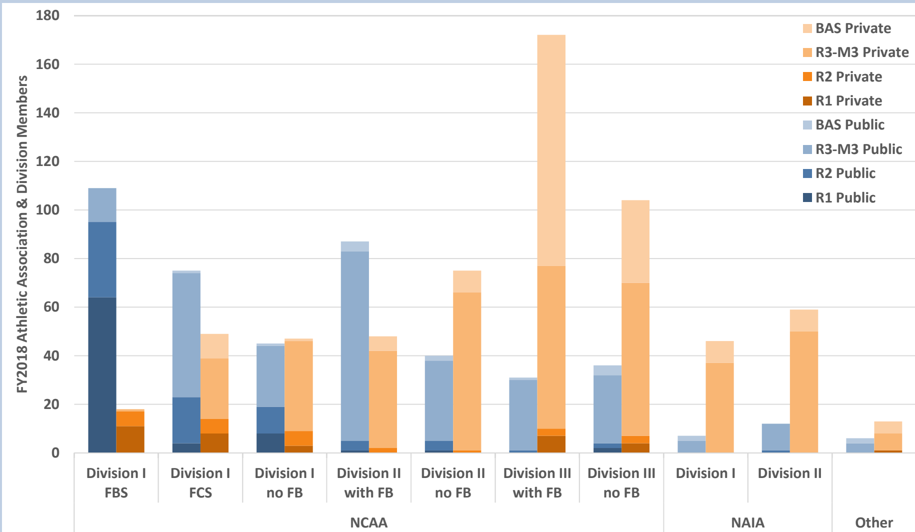

Figure B.10. Athletic association, division and subdivision membership in FY2018, by Carnegie classification and control. Source: EADA (Office of Postsecondary Education 2020).

In the NCAA the top divisions are dominated by public institutions whereas Division III has a preponderance of smaller private schools (Figure B.10). Most R1 publics are in the FBS while R1 privates are spread throughout all three divisions. The FBS is largely comprised of R1 and R2 schools with some R3-M3 schools as well.

Within the FBS are ten conferences, with conference membership differing slightly for football versus basketball, as seen in Figure B.11. The FBS conferences are the Atlantic Coast Conference (ACC), Big Ten Conference (Big Ten), Conference USA (CUSA), Southeastern Conference (SEC), Mid-American Conference (MAC), Pacific-12 Conference (Pac-12), Sun Belt Conference (S-Belt), Mountain West Conference (MWC), American Athletic Conference (AAC), Big Twelve Conference (Big 12). The one independent FBS school for football is Notre Dame (it's an ACC member in basketball).

The dominance of public schools in the FBS is especially striking (Figure B.11) with only 16 privates among the total of 124 in our data set (13%).* One would think that the available resources at R1 Private schools in particular would enable them to spend more on top-tier football and basketball programs, but clearly that is a path that many have chosen not to follow. No doubt the age-old tension between athletics and academics is a part of that dynamic, along with a differential need for name exposure, focusing on an elite academic reputation, and understanding that FBS participation requires what is typically a significant and sustained "loss-leader" investment.

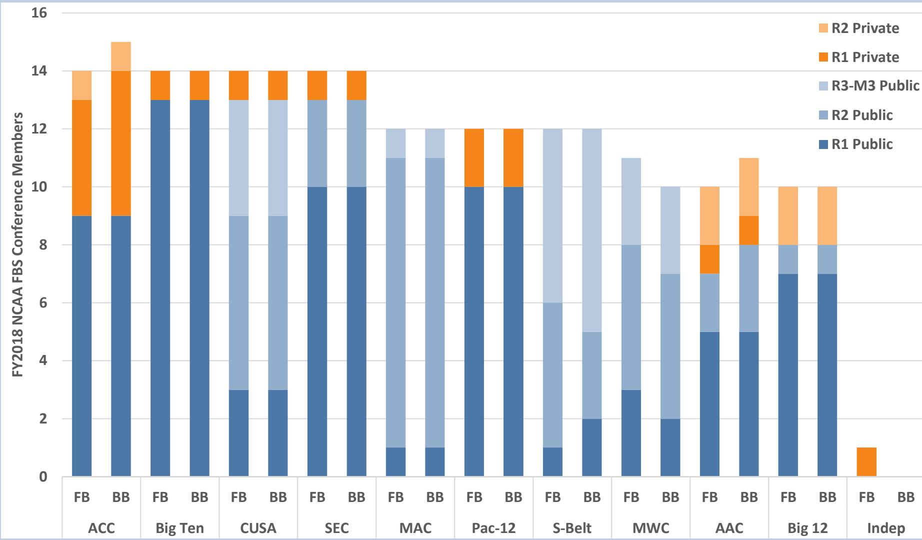

Figure B.11. NCAA Division I FBS conference membership for football (FB) and basketball (BB) in FY2018, by Carnegie classification and control. Source: IPEDS (2020).

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* The FBS additionally incorporates a half-dozen schools including teams from the three military academies that are not in our data set (Army, Navy, and Air Force) and some schools that have multiple conference memberships across different sports.

12.2 How important are subsidies and media revenues in athletics?

With the exception of the Power Five conferences, which the NCAA calls the FBS Autonomy conferences,[4] institutional funds and student fees contribute the majority of support for athletics programs in all divisions. Figure 12.4 shows that together they supply 70% of revenue even in the FCS, and about 90% in Divisions II and III. Philanthropic income is generally the other sizable source of revenue, about 5–13% in all but the Power Five. It's worth noting that this funding mix is not unlike many academic departments. As we expect, the Power Five revenue portfolio is quite different, dominated by NCAA and conference income from media rights and bowl games, followed by gifts and endowment income as well as ticket sales. Institutional support comprises only about 5% of income for this group, about half the amount from royalties, licensing and advertising.

4 The Power Five conferences are the ACC, Big Ten, Big 12, Pac-12 and SEC. The NCAA grants them autonomy to create their own rules to benefit athletes, which includes allocating more resources. The remaining (non-autonomous) FBS conferences are sometimes called the Group of Five.

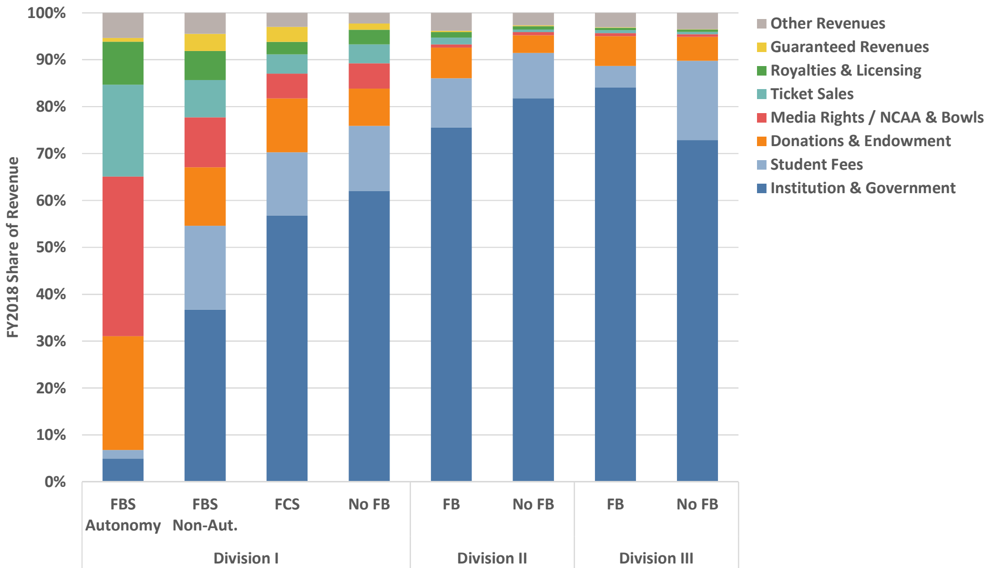

Figure 12.4. FY2018 athletics revenue sources as a share of total athletic revenues by NCAA subdivision. Source NCAA (2019a).

The divergence between the Power Five and the other subdivisions is even more striking when we consider that these percentages apply to the dollar amounts in Figure 12.2. The median FY2018 revenue at a Power Five school was $123M versus $41M at the other FBS schools, and about $22M at FCS and non-football schools across the rest of Division I (NCAA 2019a). For a sense of comparison, the median FY2018 income from media rights/NCAA alone at Power Five schools was about $42M, the same as the entire revenue of the other FBS schools and double the entire revenue of an FCS school (NCAA 2019a).

Thus, institutional subsidies are the most important source of support for athletics programs at most universities. In the FBS, especially the Power Five, the business model is entirely different and can only be sustained because of the income streams associated with the high profile of its football and basketball programs. Ironically, the institutional investments required to compete at a middling level place a higher relative financial burden on the university than they do for the richest and highest-performing FBS programs. The pressures to participate in the cycle of increasing investments to improve performance are significant, whether from athletics boosters, wealthy donors, board members, politicians, or local sports media, and they lead to widespread aspirational athletics budgeting across US higher education.

As we've seen, the size of the subsidy at most schools is sufficiently large that, if it was cut from athletics, it could indeed be diverted to help support academics, as has happened occasionally (Keller 2010; Sokol 2020). However, at top-tier programs, this logic applies only to the relatively small subsidy and not to the generated income.

I have heard resolute colleagues on my campus (a Power Five school) suggest that the entire athletics budget be diverted to academics—that's largely folly, of course, because most of the generated and gift revenue would evaporate without the high-profile teams.[5]

12.3 Is the number of student athletes increasing?

Before we move on to athletics spending, which is to say investments made ostensibly in the interests of student athletes (at least in part), it's worth knowing how many athletes there are by type of school and any underlying trends. The average number of student athletes (who are all undergraduates by definition) at R1 and R2 institutions is about 500 to 700, and about 400 at smaller institutions (Office of Postsecondary Education 2020). From those numbers alone, we can infer that the percentage of students who are athletes is significantly higher at smaller schools. While absolute numbers of student athletes have increased steadily at all types of institution in recent decades (the numerator), overall student enrollments (the denominator) have generally increased too with the exception of baccalaureate institutions (as we saw in Section 2.2).

These and other dynamics have led to interesting patterns in student athletes as a share of all undergraduates, illustrated in Figure 12.5 and Figure 12.6. Public universities have lower percentages of student athletes than private universities, and bigger universities have lower shares of student athletes than do medium and small institutions. Thus, at R1 Public universities, student athletes average just a few percent of the student body, while at private baccalaureate colleges, nearly 30% of the student body are athletes (Figure 12.5). The trends diverge by size: larger universities (R1 and R2, public and private) have decreased their shares of student athletes on campus largely due to overall enrollments growing faster than athletics team slots. Many of these schools have fielded a large set of sports for men and women for some time, so they are closer to an upper bound. In contrast, medium to small institutions have all increased their shares of student athletes on campus (since at least the early 2000s when data began). This latter trend is especially noticeable when viewed by association and division (Figure 12.6). The NCAA Division I schools have not seen an increase in the percentage of student athletes on campus, while NCAA Divisions II and III as well as both divisions of the NAIA have seen higher percentages of student athletes. The growth is particularly pronounced in the NAIA where that share has virtually doubled in several categories. A recent study of athletics at small colleges that compete predominantly in lower division sports found that certain sports (e.g., women's golf, women's and men's lacrosse) have grown rapidly, and that while women's sports have grown faster than men's, the number of men's sports and participants have each

5 Athletics subsidies contribute to the historic tension between academic and athletic priorities. For the record, despite an admission advantage (Malekoff 2005) and lower GPAs (Rampell 2010), graduation rates for athletes are higher than for the broader student body (NCAA 2019b).

increased too (Hearn et al. 2018). The authors make the case that expanding into desirable sports and growing the percentage of student athletes can expand appeal to prospective students, creating a potentially astute enrollment strategy for certain small colleges.

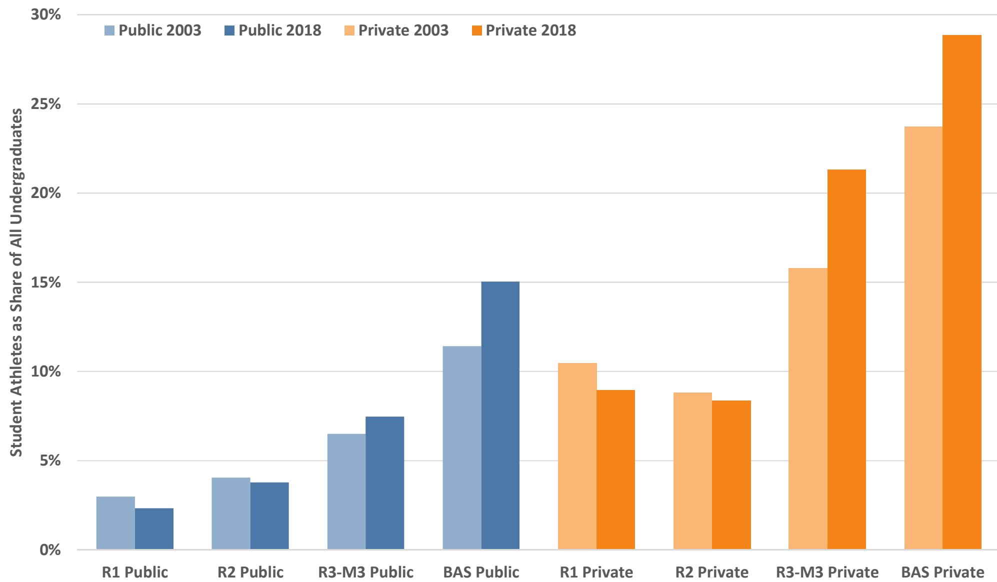

Figure 12.5. FY2003 and FY2018 student athletes as a share of all undergraduates by Carnegie classification and control. Source: EADA (Office of Postsecondary Education 2020).

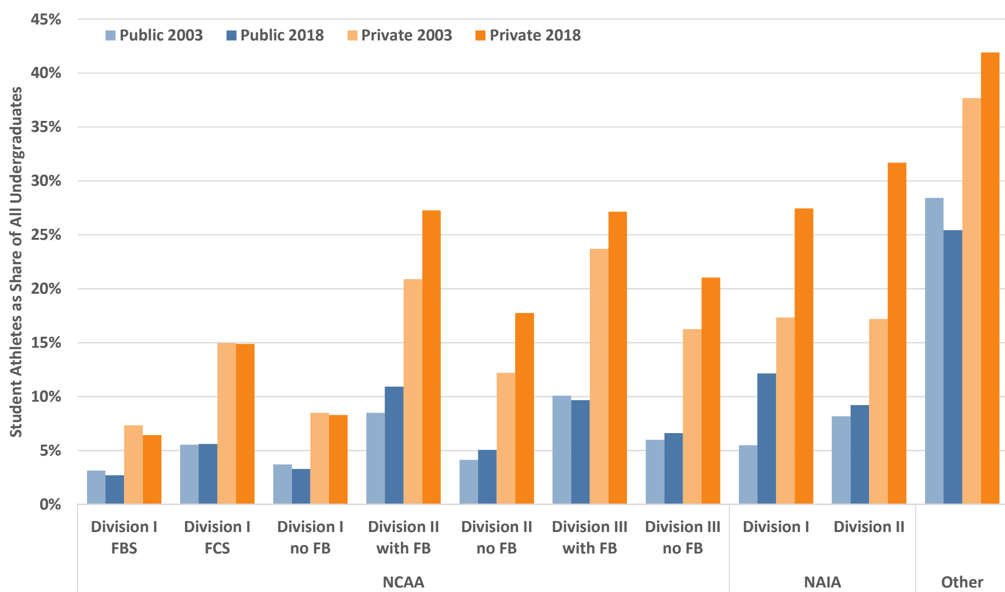

Figure 12.6. FY2003 and FY2018 student athletes as a share of all undergraduates by athletic association, division, subdivision and control. Source: EADA (Office of Postsecondary Education 2020).

12.4 What are the trends in athletics spending and where does the money go?

Athletics expenditures at most types of schools are virtually the same as the revenues shown in Section 12.1, except that FBS schools average several million dollars (a few percent) less in annual expenditures. That margin may be used for reinvestment, carried forward to the next year, or (rarely) returned to the university. Whether it is truly a profit (in everyday terms; recall from Section 3.9 that technically it's a margin in the nonprofit setting) depends on all costs being fully accounted—student financial aid is sometimes overlooked as a cost to the institution, as are regular facilities maintenance expenses. In general, though, total athletics expenditures look much like total revenues.

Because universities field different numbers of sports and various sized teams, athletics expenditures can be usefully scaled and compared as expenditures per athlete, much like university spending per student. Athletics expenditure levels are illustrated in Figure 12.7, including inflation-adjusted changes from FY2003 to FY2018 (the trends between those years are approximately linear in most cases). The amounts per subdivision generally scale as expected, with FY2018 expenditures per student well over six figures at FBS institutions[6] and over $40,000 in the rest of NCAA Division I. Curiously, among the latter, the FCS programs spend slightly less than the non-football subdivision programs, perhaps because the large size of football squads increases the denominator relative to other sports. All lower divisions spend under $20,000 per athlete.

The real story in Figure 12.7 is the growth. Almost all divisions have grown per-athlete expenditures by half over those sixteen years, with the FBS and NAIA Division II closer to double. In annualized growth terms, all divisions have expanded at least 2% above the rate of inflation with several above 3% and the same couple closer to 4%. These patterns highlight the expansion of athletics on a financial and a per capita basis at two to four times the analogous rate for university-wide expenditures (see Section 3.4). When FY2020 data become available, they are likely to show the dramatic effects of COVID-19 on athletics finances, nowhere more so than in the FBS: virtually no ticket revenue, canceled games and seasons, layoffs and furloughs, program cuts, and even elimination of smaller sports at some institutions (Uhler 2020).

While the size of athletics expenditures varies across subdivisions, in a relative sense the money goes to a consistent set of expenses more-or-less across the board. Figure 12.8 shows athletics expense categories as a share of total expenditures for the NCAA. Athletic scholarship aid is the only category with substantial differences across the subdivisions: in Division I it ranges from 13% of the total at FBS autonomy

6 In FY2018, FBS schools per-athlete spending averaged almost $300,000 in basketball and almost $200,000 in football. The other FBS sports averaged about $50,000 per athlete and ranged between $10,000 (Sailing) and $120,000 (Ice Hockey) per athlete (Office of Postsecondary Education 2020).

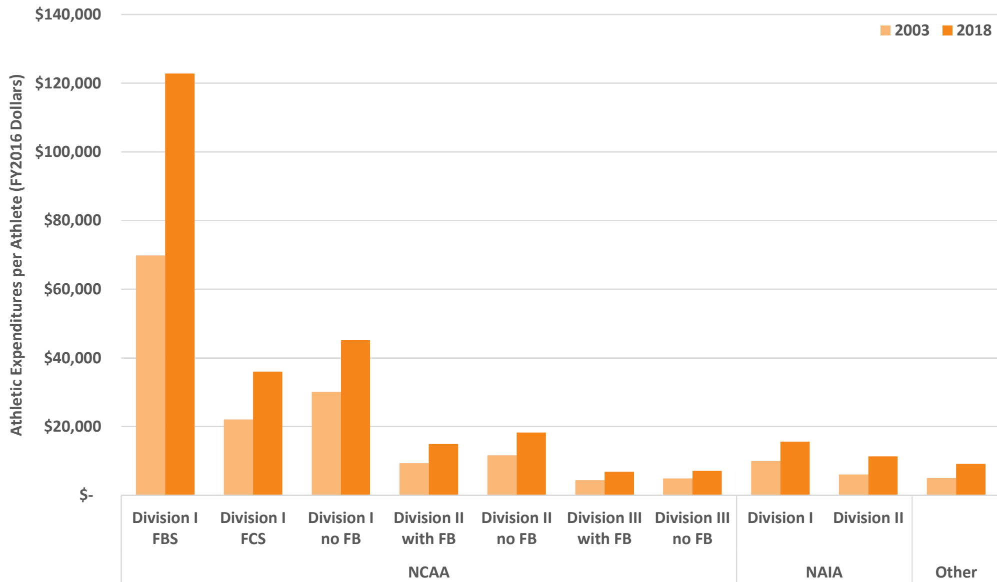

Figure 12.7. FY2003 and FY2018 total institutional athletics expenditures per student athlete averaged by athletic association, division, and subdivision. Source: EADA (Office of Postsecondary Education 2020).

(Power Five) schools to a bit under 30% for the FCS and non-football subdivisions; in Division II, aid is about one third of the budget; and, in Division III there is virtually no aid by stipulation. If we omit financial aid then all NCAA subdivisions spend

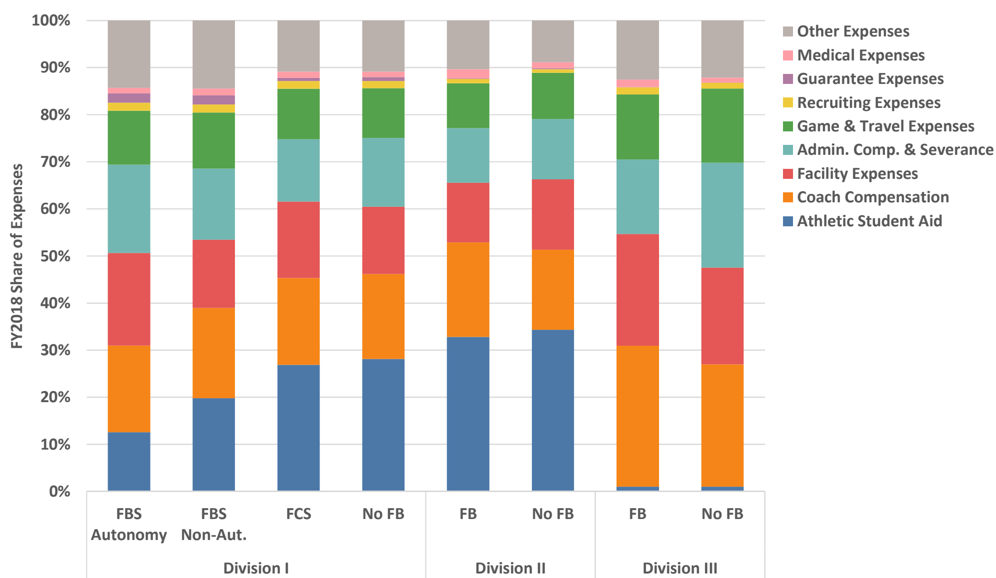

Figure 12.8. FY2018 athletics expense categories as a share of total athletic expenses by NCAA subdivision. Source NCAA (2019a).

their funds in a remarkably similar pattern (much as we see in Division III), over one quarter on coaches (see Section 12.6 below), about 20% each on facilities costs and on administrative compensation and severance packages, about 15% on game and travel expenses, and the remainder on all other costs. Clearly, other than the student aid component, it takes much the same mix of activities and resources to run an athletics department no matter if its teams are regularly on national television or competing in the lower divisions.

12.5 Which sports make or lose money?

The so-called "revenue sports" are football and men's basketball in the NCAA Division I FBS. Only these two sports in that subdivision (and largely only those in the Power Five conferences) are able to attract enough television viewers and ticket-buying fans to create clear net revenue margins when averaged across the division. And when we look closely at net revenues, as we'll do below, we'll see that it's really about football—perhaps surprisingly, basketball comes in a distant second on average. Those margins cross-subsidize all the other intercollegiate sports at the institution that are typically also competing heavily in Division I. Note that these two sports are not necessarily net revenue positive at all schools in the division, and likewise some other sports that are non-revenue positive on average across the division can be revenue sports at certain schools (e.g., ice hockey).

It bears repeating that, as we saw in Section 12.2, institutional subsidies and student fees account for half to 90% of the athletics budget from the FCS on down through the lower divisions. Therefore, those athletics programs all "lose" money in an overall sense. Of course, within their own (subsidized) budgets they generally balance total revenue with expenses as any other unit would. We'll focus on the FBS in this section because it is where the generated net revenues are.

It is instructive to see the revenue and expenditure amounts for each sport, illustrated in Figure 12.9. We see that FBS football budgets are two to three times larger than basketball budgets, and basketball budgets are about ten times the size of any other sport. The effects of media revenues and ticket sales on football and basketball finances are thus dramatic. Furthermore, football is a men's-only sport and over 80% of FBS basketball revenues are earned by the men's team rather than the women's team—about two thirds of the expenses are incurred by the men's team (Office of Postsecondary Education 2020). As much as Title IX has led to greater gender parity in college sports, popular sports culture and fan preferences lag far behind, leading to the financial dominance of these two sports within FBS athletics programs. The net revenues make this plain: about \$14M from football, \$1M from basketball, and net losses of \$0.5M or more in each of the other sports. Football clearly supplies the lion's share of net revenues and it is remarkable that basketball net revenues are so low, especially given the sport's high visibility and the comparative size of basketball budgets.

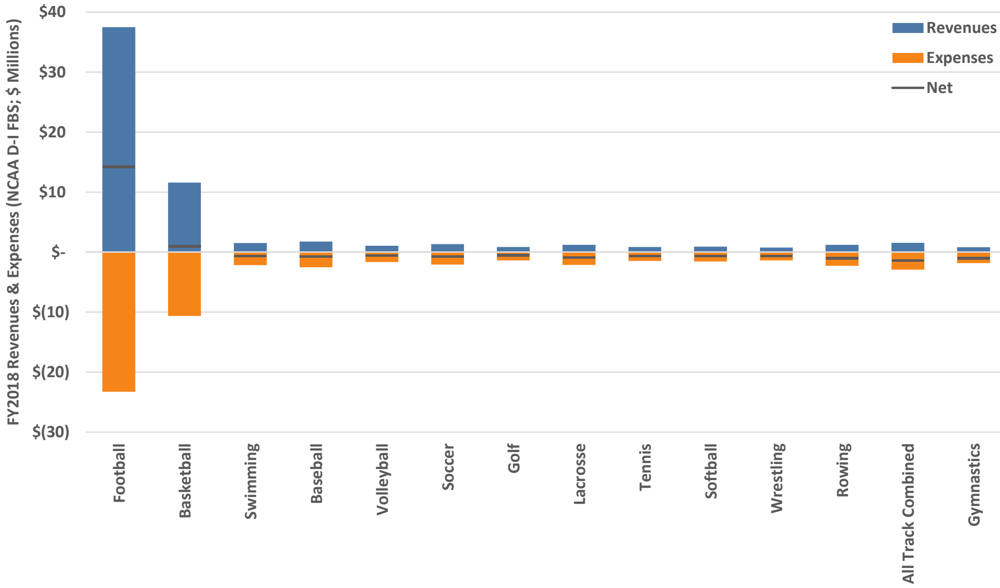

Figure 12.9. FY2018 revenues, expenses and net revenue/loss by sport for all sports with over 1,000 participants in the NCAA Division I FBS. Source: EADA (Office of Postsecondary Education 2020).

While the absolute dollar amounts provide a clear sense of scale across the various sports, it is also enlightening to examine them in relative terms. Figure 12.10 shows net revenue (revenue minus expenditure) for each sport expressed as a share of the

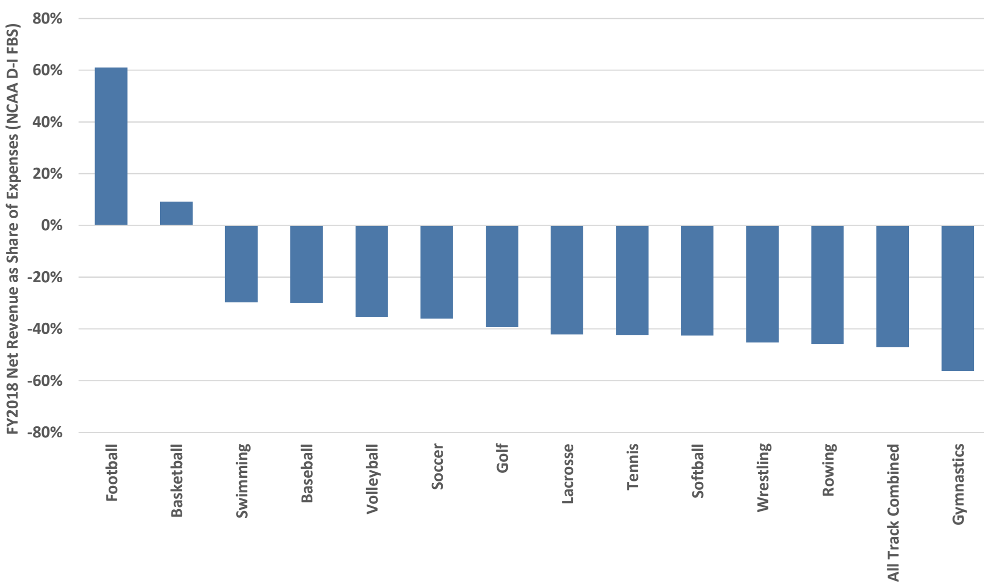

Figure 12.10. FY2018 net revenue/loss as a share of expenses by sport for all sports with over 1,000 participants in the NCAA Division I FBS. Source: EADA (Office of Postsecondary Education 2020).

spending in that sport, thus providing a relative index of net gain or loss by sport. FBS football produces a margin that is 60% more than its expenses, while basketball margins are less than 10% beyond expenses. Looking at Figure 12.10 we can see the relative gain/loss profile of sports across FBS schools quite plainly: many have net losses that require as much as half of their expenditures to be cross-subsidized, and as we've just seen, almost all of that comes from football.

12.6 Do all head coaches earn millions?

Outside of the NCAA Division I, which is to say at the majority of institutions, head coach salaries across all sports are unexceptional, averaging $45,000 (NAIA Division II) to $69,000 (NCAA Division II with football) in FY2018 (Office of Postsecondary Education 2020). Headline-grabbing seven-figure head coach salaries are largely a feature of NCAA Division I FBS football and basketball, especially in the Power Five conferences. Figure 12.11 illustrates overall head coach compensation for the revenue sports in the Power Five. At these eye-watering levels, football head coaches average $5M annually in the SEC and "only" $3M in the PAC-12. Those earnings are 25–65% higher than the men's basketball head coaches that average just over $2M in the PAC-12 and near $3M in the other conferences. Base institutional salaries generally account for over 90% of the total pay, with 3–9% in bonuses and up to 6% from non-university athletically-related compensation (e.g., endorsements, consulting with apparel and equipment manufacturers, guest speaking, sports camps). These coaches are usually the highest compensated individuals at their institutions, earning more than the president and the rock-star surgeons. For some observers these numbers are obscene and for others they are the reality of the market, but all can agree that they are quite extraordinary.[7]

What about trends in head coach salaries? Figure 12.12 shows inflation-adjusted head coach salaries averaged for all sports by division since FY2003. FBS head coach salaries have risen dramatically, more than doubling over this period at an annualized rate of 5% above the rate of inflation. No doubt the football and basketball coaches' compensation affect the average—major football coach salaries rose 9% from FY2018 to FY2019 (Lederman 2019)—but non-revenue coaches at Power Five schools have seen steep raises too (Berkowitz et al. 2019). FCS head coaches earn about the same in real terms now as they did in 2003, while head coaches in the non-football subdivision of NCAA Division I have grown at an annualized rate of 1.6% above inflation since then. Outside of NCAA Division I, head coach salaries have remained flat for over a decade—those coaches, who comprise the majority of head coaches nationally, are

7 The contrast between the sky-high coaches' salaries, athletics revenues, and the prohibition against student-athlete compensation has for years created rising pressure on the NCAA to permit athletes to profit from their name, image and likeness, a decision that it recently approved (Anderson 2020a). The highest-rated football recruits in the FBS generate $650,000 for their programs annually (Anderson 2020b). A recent study estimated that in the Power Five conferences, assuming wage structures from professional sports and a 50% share of revenue, that a starting quarterback should earn $2.4M annually, a wide receiver $1.3M, with the lowest-paid backups still earning over $100,000 annually (Garthwaite et al. 2020).

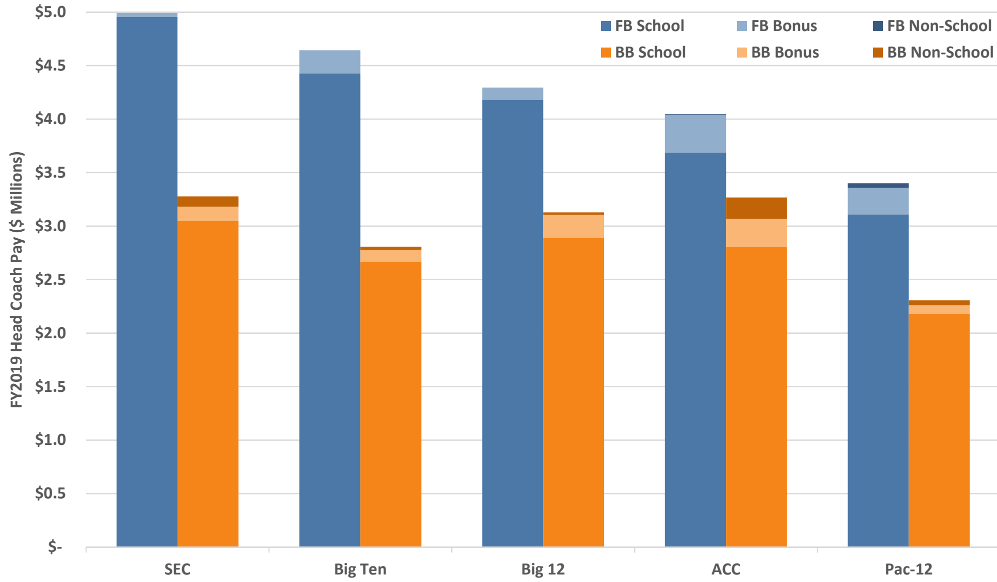

Figure 12.11. FY2019 football and men's basketball head coach pay for the NCAA Division I FBS Power Five conferences, including base institutional salary, bonuses paid and athletically related compensation from non-university sources. Source: USA Today (2020a; 2020b).

making relatively less today in real terms than they did in the early 2000s. As in other aspects of college athletics finances, in head coach compensation amounts and trends the contrasts between the top-tier and the rest are as conspicuous as ever.

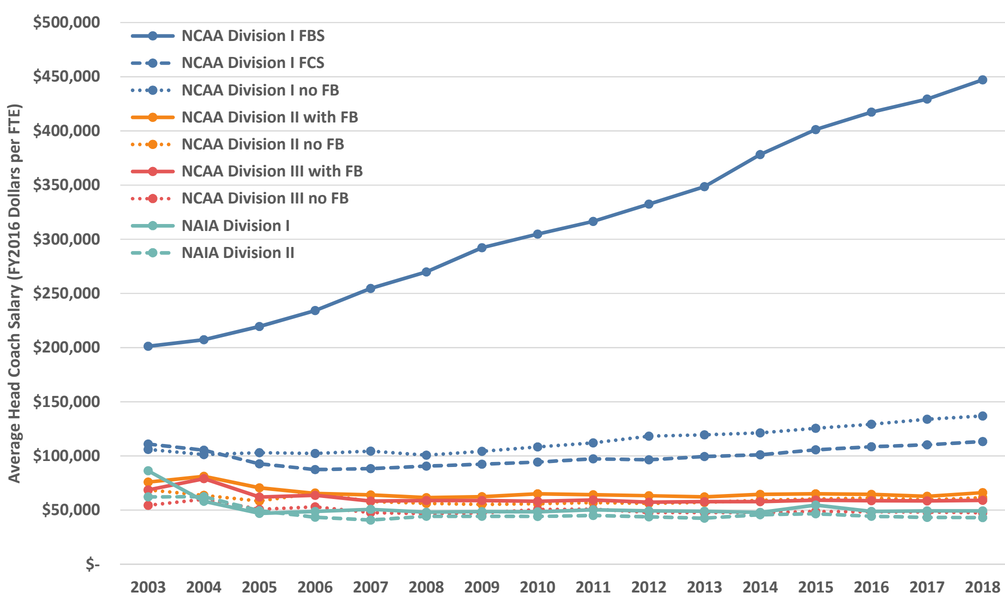

Figure 12.12. Trends in inflation-adjusted average institutional head coach salary across all sports by athletic association, division, and subdivision. Source: EADA (Office of Postsecondary Education 2020).

12.7 Does athletic success benefit the university's bottom line?

It happened on a windy and rainy Miami afternoon in 1984, the Friday after Thanksgiving, at the end of a nationally-televised football game between Boston College and defending national champions, the University of Miami. An improbable Hail Mary pass in the final second of the game by Doug Flutie,[8] the Boston College quarterback, led to a classic victory and ensured that this now-legendary moment became enshrined in the annals of college sports. For two years following the win, Boston College experienced a rise in applications that many attributed to the school's high-exposure success on the field. The post-game increase was alliteratively dubbed the Flutie Factor, or Flutie Effect. Ever since then, because most football seasons and virtually every basketball tournament produce compelling underdog stories,[9] anecdotes surface regularly about the Flutie Factor working for other schools (Nowicki 2014; Wikipedia 2020).

The claimed benefits of this supposed phenomenon have broadened over the years to include not only the quantity of applications but also their quality, reputational rankings, merchandise sales, publicity value, philanthropic gifts, attendance growth, licensing royalties, and state appropriations as well as less tangible benefits including name recognition and institutional prominence. While increased game attendance, team merchandise sales and licensing royalties are unsurprising following high-profile athletic success, they benefit primarily the athletic department.

What about the more fundamental assertion embodied in the Flutie Factor, that athletics success benefits the wider university? It turns out that unequivocal answers to that question were elusive for many years, with studies of varying scope and sophistication producing mixed and even contradictory results. The two most comprehensive and econometrically advanced studies are both recent: a paper by Anderson (2017) and an article by Baumer and Zimbalist (2019). The latter authors provide an expert review of the literature covering 25 studies; those findings, the results of their own analyses, and two further recent papers (Eggers et al. 2019; D.R. Smith 2019), for a total of 28 altogether, are the basis for the relationships depicted in Figure 12.13. Nearly all of the studies focus on NCAA Division I, some more narrowly on the FBS, and the majority cover football although some incorporate men's basketball; 16 of

8 After winning the Heisman Trophy and becoming the first to break the 10,000 yards passing barrier in a college career, Flutie went on to play professional football. He retired from the game in 2006 and became a sports broadcaster. Of the many articles on what became known as the Hail Flutie game, one of the most evocative was written for its 30th anniversary by Mark Brown (2014); it includes the obligatory video clip and many others in a lively summary of the game.

9 One of the most notable Cinderella stories is the rise of Gonzaga, a previously obscure small college in Spokane, Washington, that was in serious enrollment and financial decline during the 1990s. After bursting to prominence in the Elite Eight round of the 1999 NCAA Men's basketball tournament, a series of major athletics gifts and continued strong performance vaulted the school's national exposure and led to documented increases in enrollments and academic quality of applicants (O'Neil 2017).

the studies focus on applicant quantity and quality, 11 on philanthropic giving, and 4 on state appropriations.

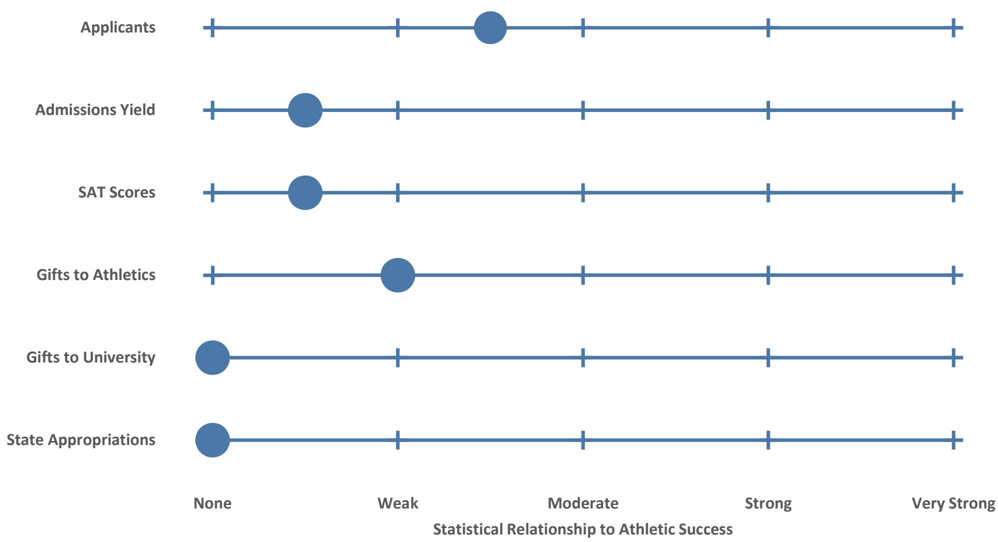

Figure 12.13. Summary of the strength of statistical relationships between athletic success and hypothesized benefits, based on review of 28 scholarly articles. See text for details.

None of the relationships are strong, and those with any effect favor football over basketball. The statistical link between athletic success and number of subsequent applicants is weak to moderate at best, with the size of the increase being just 0.5–1% in the most comprehensive studies and lasting one to three years; when studied, the additional applicants tended to be less academically prepared and originated in-state. That likely explains why the observed effect on admissions yield is extremely weak statistically and any effect is small (about 0.5%). The relationship between athletic success and a school's SAT scores is likewise exceedingly weak, with an essentially meaningless impact of 0 to 8 points (a fraction of a percent). None of these applicant quantity or quality metrics has a direct financial benefit, and many schools have fixed incoming classes, but it could be argued that improvements in yield might make the institution slightly more selective and thus able to charge higher tuition.

Figure 12.13 also illustrates several metrics that are explicitly financial: gifts to the athletics program, gifts to the university excluding athletics, and state appropriations. Analyses of giving are plagued by incomplete data, but there may be a weak statistical link to athletic giving, with an impact of several hundred thousand dollars (perhaps 5–10%). There is no robust link between athletic success and broader university giving, nor is there a relationship to legislative appropriations to public institutions.

Overall, under expert scrutiny, it appears that the Flutie Factor is often exaggerated, and the limited effects found in the most thorough studies are small when they exist at all. Interestingly, the attribution of the enrollment bump at Boston College to the Flutie Factor was later discounted and was instead explained by a set of campus investments and enrollment growth in the years before and after Flutie's eponymous pass (McDonald 2003). Despite the lackluster evidence, it's a testament to the power of a great story that advocates and commentators continue to mention the Flutie Factor when discussions turn to the benefits of college athletics for the rest of campus.

13. Fundraising

13.1 How much do universities raise in gifts?

Philanthropic giving to universities is an essential part of their business model. This has always been true for private universities, and for most public institutions it has become increasingly true over the last several decades. Of course, the relative role of gifts and endowment income is far greater at the privates than the publics, as we saw back in Sections 2.4 and 2.5; combined, they account for 5–10% of the budget at public institutions and 20–40% of the budget at privates. Thus, it shouldn't surprise us that education is the second largest charitable cause at 14% of all giving, second only to religion at 29%, and ahead of giving to human services and health at 13% and 9% respectively (Giving USA 2020).

The levels of giving to different types of institutions are illustrated in Figure 13.1, split into deciles to show the huge range of giving within each type of institution. Gift totals clearly scale with school size and as I just noted, size-for-size, private institutions

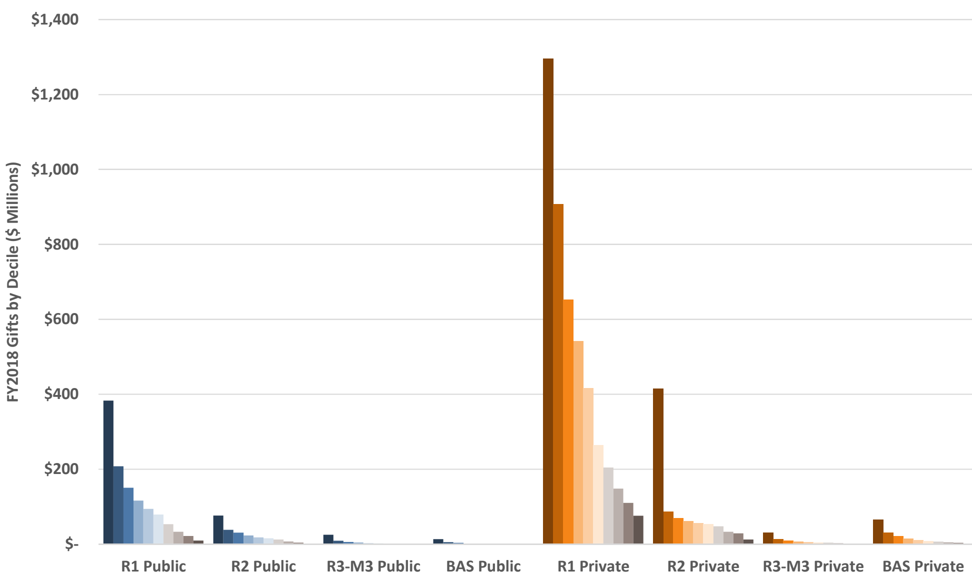

Figure 13.1. FY2018 gifts averaged per decile by Carnegie classification and control. Source: IPEDS (2020).

 https://doi.org/10.11647/OBP.0240.13

attract more than public ones. The sheer dollar amounts raised are astonishing—in FY2018 the top 10% of R1 publics attracted over $380M in new gifts, while the top decile of R1 privates raised nearly $1.3B, over three times more—and these averages are per-institution and they raise these amounts anew every year. The stark disparity in gift income within each type of school is even more dramatic. The bottom 10% of R1 publics attracted about $10M in new gifts in FY2018, while the bottom decile of R1 privates raised "only" $76M dollars. Across all types of institution, the lowest decile raises from 0.1–3% of the highest decile.

Gift amounts per student afford a more consistent comparison across institution types, and in Figure 13.2 we can see that FY2018 gifts per student at the publics amounted to no more than a few thousand dollars at most publics and under $10,000 in the topmost decile of each institution type. At the privates, the profile of R3-M3 privates, the lowest type, is similar to the R1 publics with all but the top decile under $5,000 per student in new gifts, while at the other privates the schools in the upper deciles raise many tens of thousands of dollars per student annually, peaking at more than $70,000 at the top 10% of R1 private universities. Private baccalaureate colleges stand out as receiving the second highest level of overall gift support per student. It's worth noting that R1 universities attract sizable gifts for research and athletics beyond the mix at other institutions, which increases their general and per-student gift totals. Also, a reminder that we are looking just at new giving here and that endowment income is a separate but equally important source of philanthropically-derived support (endowments are covered in Sections 13.3 and 13.4).

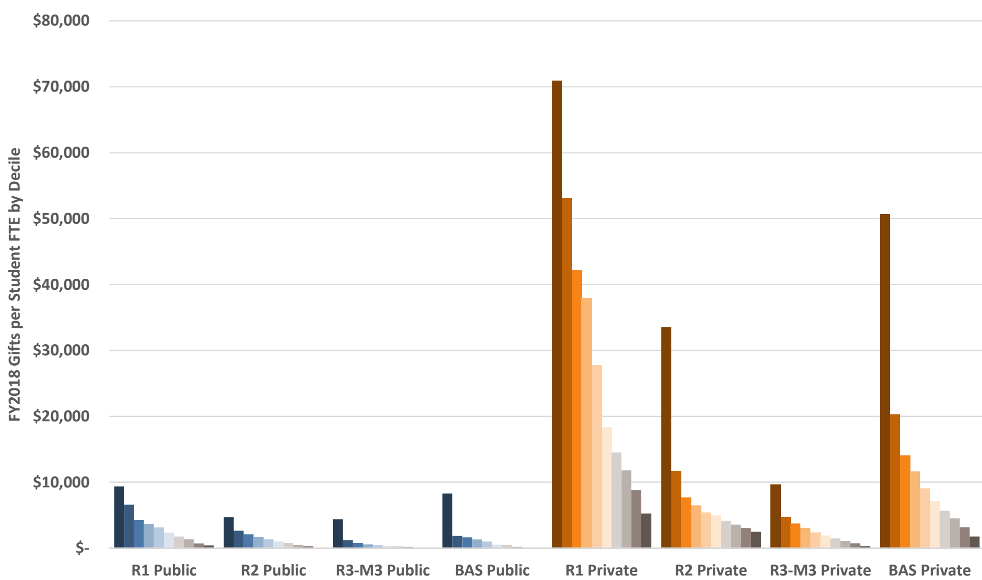

Figure 13.2. FY2018 gifts per full-time equivalent student averaged per decile by Carnegie classification and control. Source: IPEDS (2020).

Giving has tripled over the last three decades at most types of university, the exceptions being the two smallest types of private school (R3-M3 universities and baccalaureate colleges) as shown in Figure 13.3. The latter saw some growth in gift support during the late 1990s but their inflation-adjusted trends have otherwise been flat. Considering that the R3-M3 private schools have experienced slight enrollment growth over this period, their per-student gift support has actually declined by almost 40% (not shown) since its peak in 2000. The reason that we don't see a similar pattern in the smaller publics, which have seen analogous enrollment patterns, is that virtually all publics initiated or expanded their development programs during this time. Many public institutions were starting from low levels of fundraising activity relative to the privates that already had active giving programs, and the publics thus had plenty of opportunity to grow (although their received gift totals are still substantially less than at the privates, as we saw above). Fundraising programs are still growing throughout the medium and small publics and it's not yet clear when they will encounter similar limitations to further growth seen at the smaller privates. Still, at some point, they must because there is only so much giving capacity available for institutions with lower numbers of alumni and limited geographical spheres of influence.

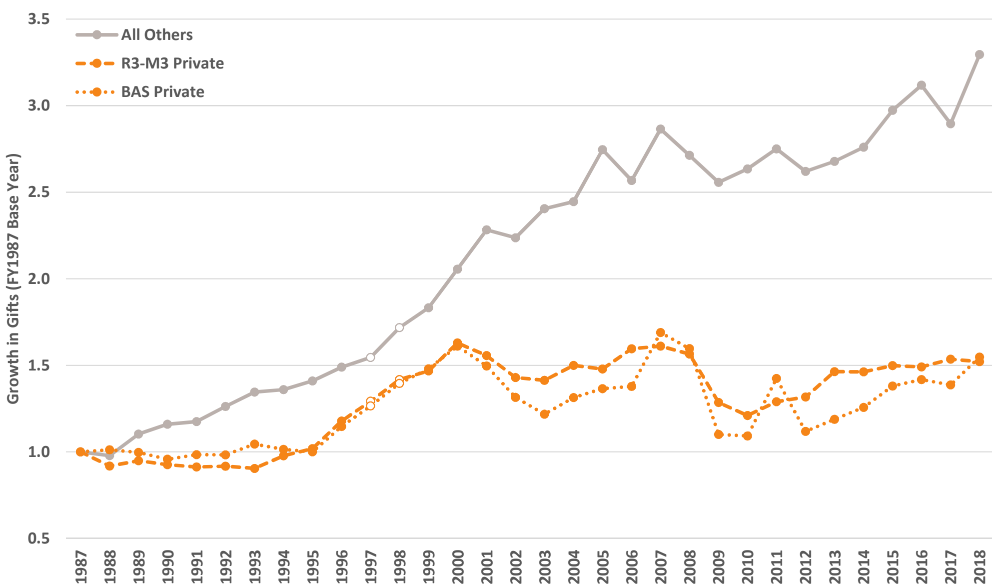

Figure 13.3. Growth in inflation-adjusted total gifts averaged for the two smallest Carnegie classifications of private institution and for all other public and private institution types, by fiscal year. Values for 1997 and 1998 at private institutions are interpolated at the average rate of neighboring years; the average for other institutions is weighted by the number in each type. Source: IPEDS (2020).

13.2 Who is giving, and what are they supporting?

The mix of individuals and groups giving to higher education has shifted in recent decades, reflecting the changing face of philanthropy. Alumni have always been and will always be an important donor group, precisely because alumni have personal ties and emotional connections to their alma mater. As we can see in Figure 13.4, alumni donations are consistently among the top sources of giving to universities and colleges, although the preeminence of alumni giving changed after 2001 as philanthropic foundations took the top spot, part of the latter's multi-decade increase in importance. At about the same time, and similarly to alumni giving, inflation-adjusted giving by non-alumni individuals and by corporations also flattened. The absolute and relative roles of giving by religious organizations has decreased consistently since the 1960s, to the point where those contributions have become sufficiently small to be included with other organizations since 2014. However, this is not the reason for the increase in giving by other organizations, which instead reflects an underlying change in the nature of philanthropy that is closely connected to the increase in importance of foundation giving.

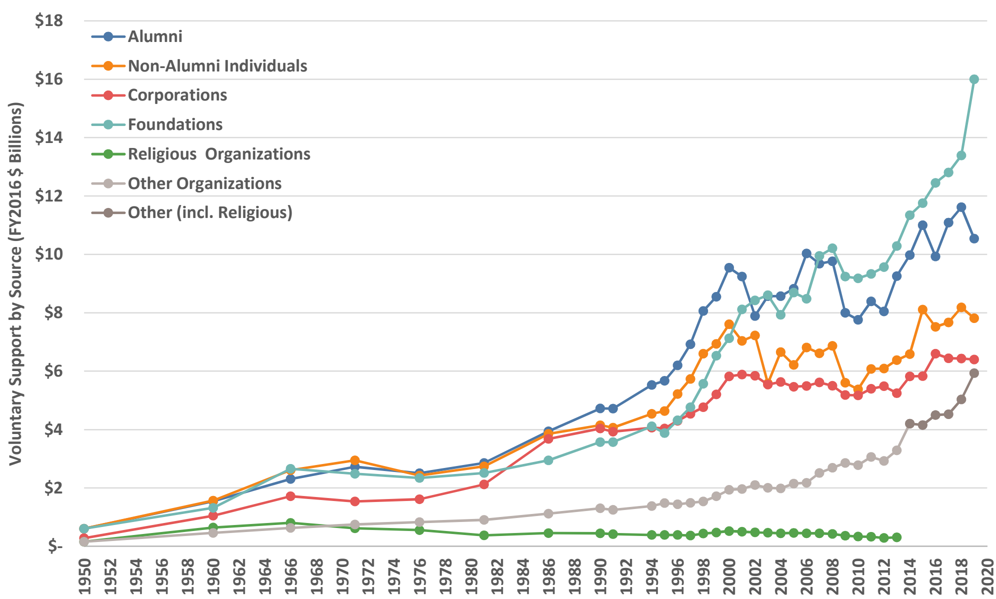

Figure 13.4. Seven decades of voluntary support for degree-granting postsecondary institutions by source of gift, in FY2016 dollars. Sources: NCES (National Center for Education Statistics 2018e) and CASE (Council for Advancement and Support of Education 2020).

The growth in independent foundations parallels the affluence generated in the private sector, such as in technology and finance (e.g., Gates Foundation and Bloomberg Philanthropies), and the number of independent foundations grew by 40% from the early 2000s to the mid-2010s (Foundation Center 2020). That rise to some extent reflects a shift in structure of how individual wealth is given away more indirectly than before. Similarly, the growth in popularity of donor-advised funds is an example of how individual wealth is given away using a different structure, and these account for some of the recent rise in the other organization category seen in Figure 13.4. Donor-advised funds are managed by community foundations or charitable arms of investment companies (the latter having lately seen substantial growth). They enable a donor to place money in the fund and claim the charitable tax deduction right away while the fund subsequently gives the money to charitable causes (technically an independent decision by the fund, but in practice virtually always on the advice of the donor). Thus, the mechanisms by which individual wealth is donated have been changing, affecting the appearance of who is giving to higher education. Also, while major gifts and giving overall are on the rise, household giving rates are actually declining (Osili 2019).

Not all contributions from independent foundations are gifts. Many such foundations have extensive grant-making programs that support work in research, education and public outreach. For example, several of the largest foundations, including Mellon, Duke, Ford, Kellogg, and MacArthur, recently announced a $1.7B initiative in cultural inclusivity that will support nonprofit institutions in higher education, the arts and the humanities (Jaschik 2020). Most universities (and their foundations, if applicable) have established rules about what counts as a gift versus a grant or contract. The general rule of thumb is that the donor should not receive more than a thank you note for it to be a gift, versus a grant or contract where there are typically deliverables. Such rules are a defense against creative investigators and/or donors who wish to avoid paying the facilities and administration cost recovery charges for grants (see Chapter 8).

Now that we've seen where donations come from, let's move our attention to the intended purposes of those gifts. Gift purposes are divided into two broad categories, current operations and capital, as illustrated in Figure 13.5. Gifts to current operations are those that are available directly for current spending on a wide variety of purposes. In contrast, gifts to capital purposes will last for many years (e.g., buildings, property and major equipment) or they will last in perpetuity (i.e., endowments) and are managed to produce income for annual expenditures. Gifts to research cover the whole range of scholarly pursuits from science to the humanities, while donations to academic divisions include those made to departments, schools and colleges but without other restrictions (such as a research topic or student scholarship). Unrestricted gifts, those without a purpose expressed by the donor, are far less common than they were a generation or two ago—unlike all other (restricted) gifts that can only be spent on their stipulated use, unrestricted gifts can be used however the institution deems best. Gifts to student financial aid include non-endowment contributions for scholarships (merit or need-based), student awards, and some athletic scholarships.

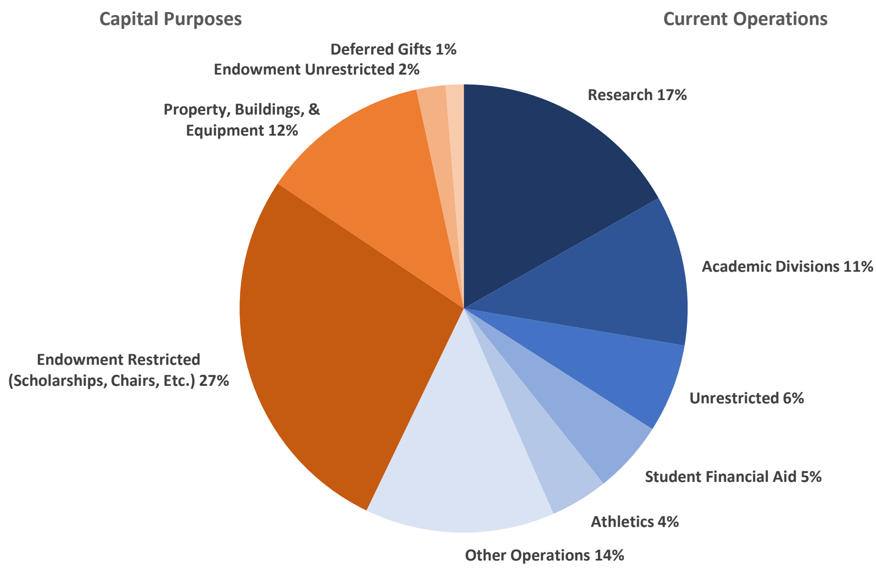

Figure 13.5. FY2018 distribution of gifts to higher education institutions by purpose. Source: CASE (Council for Advancement and Support of Education 2019; 2020).

Speaking of athletics, let's bust a persistent myth about giving to athletics versus academics: on average, athletics receives just 4% of gifts to the university for current operations. There's a perception on many campuses that the lion's share of giving goes to athletics, and while athletics gifts also go to endowments and facilities, the total athletic share pales in comparison to the academic share.[1] There's a related hypothesis that courting athletics donors somehow crowds out donors who otherwise might give to academics. Its flawed assumptions are that fundraising for an institution is a zero-sum game and that donors can be redirected to other causes. The bulk of athletics fundraising is directly linked to obtaining premium football and basketball tickets and associated privileges such as stadium clubs and parking privileges. Astute presidents and fundraisers know that it is not an either/or proposition and that, while there are benefits to greater exposure and the occasional major athletics donor can be persuaded to support the institution more broadly, donor passion and intent drive most giving decisions and these are largely separate sets of donors. The research literature on this effect is small, but the most thorough recent study found evidence for spillover benefits from athletic giving to academic giving rather than crowding out such donations (Koo and Dittmore 2014), although recall from Section 12.7 on the related Flutie Factor that the magnitude of these kinds of effects is small.

Returning to the distribution of gifts by purpose, a large share of donations goes to restricted endowments. These are the core gift funds that support student scholarships,

1 There are exceptions but they are rare. For example, even in the SEC, only LSU raises more gift funding for athletics than for academics; the other conference members typically raise twice as much money "for the classroom as for the locker room" (Allen 2016).

named chairs, centers and institutes for the long term. Making a gift to endow these purposes involves a challenging trade-off, as much for the donor as for the department chair or dean soliciting the gift: current needs are almost always pressing and a large contribution of cash in the short run can make a sizable impact immediately versus a smaller impact for the long run. For example, a $100,000 gift can benefit 20 needy students with scholarships of $5000 for one year, or it can provide a single $5,000 scholarship for just one student in perpetuity, taking twenty years to reach the same level of impact. Only after that time, at which point the donor may have passed on, does the lasting impact of an endowment manifest itself. Thus, endowments are about the long game and they are not necessarily the vehicle of choice when shorter-term goals are a priority.

Buildings are a particularly visible sign of large capital gifts. Depending on the building's purpose, the gift might account for a substantial portion of the construction expenses or it might only cover a minor portion of the overall project cost. There may be other sources of funds for classroom or laboratory buildings that can be supplemented with gifts, while funds for performance halls or stadiums may not be given the same precedence for funding as academic buildings, meaning that a larger proportion of those dollars will need to be raised from private donations. Most universities have established policies on the gift amounts associated with naming buildings, centers, programs, etc. after donors (and of course buildings can be named without relation to a donation to honor a significant social figure such as a politician, civil rights leader, or former university president).[2]

13.3 How big are endowments and how much have they grown?

The basic concept of an endowment is simple: rather than spending a cash gift on current needs, invest the money for the long term and use the proceeds to provide funding in perpetuity. We'll go through an illustrated example of how endowments work in the next section (Section 13.4), but first let's clarify some language and get a sense of endowment size and growth across higher education.

We tend to talk about endowments like we talk about sheep, using the same word for the singular and the plural (as I just did in the previous paragraph). This can lead to unfortunate misperceptions both on campus and in public policy, especially the use of the singular to describe the entire university endowment. The resulting impression is that there is a single fund containing a vast hoard of cash that can be spent on whatever the university desires or used as a rainy-day account to avoid budget cuts in times of financial need. *There is no single fund*. University endowments are collections of

2 Names can be removed and naming gifts returned if warranted. For example, the names of controversial figures such as pro-slavery alumni at Yale (Thelin 2017) and Woodrow Wilson at Princeton (Princeton University 2020) have been removed from campus buildings, as was the name of donors to Tufts who were linked to the opioid crisis (Seltzer 2019b). The issue can go further: at the University of Alabama a donor seeking improper influence had his name removed from the Law School and his gift returned (Jaschik 2019c).

hundreds or thousands of individual funds, each from a distinct original gift and almost all from different donors over time. So, technically, the university has endowments, plural, despite our confusing verbal shorthand that incorrectly implies a single institutional fund. Endowments are generally not fungible either and virtually all of them have legal restrictions on their purpose as a condition of the gift, as we saw in the previous section. Therefore, the university or its foundation cannot unilaterally spend the principal or earnings of an endowment intended for, say, student scholarships to instead pay for a new stadium or to cover salaries and prevent layoffs. This issue isn't helped by the conspicuous size of total endowments at the wealthiest elite private universities, which have become sufficiently large that recent legislation imposed a tax on these otherwise tax-exempt organizations.[3]

Figure 13.6 shows the size of total institutional endowments, split into deciles as we did for gifts because of the unusually large range within each institution type. At R1 public universities the total endowment value is typically \$0.5 to \$1.5B although schools in the top decile average north of \$6B each. Endowments at the other public institution types barely register on the chart: at R2 publics the median endowment is \$190M (lowest and highest deciles averaging \$22M and \$732M respectively), while at the smaller publics the median is \$20-\$30M with their lowest deciles in the single-digit millions and the highest deciles at \$150-\$300M.

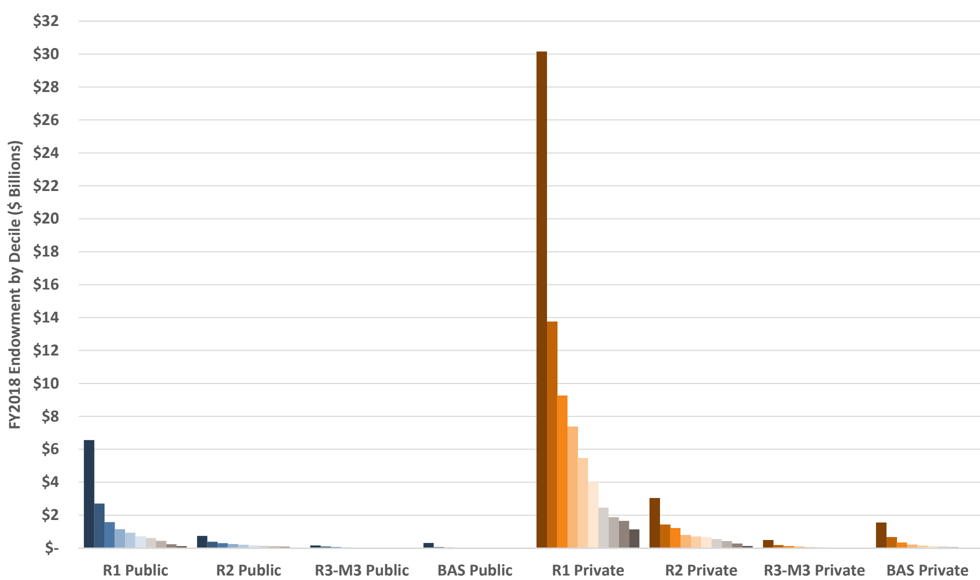

Figure 13.6. FY2018 endowments averaged per decile by Carnegie classification and control. Source: IPEDS (2020).

3 The 2017 Tax Cuts and Jobs Act imposed a 1.4% tax on private nonprofit higher education institutions with endowment assets greater than \$500,000 per student and with at least 500 students enrolled. Less than a few dozen private schools meet these criteria, mostly R1 and BAS institutions.

Figure 13.6 also makes plain why the most well-endowed private institutions attract special attention—the handful of universities at the top of the pyramid have total endowment assets in the tens of billions of dollars (Harvard leads that list with about $40B). Endowments at the R1 privates are more typically in the single-digit billions, as are the wealthier R2 privates, although the latter are more typically in the hundreds of millions. While the richer R3-M3 privates have endowments in the hundreds of millions, there is a steep drop-off across these institutions and their endowments are more typically in the tens of millions. The private baccalaureate schools display a particularly wide range in endowments, as this group includes some unusually well-endowed elite colleges ($1.5B in the highest decile) as well as many less-wealthy schools (averaging just $11M in the lowest decile).

Returning to those universities with the largest endowments, the concentration of accumulated private giving is especially stark at the very top of the list, as shown in Figure 13.7. The top 2% of schools (23 of them) hold 50% of all university endowment wealth in the country. The first four on the list—Harvard, Yale, Stanford and Princeton—account for over 20%. Counterintuitively, the top 25 list includes 5 public universities: Texas A&M and the University of Michigan are in positions 7 and 8, ahead of large private schools such as Columbia and also the University of Southern California, the latter with an endowment close to those of two more publics, Virginia and Ohio State. Endowment size is determined by many things, including but not limited to the size of the founding endowment (at private institutions), the number of financially successful alumni (in turn a function of time), and the compounding effects of past success and prestige that help to further attract non-alumni donors as well.

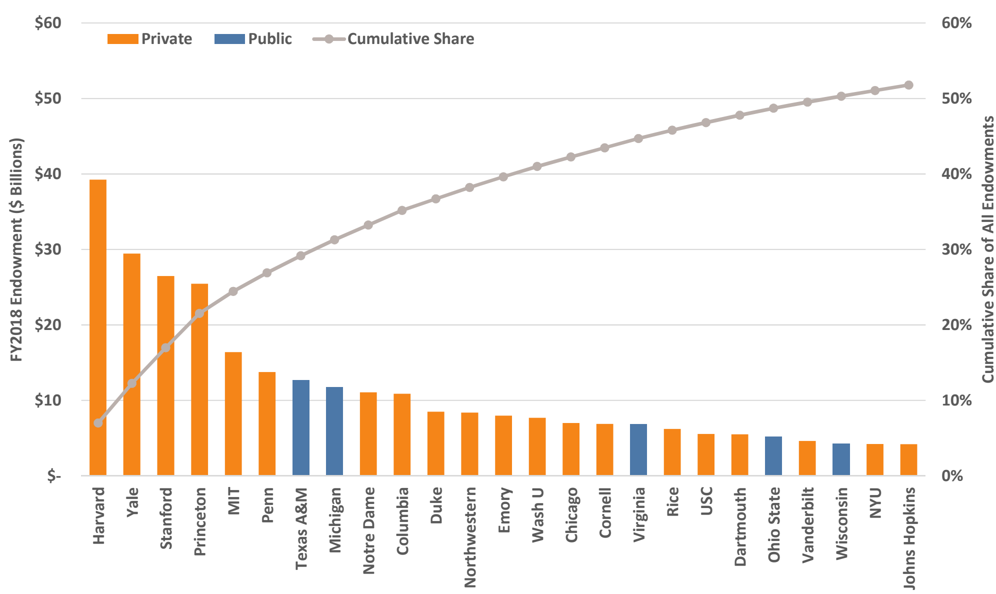

Figure 13.7. Top 25 FY2018 university endowments and their cumulative share of all endowments in the data set. Amounts are for the main campus location and do not include branch campuses reporting separately. Source: IPEDS (2020).

The result for high-endowment institutions is that they have extraordinary resources to invest in their educational and research missions, all part of staying ahead in the competition (some would say arms race) to be the best. Assuming a 4.5% payout, every billion dollars of endowment provides $45M in revenue per year—that's as much as a percentage or two of overall budgets at big universities such as the ones on the top 25 list, and they all receive several multiples of that number.

We can level the endowment playing field somewhat by examining endowment per student, just as we did for gift amounts. Figure 13.8 illustrates those distributions, again by decile as we did above for endowments. The same key observations apply here too: the especially wide range within each type of institution, and the large differences between public and private schools. The lowest deciles at medium and small institutions are just a few thousand dollars of endowment per student, while the highest deciles average in the hundreds of thousands, with the most well-endowed reaching $1M or more per student.

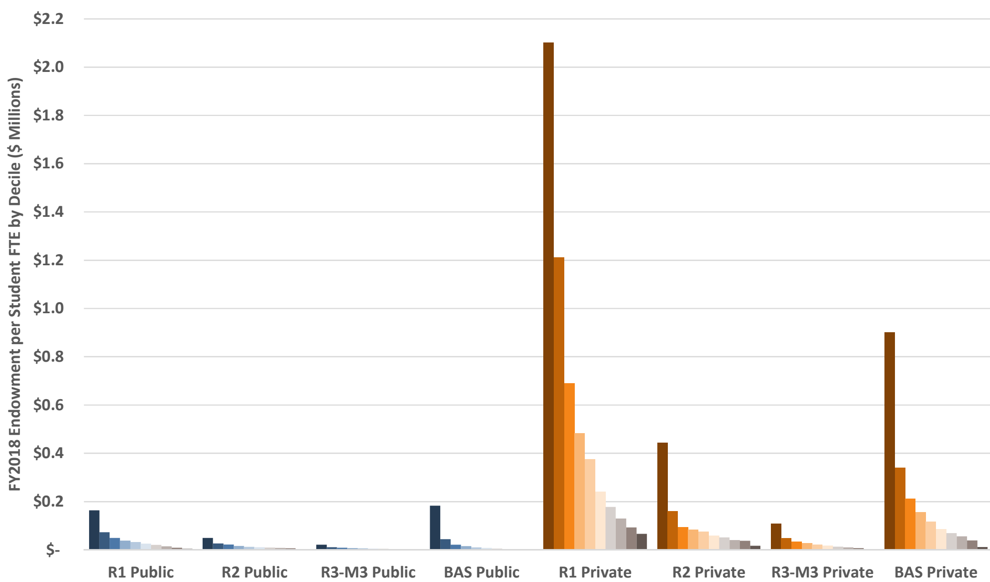

Figure 13.8. FY2018 endowment per full-time equivalent student averaged per decile by Carnegie classification and control. Source: IPEDS (2020).

The top 25 list for per-student endowments is illustrated in Figure 13.9 and, unsurprisingly, with only one exception (Soka University[4] in the number 2 spot), it's a who's who of the most elite and long-established private schools in the nation.

4 Soka University of America is a small liberal arts college located in Orange County, CA, and it isn't yet as well-known as the other schools on this list. It provides a secular education emphasizing human rights and interdisciplinary approaches, and was established in 2001 by a Japan-based worldwide Buddhist movement that contributed to its endowment (Soka University of America 2020). In FY2018, Soka's endowment was $1.3B with an enrollment of 442 according to IPEDS (2020).

No public institutions make this list;[5] they are all private and virtually all are either R1 universities or baccalaureate colleges. The wealth concentration is slightly less pronounced for this metric than for endowments proper, but the institutions on this list are still home to over one third of all per-student endowment wealth. Using the same payout math as above, $1M of endowment per student equates to $45,000 of annual endowment income per student. Note that this is not what these institutions necessarily spend per student, but it is a relative guide to the level of resources available at the wealthiest institutions. Also, a reminder that research universities have endowments for research institutes as well as for graduate students, and the simple endowment per student metric does not account for these differences.

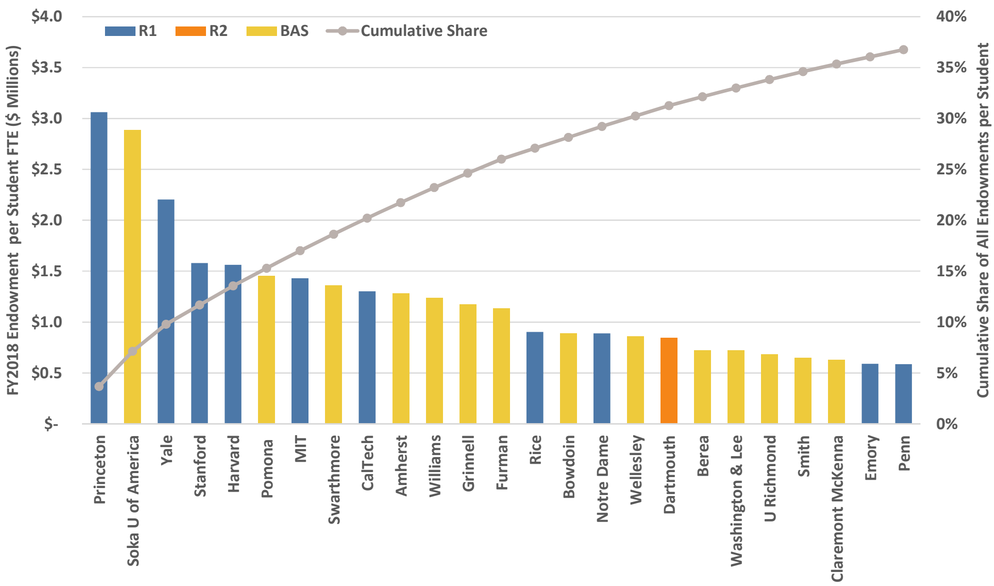

Figure 13.9. Top 25 FY2018 university endowments per full-time equivalent student and their cumulative share of all values in the data set, shaded by Carnegie classification (all are private institutions). Amounts are for the main campus location and do not include branch campuses reporting separately. Source: IPEDS (2020).

To wrap up our tour of endowment wealth it's worthwhile to also look at trends. Endowment values have increased steadily over the years, with the amounts for each type of institution showing the same basic pattern that more-or-less tracks the stock market, which is where the bulk of the funds are invested. A much more interesting trend, and one worth showing, is the relative growth of endowments per student that are illustrated in Figure 13.10 (the patterns are extremely similar to those for straight endowments, but the per-student values provide a more consistent comparison over time). What's intriguing is that, over the three decades

5 The highest-ranked public institutions on the list are Virginia Military Institute and the University of Virginia at numbers 59 and 60 respectively, each with about $300,000 of endowment per student.

that included several bull and bear markets as well as the Great Recession, inflation-adjusted endowment per student grew by a factor of 3 at private schools and by an astounding factor of 9 at public schools. As we'll see in the next section (Section 13.4), a typical endowment keeps pace with inflation with the additional returns used for income, so the overall growth we see in this figure is mostly the accumulation of new endowment gifts. Therefore, since the late 1980s, public institutions grew their relative level of endowment giving at three times the rate of the privates. I mentioned in Section 13.1 on gifts that the medium and smaller public institutions are relative latecomers to fundraising and that's the effect we're seeing here. Within the average for public institutions in Figure 13.10, R1 schools grew at the same rate as the privates while the other types of institution all grew much faster than their private counterparts (not shown) because many of the medium and smaller publics were just starting their development programs. Of course, they still have a long way to go in absolute terms.

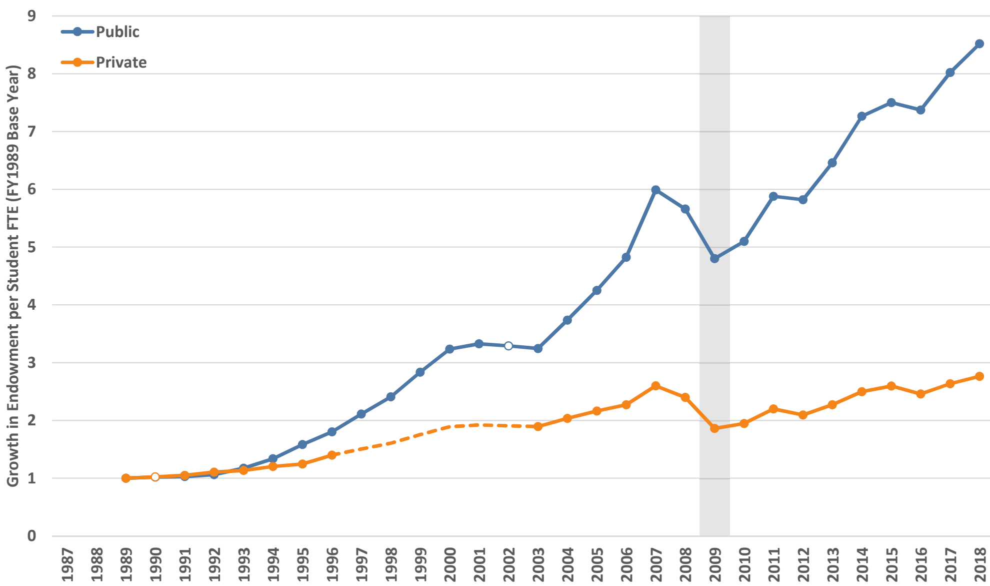

Figure 13.10. Growth in inflation-adjusted endowment per full-time equivalent student, by fiscal year, with averages for public and private institutions weighted by the number of institutions in each Carnegie classification. Values for 1990 at both types of institution and for 2002 at public institutions are interpolated as the average of neighboring years, while the 1997–2002 gap at private institutions is interpolated proportional to the public institutions. Source: IPEDS (2020).

Box 13.1. State Support As "Endowment Income" for Public Universities

Endowments at public institutions are generally far smaller than at their private peers, about 10–20% after adjusting for enrollment. Unlike the privates, however, public universities receive state support. A thought experiment: if we think of state appropriations as revenue from a sort of "public endowment" then how might the size of public and private endowments compare?

Typical state appropriations down the four types of public institution from R1 to BAS are something like \$300M, \$110M, \$45M and \$10M. At a 4–5% payout rate, those revenues represent, in round numbers, pseudo-endowment sizes of \$6.7B, \$2.4B, \$1B and \$0.2B respectively. Interestingly, these amounts are larger than their private counterparts, several times so for the medium-sized schools. However, recall that tuition revenue at the publics is generally much lower than at the privates, serving to offset some of these differences in the context of overall institutional revenue. Nonetheless, this exercise shows that, financially speaking, state support is at least as important to public institutions as endowment income is to private institutions.

13.4 How does a university endowment work?

The core idea of a modern university endowment is to invest the gifted funds to produce annual income, known as the endowment return, while maintaining the original amount, called the principal or corpus (Latin for body), such that the endowment can produce income in perpetuity.[6] Let's run an example to see how this works in practice. We'll assume an endowment of \$1M starting in 1980 and that our returns track the S&P 500. Of course, depending on exactly how the funds are invested, any given endowment will have a unique set of returns—more on that later. As it happens, the S&P has performed at just under 8.5% on an annualized basis over the last four decades. If we'd invested our funds and simply reinvested any proceeds and let those grow, we would have seen the value of our investment follow the index curve in the upper panel of Figure 13.11, starting at a smidge over \$3M (\$1M adjusted for inflation to 2016 dollars) and ending at about \$23.5M. Inflation over this period was just over 3% (it was high back in the early 1980s—see Section 3.7). Overall, the annualized

6 Endowments are as old as universities themselves. Although some of the philosophy schools in ancient Athens that predate universities had endowments in the sense of having independent wealth (Lynch 1972), the earliest endowments in the contemporary sense of an income-producing asset were in Europe. For example, in England, the early universities received tithes, 10% annual taxes on the produce of agricultural land, from acreage that passed to them from the dissolution of monasteries (Russell 2006). Early university endowments in the US originated from the wealth of multi-millionaires during the late 1800s and early 1900s, including Ezra Cornell, Benjamin Duke, Leland Stanford, Andrew Carnegie, and John D. Rockefeller (Kimball 2017). Since then, those endowments and may others have grown considerably from alumni contributions.

inflation-adjusted rate of return is 5.24% over the four decades but with plenty of ups and downs on that journey.

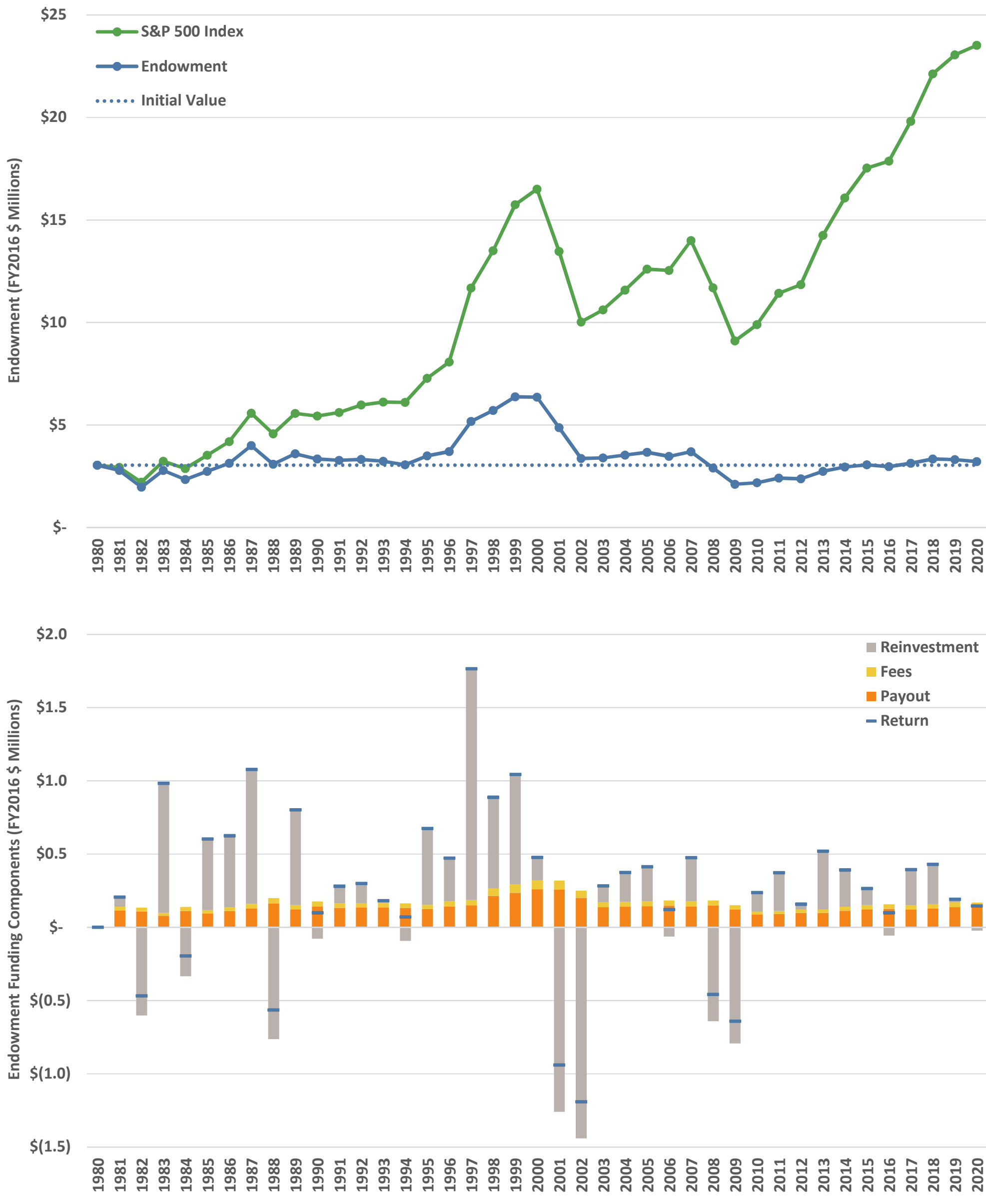

Figure 13.11. Performance of an example endowment started in 1980 (upper panel) shown as a simple investment with returns tracking the S&P 500 index and as a revenue-generating endowment fund, and as components of the example endowment (lower panel) including annual return, payout, investment management fees, and a surplus (or deficit) for reinvestment (or withdrawal). Amounts are in FY2016 dollars; the inflation-adjusted initial endowment value of $3M corresponds to $1M in FY1980 dollars. See text for details.

Endowment management is all about taking advantage of the overall trend, while weathering short-term downturns, to simultaneously produce a dependable annual income stream and maintain the principal in the long run. Therefore, the question is what (fairly consistent) portion of the endowment can be withdrawn each year, allowing for investment management fees, that will leave enough returns to cover inflation and preserve the original investment? In practice that amount, known as the payout, is typically between 4% and 5%. In our example, we will take an annual endowment payout of 4.2%, and we will pay annual investment management fees of 1%. Those rates result in the endowment trend illustrated in the upper panel of Figure 13.11, which is essentially flat in the long run, just as we desire (it ends slightly up at $3.2M in inflation-adjusted terms). The notion of preserving the inflation-adjusted principal is known as intergenerational equity. This approach is debated in tough times, when some argue that the corpus should be invaded to prioritize institutional survival (Whitford 2020d), and in good times when managers keep payouts low and let the endowment grow, i.e., lowering future risk at current expense (Mehrling et al. 2006).

The components that constitute the endowment performance are illustrated in the lower panel of Figure 13.11, also in inflation-adjusted dollars. After one year, the $3M initial endowment returned 7.6% ($207,000) in FY 1981, allocated as $114,000 in payout (the 4.2%), $27,000 in management fees (at 1%), and a surplus to be reinvested of almost $66,000 (the remaining 2.4%). The next year, FY 1982, the market was down 18.2% and the endowment lost value with a negative return of $468,000. Despite the loss, we still allocated a 4.2% payout ($108,000) and we still needed to cover management fees (almost $26,000), meaning that the endowment actually decreased by a total of $602,000. Thus, we actually invaded the corpus to provide the payout; many real endowments would not have done so. Fortunately, 1983 was a strong year and the (now reduced) endowment returned nearly 52%, although it was not enough to restore the endowment to its initial value—that took until 1986 (see the upper panel of Figure 13.11). Our example endowment did very well during the late 1990s, reaching a peak of more than $6M in 1999 and 2000, and it promptly lost those gains in 2001 and 2002. It sunk to its lowest levels during the Great Recession, about $2.1M in 2009, taking until 2017 to again fully regain its initial value.

One can see the importance of having the intestinal fortitude to take the long view, resisting the temptations of panicking during short-term losses or of spending windfall gains. That said, this was a simple example and in practice university endowment managers do a number of other things to increase value and ameliorate loss. We stuck with a constant payout percentage in our example, but endowment managers evaluate and reaffirm or modify the payout rate every year, trying to keep the rate smooth but sometimes shifting it up or down by a few tenths of 1% after a run of good or bad years. Also, all individual endowment funds are usually comingled for investment purposes while keeping track of individual accounts, much like a bank. Payouts are made into accounts from which the funds are spent by university units, and if those accounts are well-budgeted then they provide a further small buffer against year to year fluctuations. I used the CPI to adjust for inflation as I've done throughout the book, but if this endowment was used to pay the salary of an endowed chair position, it would be more likely to rise at the HEPI which has recently run about 0.5% higher than the CPI (both are covered in Section 3.7). As it happens, the payout in our example increased at about that rate so it would be sufficient to maintain a salary commitment.

We tracked the S&P 500 in this example, but most university endowments are not invested in a simple consumer-oriented index fund. Instead, they are managed by a team that will often include investment consultants (a minority of endowments are wholly outsourced and managed by an investment firm). Also, depending on the type of investments in the portfolio there will be various associated costs and fees such as management fees, fund-of-fund fees, advisory fees, fund operating expenses, and custody fees for recordkeeping and reporting (Commonfund Institute 2017b). For simple investments these costs may be half or less of the 1% we assumed in our example, but for complex portfolios they can approach 1.5% (Skorina 2017).

University endowment managers invest the funds entrusted to them across a broad portfolio, as shown in Figure 13.12. Three quarters of the average institutional portfolio is invested in equities (i.e., stocks/shares), about 10% in fixed income investments such as bonds, and slightly more (about 14%) in real assets including real estate. This is the portfolio mix for the average institution, but the average dollars in each type of investment vary because large endowments (over $1B) tend to have a slightly different mix—about half as much in US stocks and bonds and roughly twice the share in private equity and venture capital, in cash, and in private real estate, energy and mining.

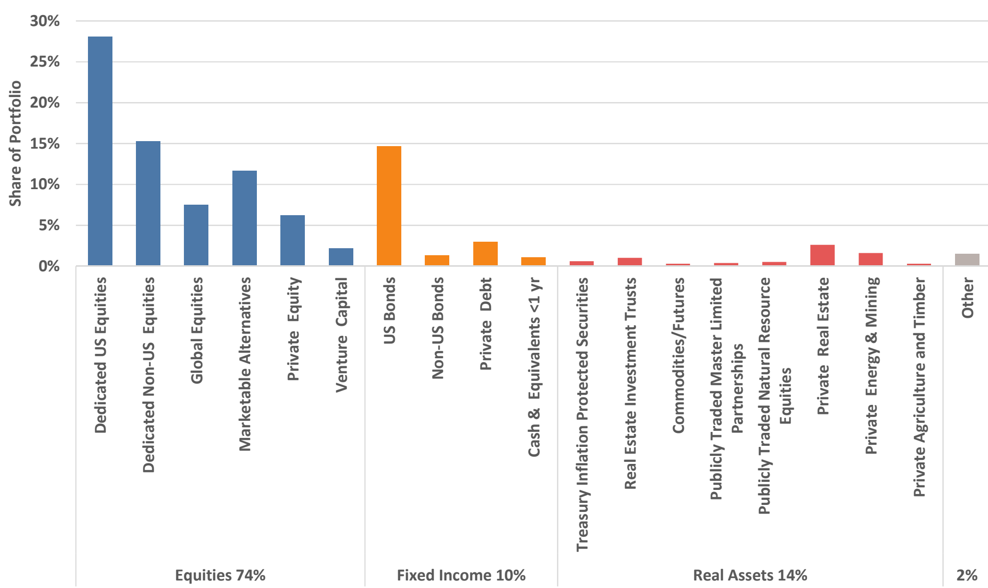

Figure 13.12. FY2019 equal-weighted average asset allocations for college and university endowments and higher education foundations. Source: NACUBO (2020).

13.5 Are fossil fuel divestment and socially responsible investing financially viable?

Universities are involved in studying and teaching about environmental, social and governance issues, and their institutional priorities on these topics are often plainly reflected in their official statement of values, usually right next to their mission and vision statements. One important way for institutions to demonstrate that their values have meaning is to align their endowment investments accordingly. The trend towards socially-responsible investing by university endowments began in the late 1970s as part of the divestment movement to boycott the apartheid regime in South Africa—the first was Hampshire College (Dayall n.d.). In 1990, Harvard and CUNY made front page news when they sold all their stocks in tobacco companies (Lewin 1990). Other disinvestment initiatives since then have included the prison industry, gun manufacturers, and companies employing sweatshop labor abroad (Elrod 2013; Chan 2015; Dyer 2018). Given the small portions of endowment portfolios that any such investments represented, and the strong university endowment performance in recent decades noted in Section 13.3, it is clear that those divestments had no appreciable financial effect on endowments while they simultaneously signaled the institution's disapproval of an activity or industry.

However, by far the most prominent contemporary university divestment movement is against fossil fuel companies. Fossil fuels are the principal source of carbon dioxide and other greenhouse gases that are causing widespread climate and environmental change.[7,8,9] The energy sector, including coal and oil companies, has historically been a standard and well-performing part of most investment portfolios. Therefore, quite reasonably as part of their fiduciary duty, endowment trustees and managers have raised questions about the possible risks of divesting from fossil fuel assets and consequent potential losses for the endowment. A minority have asked about the risks and potential losses of *not* divesting, given the downward prospects for the sector (Grantham 2018; Sanzillo et al. 2018).

Analyses by leading investment advisors and independent economists show that both the investment risks and endowment impact of not investing in fossil fuel

7 This statement doesn't really need a citation nowadays. I'm a climate scientist and the evidence shows beyond a shadow of a doubt that climate change is happening, with alarmingly little substantive action to stop carbon emissions. If you're interested, the most authoritative source on the science of climate change, including its consequences as well as adaptation options and mitigation, is the Intergovernmental Panel on Climate Change (www.ipcc.ch).

8 Why target the companies when we all use energy from fossil fuels? Beyond signaling the importance of moving away from fossil fuel consumption, those companies are targets of divestment because they knew about the perils of climate change as early as the 1970s, misrepresented the harm their products would bring about, and funded campaigns to discredit the science, spread disinformation, and influence policy (the same playbook used by tobacco companies), as described by Naomi Oreskes and Erik Conway in their book, *Merchants of Doubt* (2010).

9 As someone who grew up in South Africa, became a climate scientist, and served as a senior university administrator, there is no more apt section of this book for me to write than this one.

energy companies are essentially neutral and possibly even positive. The bulk of most endowments is invested in companies on the stock market, as we saw in the previous section (Figure 13.12). The market is categorized into ten sectors, such as energy, financials, information technology, etc. with endowments typically holding a diverse portfolio across those sectors. We can calculate relative market performance by simply omitting a sector, such as energy, and comparing the non-energy market to the regular market. Figure 13.13 shows these comparisons for the non-energy portfolio and each of the other omitted sector portfolios for two periods, since 1957 and since 1989, as calculated by investment firm GMO (Grantham 2018). Omitting the energy sector makes the least difference of all sectors to overall returns, within 0.1% of the regular S&P 500 (10.18% return for the non-energy portfolio versus 10.25% for the regular S&P 500 from 1957 to 2017; likewise, 9.74% for non-energy versus 9.71% for the S&P 500 from 1989 to 2017). This means that if one was broadly invested across all other sectors, dropping energy was less risky than divesting from any other sector, and that the non-energy portfolio actually ended up doing slightly better than the overall market since 1989.

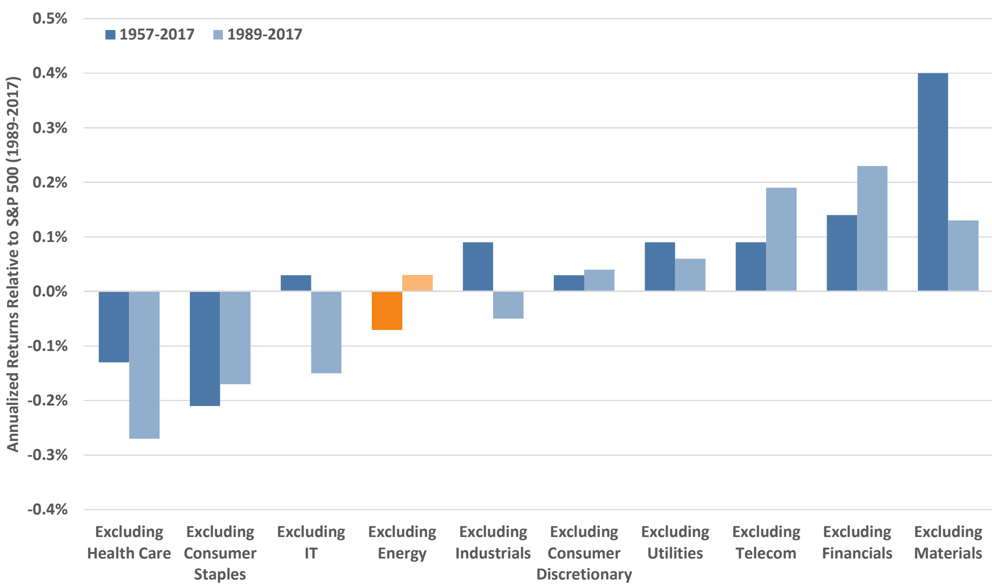

Figure 13.13. Annualized absolute returns of market portfolios excluding each of the ten market sectors, relative to the S&P 500 for 1957 to 2017 (10.25% annualized return) and for 1989 to 2017 (9.74% annualized return), with the non-energy portfolio highlighted. Source: Grantham (2018).

Figure 13.14 illustrates the trends for the non-energy S&P 500 portfolio and the whole S&P 500, showing that there is virtually no difference between the two and that, because energy stocks have declined more than the overall market in recent years, the non-energy mix actually ends up slightly ahead. Much the same conclusions were reached in a recent peer-reviewed analysis that applied rigorous econometric methods to assess the financial implications of fossil fuel divestment (Trinks et al. 2018). Another recent study evaluated the impact of divestment in two ways, first on almost 700 institutions that did and did not divest, and second by modeling four actual college and university endowments in detail (Pitzer, Dayton, Syracuse and Stanford); the authors found no consistent impact or negative effects, along with some limited positive effects of fossil fuel divestments on mid-size and large endowments (Ryan and Marsicano 2020). Unsurprisingly, there are papers sponsored by the fossil fuel industry that claim negative impacts as a result of fossil fuel divestment (Cornell 2015; Bessembinder 2017); sustainable-investment groups have provided detailed rebuttals as to why those arguments are not pertinent to the actual performance of fossil fuel investments (Sanzillo et al. 2018). To the question of whether fiduciary duty might prevent fossil fuel divestment, because that duty binds a trustee or endowment manager to make the best financial decisions for the funds they oversee, there is now plenty of evidence that the most prudent fiduciary path is to actively consider calls for fossil fuel divestment—those calls cannot be rejected merely because of uninformed worries about negative risks or losses. Fiduciary duty may even favor divestment: some analysts argue that while fossil fuel investments provided strong performance in the past, their current financial case and future prospects are far weaker (Grantham 2018; Sanzillo et al. 2018).

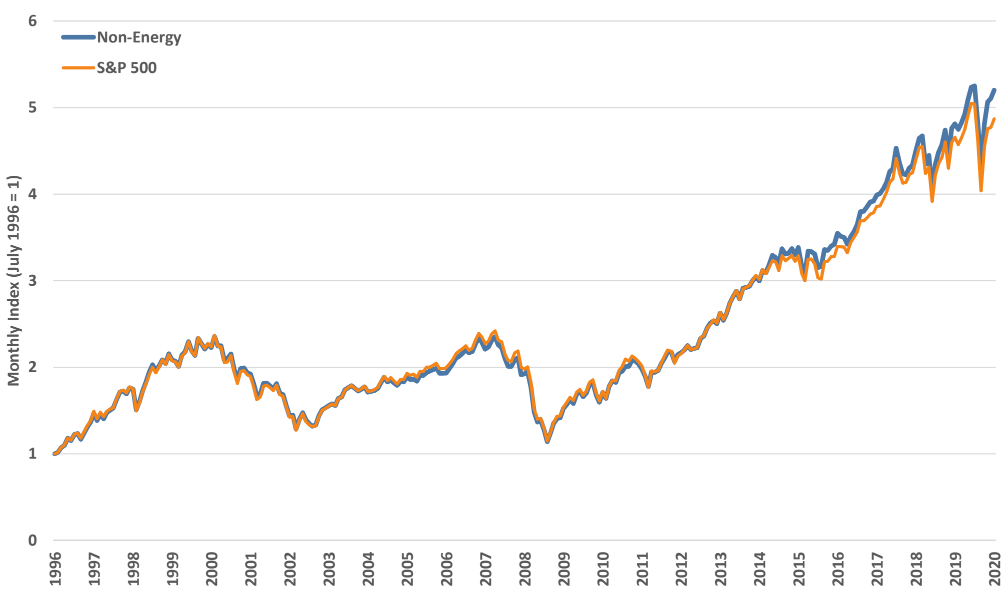

Figure 13.14. Performance of S&P 500 index with all sectors and excluding the energy sector since sector indices were launched by S&P in mid-1996. Source: S&P/Investing (Investing.com 2020).

How does an endowment divest from fossil fuels? It's a process rather than an event. The institution typically announces that it has decided to divest and that it will complete the process within a year or two. A period of time is necessary because some investments have rules about when investors can get in or out, or they are only offered at certain times. Having that time enables the endowment managers to integrate the sale of direct and indirect investments in fossil fuels into the flow of transactions while they balance the portfolio through the purchase of other positions. Direct investments include, for example, shares in an oil company, while indirect investments include index funds and other instruments that commingle fossil fuel stocks with many others. Divestment initiatives sometimes include a commitment to shed only direct investments in fossil fuels (or even narrower, such as coal only), while others promise full divestment including indirect holdings. Figure 13.15 shows the mix of divestment at the 60 institutions that have made the commitment so far. About two thirds are in the process of fully divesting or are already fossil free, while institutions in the other third have committed to various permutations of limited divestment (e.g., partial divestment of direct investments only, or coal companies only). Together, all these schools represent about 5% of all universities and colleges; they include institutions of all types such as large public and private universities (e.g., University of California system, Johns Hopkins) as well as smaller public and private schools (e.g., Salem State, Middlebury). For institutions looking to evaluate whether or not to divest, and where to invest instead, there are several sustainable investment groups that offer frameworks and performance information (Cambridge Associates 2014; Dyer et al. 2020).

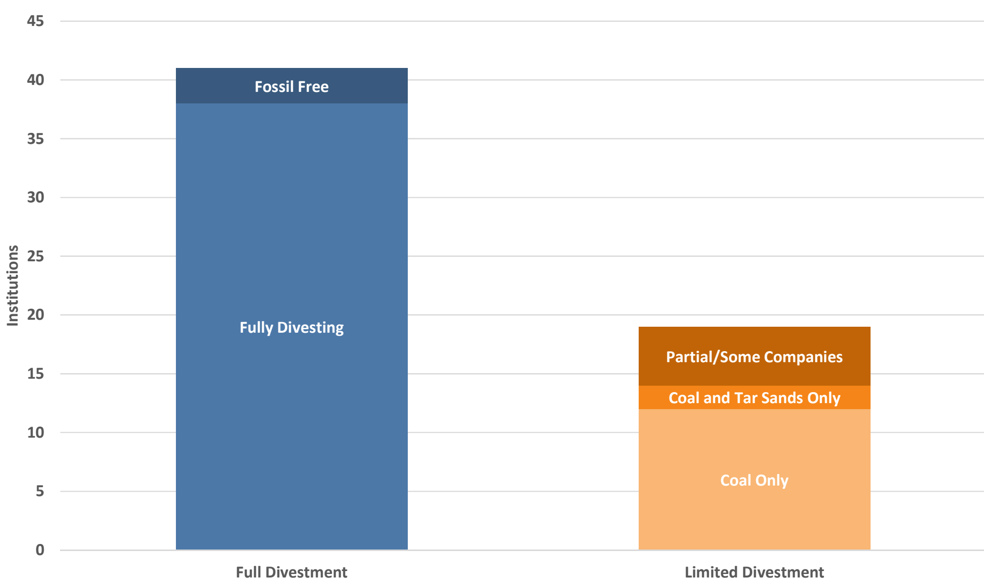

Figure 13.15. Number of US universities and colleges (or their affiliated foundations) with full and limited fossil fuel divestment, as of mid-2020. University systems are counted as the number of main campuses in the system. Source: Fossil Free/350.org (Fossil Free 2020).

Divestment is not so much an investment strategy as it is a reaction and decision to not invest in something. A number of institutions have adopted active strategies to align their endowment investing with their priorities on environmental, social and governance issues (ESG investing). For example, not just divesting from fossil fuels but investing in renewable energy instead, or in companies with commitments to social responsibility. The irony of philanthropy is that it is needed to fix the very system that creates it. To that end, progressive groups in the philanthropy world are now advocating a rethinking of how social justice initiatives could be supported by what they term liberatory philanthropy, which acknowledges the inequalities that produced its wealth and commits to deconcentrating it, as well as making restorative investments in communities and programs that address environmental, social and governance issues aligned with their philanthropic mission (Foxworth 2019).

13.6 How does the business of university fundraising work?

For most people, the thought of asking for donations inspires a dread that rivals their fear of public speaking. Most professors have overcome the latter through their experience in teaching; the same kind of practice and familiarity is also how one overcomes the fear of fundraising and, in particular, making "the ask" (see Box 13.2 for a glossary of fundraising terms). Better yet, most universities employ professional fundraising staff who are not only able to make the actual request but are also invaluable at systematizing the process of raising money. Gift officers often say that fundraising is friend-raising, which underlines the simple truth that relationships are the cornerstone of any development effort. The business of creating and cultivating relationships, figuring how much to ask for, and stewarding the connection after a donor has made a gift take time and require organization—that is the role of the gift officer (or development officer). Lest this sound rather clinical, the magic ingredient is the student, faculty member, department chair, center director, or dean who has the opportunity to talk about what they love with a potential donor—someone who would like to share in that passion for advancing the program or unit and helping it to do good in the world. Like teaching, it's actually a lot of fun once the anxiety of the unfamiliar is out of the way. So, relationships are key, but how does the money work?

Let's say that we need to raise a million dollars, perhaps to endow a scholarship program in an emerging field. This scholarship will enable us to attract excellent students who will gain special skills and experiences and position them well for future studies and/or jobs. We have some friends of the department and college who we already know might be willing to support the new program (and if we're smart, we've already mentioned to them our excitement about it). Some of them could even provide a substantial amount, but we'll need to greatly expand the set of people involved to reach our fundraising goal. Figure 13.16 illustrates a simple gift table example, also known as a donor pyramid, that a gift officer might draw up as a planning tool to help us reach the goal. Working together, we think that we could land one principal gift of almost half the needed amount, we could get three major gifts in the $50,000 range, and a set of others down the pyramid that together will get us to our total. Notice that we need 184 donors across the plan and that we will need to approach three or four times that number of viable prospects in order to net the support we need.

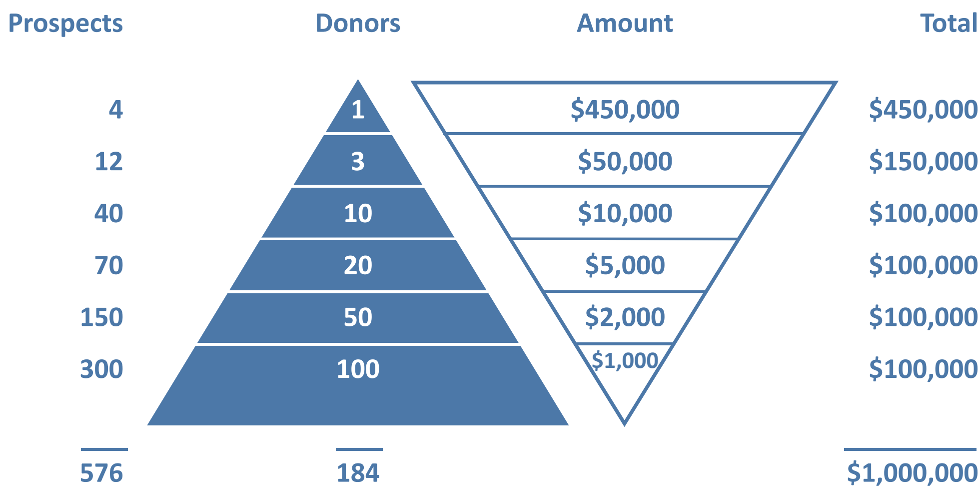

Figure 13.16. Example gift table to raise $1M, showing the donor pyramid (shaded), estimated prospects needed to net those donors, gift amount at each level, total gifts per level, as well as overall totals for each category. See text for details.

Importantly, these estimates are not arbitrary or a wish-list. They reflect what we know about our alumni, community members with a demonstrated interest in our other work, possible corporate support, and so on. The gift officer will have assessed the capacity of potential donors to give as a function of their connection, prior giving, potential interest, estimated wealth, and more, such that the amounts and timeline are realistic.

Box 13.2. University Fundraising Lingo—A Non-Exhaustive Glossary

THE PROCESS

Advancement — building broad awareness and support through development, alumni relations, government relations, and sometimes marketing and public relations

Ask, "The Ask" — the actual request for support from a donor; sometimes refers to the amount being requested

Campaign, Capital Campaign — a coordinated fundraising initiative to meet a stated financial goal, typically institution-wide; customarily begins with a quiet phase to raise a substantial portion of the goal, followed by a public (marketed) phase to achieve and subsequently celebrate it

Capacity — the estimated giving capability of a prospective donor; a combination of the individual's disposable wealth and inclination to give to the specific cause

Case Statement — a donor-oriented document that makes the case for support of a fundraising initiative including the need or opportunity and potential impact; often a glossy brochure, possibly a website and/or video

Development — fostering understanding of, and obtaining private support for, an institution's activities and programs; a subset of advancement

Fundraising — acquiring voluntary financial support from individuals and organizations; a subset of development

Gift Officer, Development Officer/Director — a staff member with primary fundraising responsibilities; typically works closely with an academic unit leader (e.g., dean, director)

Moves Management — the practice of progressing a donor through a five-step fundraising cycle:

(*i*) ***Identification*** — finding prospective donors, or prospects

(*ii*) ***Qualification*** — wealth screening and estimating capacity

(*iii*) ***Cultivation*** — building a relationship ("fundraising is friend-raising")

(*iv*) ***Solicitation*** — making "the ask"

(*v*) ***Stewardship*** — saying thank you and continuing cultivation

Wealth Screening — assessment of a potential donor's assets to help estimate giving capacity; includes knowable and public data such as previous giving, real estate ownership, public stock ownership, political donations, and corporate/executive positions

THE GIFT

Alumni Giving — not only gifts from alumni but also the proportion of alumni who donate

Annual Giving — ongoing foundational fundraising program engaging a broad base of donors and prospects; typically generates many smaller donations from letter and email appeals

Bequest — gift made through a will or trust upon the donor's decease

Charitable Contribution — a tax-deductible donation to a qualified nonprofit organization

Donor Pyramid, Gift Table — planning tool that accounts for the many small donations and few large donations typically needed for a fundraising initiative

Legacy Gift — synonymous with bequest, sometimes announced as a gift with current gifts

Major/Principal Gift — large/extra-large gift at the upper end of the typical gift range for the institution

Philanthropy — literally "love of humanity" via the giving of money, expertise or time, often with a long-term or strategic connotation; a philanthropist is an individual giver; a philanthropy is a philanthropic organization or nonprofit foundation that can give and/or be given to

Planned Giving — major gift that is part of an individual's financial and/or estate planning

Pledge — a promise to donate a specific sum to be fulfilled at a later date

Voluntary Support — broad and/or synonymous term for gifts, donations, bequests and philanthropy

Two further points on donor pyramids and gift tables. First, there's an interesting trend in the shape of the donor pyramid towards a much narrower profile: the top 1% of donors now account for almost 80% of total giving, rising from 64% just a decade ago (Hasseltine 2017). This shift is likely related to rising wealth inequality and megagifts from the ultra-wealthy, the ultimate example of which is Michael Bloomberg's $1.8B gift to Johns Hopkins (Bloomberg 2018).

The second point is about campaigns. Donor pyramids and gift tables are often used in institution-wide fundraising campaigns, and almost every university has had or will have a major fundraising campaign. Campaigns are, more or less, a large multi-year marketing wrapper around what is essentially the whole range of institutional fundraising priorities. In years past when university fundraising had a lower profile, a campaign denoted a substantial intensification of activity and sometimes a special target, but nowadays campaigns can be almost continuous and they involve all the colleges and schools. Because the campaign has an identity of its own that is seemingly separate from fundraising in local units within the university, it is not unusual for the campus (and donors) to think that the funds raised in a campaign are likewise separate. I've heard people ask, "Where's that X million dollars the University raised in the campaign? They should give some to our department." Generally, those funds are not separate; they represent the university-wide total of fundraising done by all the units across the university as part of the overall campaign effort. Campaigns typically have a quiet phase and a public phase. If our school is ordinarily raising about $1M per year, we might plan a five-year campaign to raise $6M: the expected annual amount

($5M over five years) plus a further $1M from the extra campaign activity. The first two years might be the quiet phase where we concentrate on the top of the pyramid to obtain leadership-level gifts, and then we announce the public phase and say that we've already raised $2.4M and we need to reach our $6M goal in the next three years. Of course, we expect to get $3M of that from our regular fundraising, but we need to try and average an extra $0.2M (20%) more per year ($0.6M over the three years) using the momentum of the campaign goal. If we've planned well, we'll reach the goal on time (or early) and celebrate (and start planning the next campaign). If we were over-zealous in our estimates, we might move the timing goalposts and extend the campaign to complete it the next year.

Let's shift now to how the money arrives, how it's handled, and how we pay for the process. Most gifts are monetary and they can be made in many forms including credit cards, electronic transfer and checks, but gifts also include stock/shares, real estate, and personal property. Non-monetary gifts are typically sold and converted to cash prior to the institution taking possession—the institution or its foundation will have a policy on how it handles such gifts. Two common exceptions are artwork or manuscripts donated to the university's scholarly collections—those gifts will usually be handled by the museum curator or special collections librarian and, of course, they are not counted as fundraising.

What happens next will vary somewhat by institution—the main difference being whether or not the gift goes into the accounts of the institution itself or those of its foundation. The presence of a foundation is largely (but not exclusively) a public/private university distinction. Public universities have separate foundations so that, in the memorable words of a trustee I know, "the State can't get its hands on our endowment!" It's also useful because the foundation will be a nonprofit for charitable contribution purposes while a public university is technically a state agency of some kind (nonetheless, many public universities will still accept gifts, and often they will be managed by the foundation). For private universities, the institution itself is a nonprofit (recall we are not focusing on for-profit private schools in this book) and only the more complex institutions might have multiple entities for handling various aspects of their finances.[10]

The role of a university foundation can also vary considerably: at a minimum it will almost certainly hold and invest endowed funds, it can include some or all of the professional fundraising staff (frontline gift officers as well as back-office data analysts and financial specialists), and it may provide some or all the additional functions of an advancement office (e.g., alumni relations; see Box 13.2). Public university foundations have boards of trustees/directors and, while the organization must preserve its legal and financial independence from the main institution, the foundation's (typically

10 The more complex publics can also have multiple entities connected with fundraising. Examples at such public and private institutions can include real estate investment, foundations for sub-parts such as the law and medical schools, athletics foundations, and more.

sole) mission is to support the university. Note that those on the foundation board are not the same as the regents (sometimes also confusingly known as trustees) who serve on the public university (or system) governing board.[11]

Whether via a foundation or in-house, the entire fundraising operation has costs that need to be covered. While they are sometimes allocated all or in-part from general institutional funds, in many institutions/foundations those costs will be recovered from gifts and/or endowment proceeds via a gift or administrative fee. Such fees are usually in the 1–15% range depending on the base they are applied to, which may variously be non-endowment gifts only, just the first X million dollars of major gifts, only endowment income, and so on.

A discussion of fundraising costs leads, almost inevitably, to the question of return on investment, often phrased as, "What does it cost to raise a dollar?" It's a fair question, even an important one. But take just one more step and ask, "What is the right cost per dollar raised?" and you will find yourself slipping all the way down the rabbit-hole of seemingly-useful-but-completely-misleading metrics. The notion of a right cost per dollar is a myth that has afflicted the fundraising world for years;[12] there is no magic number and it is no more useful than asking, "what is the right cost per student?" The myth stems from the preference of donors to have 100% of every dollar go to the cause, and the incorrect supposition that dollars spent to actually raise the funds are being diverted to activities that should mysteriously be paid for by someone else (tuition from students and families?). This erroneous belief not only undermines the strategic value of investing in growing philanthropic support for education and research, but it also distracts from the impact and effectiveness of the program.

Consequently, while one school might spend 10 cents to raise a dollar, another might spend 20 cents, and either one could be performing relatively better or worse depending on context: a new fundraising initiative will not yet be bearing fruit, or some programs will need to rely more on high-cost and lower margin activities (e.g., special events) instead of depending on major gifts from a few reliable donors. A healthy fundraising program will try to balance this tension between cost and dependency. By all means, we should compare costs per dollar across like programs and institutions, but a holistic range of effectiveness metrics is far better than boiling things down to a single number (BoardSource 2020).

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11 As you might imagine, state governing boards, foundation boards, and presidents can have diverging priorities. The resulting politics will occasionally rise to a level that makes the news, such as during a recent chancellor search at Ole Miss (Ganucheau 2019).

12 The nonprofit overhead myth became so pervasive that three leading groups that provide information about charities issued an open letter to donors everywhere, urging them to pay attention to other performance factors (Taylor et al. 2013).

13.7 What role do alumni donors and associations fill in fundraising?

The quintessential donor is an alumna or alumnus[13] but, as we discussed in Section 13.2, that is becoming less and less the case. While the dollar amount of alumni giving overall has continued to rise (Council for Advancement and Support of Education 2019), the number of alumni donors has not risen much at all, as shown in Figure 13.17. The result is that alumni giving participation has been falling since 1990, when it peaked at over 18%, to less than half of that at the current level below 8%. All is not what it seems, however, because technology has enabled us to make dramatic improvements in our databases of contactable alumni, the alumni of record, by a factor of almost two over the same period (Council for Advancement and Support of Education 2019). Thus, the denominator has doubled and this alumni participation metric, also known as the giving rate, has halved and lost its validity as a measure of alumni engagement. Also, a definitional note, alumni donors include those who have given any amount, even just $1. Still, the role of individual alumni giving is changing as the wealthiest alumni give through family foundations and donor-advised funds, as we saw in Figure 13.4.

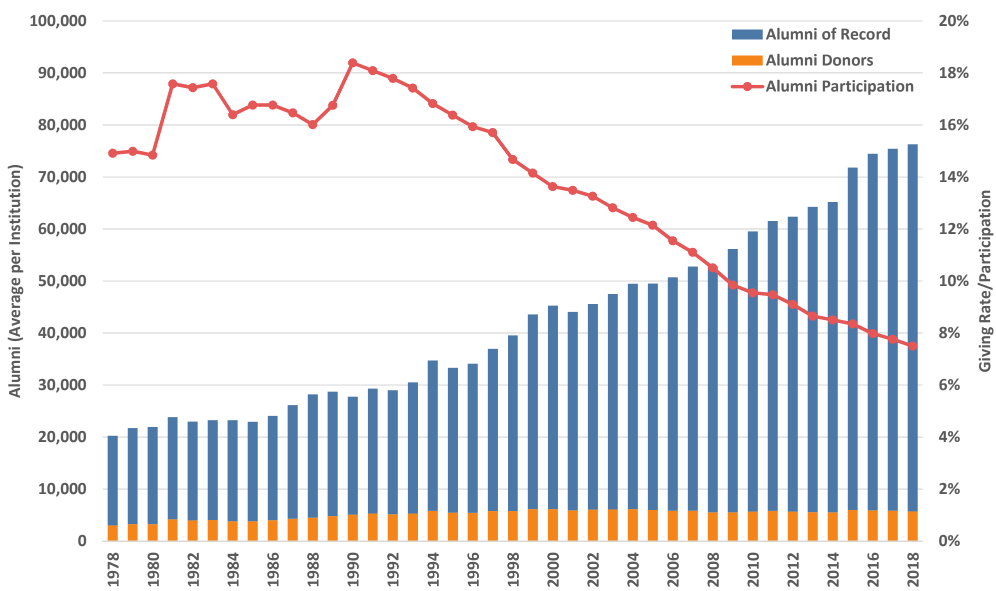

Figure 13.17. Trends in alumni of record, alumni donors and alumni participation (giving rate) at colleges and universities. Records of contactable alumni have improved dramatically, driving down the participation/giving metric. Source: CASE (Council for Advancement and Support of Education 2019).

13 I can't stop myself, the Latin is: alumna (female, singular), alumnae (female, plural), alumnus (male, singular), and alumni (male, plural; or a mixed-gender group). I'm perfectly fine with the colloquial "alum" or "alums" to keep things easy, although I imagine there must be some sticklers out there for whom those terms or the incorrect usage of the others are like fingernails scratching on a Latin blackboard (*in tabella unguibus scalpendo*, so Google Translate informs me).

To which activities do alumni give, relative to all donors? Figure 13.18 illustrates that mix for giving to current operations (typically lower dollar amounts than capital gifts, and strongly connected to annual giving). We see that alumni give proportionally more to academics, student aid and especially athletics, relative to giving from all donors. Those are all areas where institutional affinity makes a difference. Alumni appear to give relatively less to research, but this is likely not because alumni don't support research and instead because research is where non-alumni tend to find relatively more affinity and provide the greatest proportion of their support.

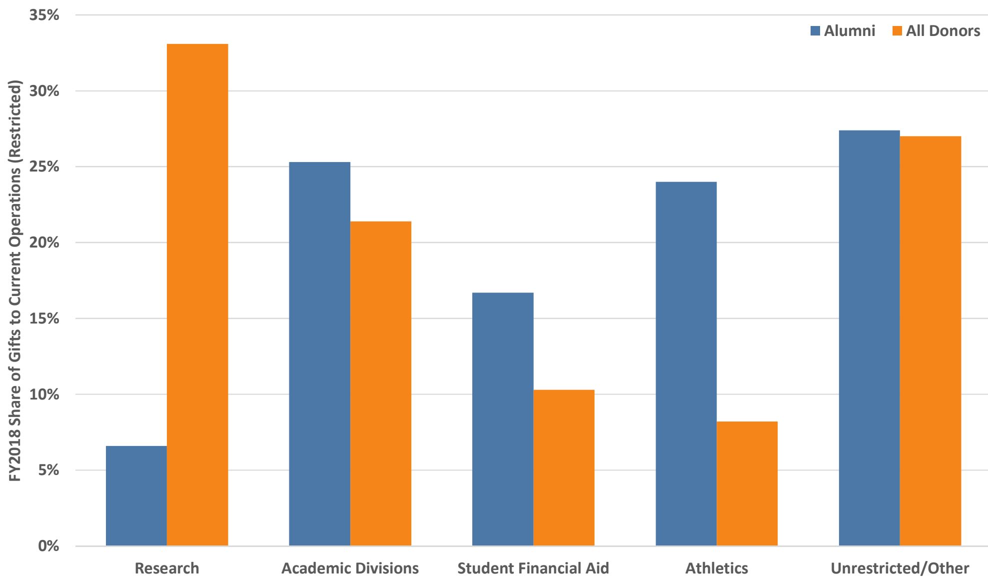

Figure 13.18. FY2018 distributions of gifts to current operations from alumni and from all donors. Source: CASE (Council for Advancement and Support of Education 2019).

It's worth stressing again that fundraising is a relationship practice—it has to be sincere and meaningful—and that fact applies as much to alumni donors as to all donors. If donors get the impression that the relationship is transactional, or if fundraising is managed with sales-type metrics alone (e.g., number of calls, quarterly targets) without those that incentivize relationship-building, then the institution's fundraising success will be mediocre. Indeed, that mediocrity may be further doomed because the next generation of donors prioritizes the entire engagement experience and an investment impact mindset over the less-engaged institutional allegiance of previous generations. For young alumni it is particularly important to pursue multiple engagement paths: while their philanthropic capacity is small, they can volunteer their time and experience (career nights, outreach events), participate in experiences that celebrate achievement or create further engagement or excitement (athletics has this one figured out, but it's a work in progress for the academic part of many universities), and connect and interact via a relevant and regular set of communication tools (social media, even newsletters).

Alumni associations are evolving in this direction, whether they are free-standing or integrated within the development or advancement office. The old business model was based on limited membership with dues, along with sales of organized travel and cruises, affiliate credit cards, etc., whereas the contemporary business model is shifting away from exclusive membership to inclusive membership for all alumni, signaling the emphasis toward engagement (Fraser and LeMaster 2013; Vlahos 2016). Alumni associations are rarely completely self-sustaining and there is a wide range of institutional contribution to their budgets (The Napa Group 2010) to complement the specific permutation of business model (i.e., mainly dues, fee for service, alumni gifts or foundation support, mainly institutional funds, or some blend of these).

14. Outcomes & Futures

14.1 What are the financial benefits of a degree?

I am as eager as any professor to proclaim that the value of earning a degree is not primarily about earning money. Understanding our world, an educated citizenry, the life of the mind, solving society's grand challenges, saving lives, and so forth, these are absolutely the good and right reasons to pursue higher education. The fact remains, however, that in today's world a college education is the broadest, fastest, and straightest way to a higher-paying job and a rewarding career.[1] Anecdotes about self-made millionaires who didn't go to college notwithstanding, there are no rigorous studies that provide any evidence to the contrary—zip, zero, none. The title of a recent piece summed it up: "Please Stop Asking Whether College Is Worth It" (Newton 2018a). All the reliable evidence points plainly and repeatedly to the economic benefits of obtaining a university degree, including a liberal arts degree, and even of completing just some college, versus not gaining any post-secondary education at all. We'll delve into all that in a minute, but why, then, do we see respected news media running articles that create doubt or directly contradict what we know? Well, many of those articles are about the high sticker price of elite private institutions and/or the associated student debt (and as we'll see below, the payoff for attending an elite school versus any other isn't as clear) and the headline-writers know that we are suckers for stories of individual exceptionalism (Steve Jobs was a college dropout, etc.) or ones implying that we can buck the system. So, anecdotes aside, completing a college or university degree, even with reasonable debt, bestows clear financial benefits.

The core point is illustrated in Figure 14.1, which shows the progression in annual earnings by education level. Bachelor's degree recipients make 56% more than

1 Which, obviously, is why so many students choose to invest sizable sums of money and many years on our campuses. Despite our lofty goals, this is the essential value proposition of higher education, the *sine qua non* of the university's existence. Consider this thought experiment: what if people with degrees earned no more or even less than those without, would students still be beating a path to our door? Of course not. Universities would be curious places outside of the mainstream, so few and far between that most current academics wouldn't be working there. It's worth mentioning again Clark Kerr's observation that I noted in Chapter 1: contrary to conventional wisdom, the university did not descend from the Acropolis to the Agora, from the high ideals of learning to the commercial pursuits of the market, but rather the other way around—by serving a market we can create a place of scholarly learning—the university has always found itself in a tension between the two.

 https://doi.org/10.11647/OBP.0240.14

individuals with only a high school diploma and they contribute 82% more in all forms of taxes. Advanced degree-holders can earn a lot more, especially people with professional degrees, while the situation is dire for those who don't complete high school. The basic pattern of this chart is repeated for dozens of related metrics such as lifetime earnings, retirement income, charitable contributions, years of children's education, volunteering, voting, and community involvement; exactly the opposite pattern is seen for measures such as unemployment, family income under the poverty line, lack of health insurance, smoking, and incarceration (Trostel 2015). Regarding unemployment, in 2018 the rate was 2% for people with a bachelor's degree or higher and double that for those with just a high school diploma, while in 2010 at the height of post-recession unemployment those rates were 4.7% and 10.4% respectively (Ma et al. 2019). The premium of obtaining any kind of post-secondary qualification thus goes well beyond the purely financial benefit and is observed across a wide range of socio-economic variables.

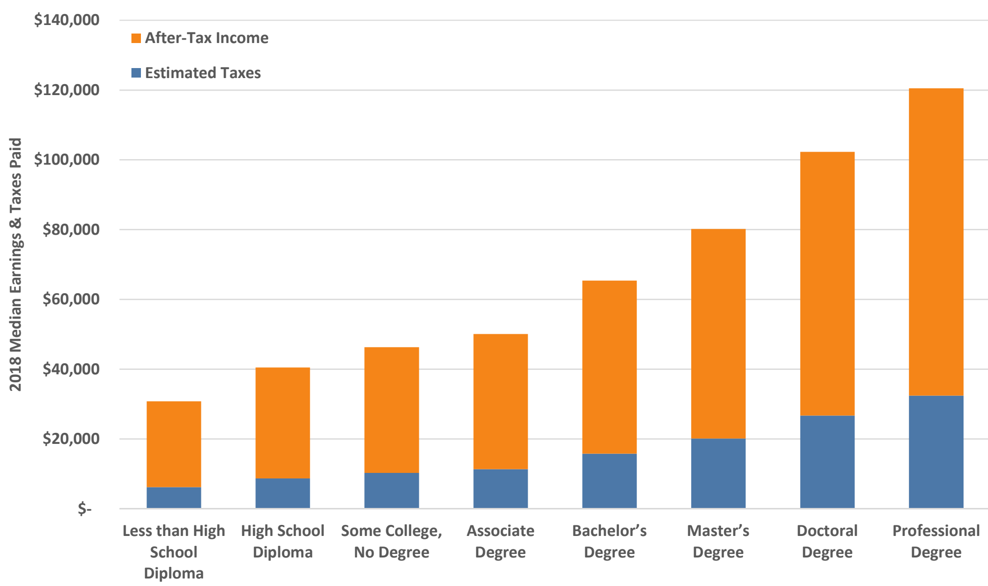

Figure 14.1. 2018 median earnings and estimated tax payments of full-time year-round employees aged 25 and older, by education level. Estimated taxes paid at each income level include federal income, social security, Medicare, state and local income, sales, and property. Source: College Board (Ma et al. 2019).

With the cost of attending a university increasing over recent decades, one might think that the college wage premium would show a matching decrease, but the opposite is true: the college wage premium has increased in real terms as the income gap has widened in recent decades (Figure 14.2). Wages for high-school graduates have been stagnant for fifty years while wages for college graduates have risen almost 20% in inflation-adjusted dollars. The difference between the two, the college wage premium, has consequently grown from about $20,000 in 1970 to about $30,000 in 2018, with most of that rise occurring during the economic expansion of the 1990s (which included the rise of technology sector). The premium lasts for an entire career, and it is possible to calculate the rate of return on the investment in a bachelor's degree. Naturally, the cash flow is negative for the first several years while the individual is getting the degree and then it rises later. Taking these and other factors into account, the return on a college degree was about 8% in the 1970s, rising after that until reaching and staying in the 14–16% range since the turn of the millennium (Abel and Dietz 2019). Therefore, the investment in going to college is at least as good as the long-run stock market return and as much as double that rate in recent years—literally one of the best investments one can make.

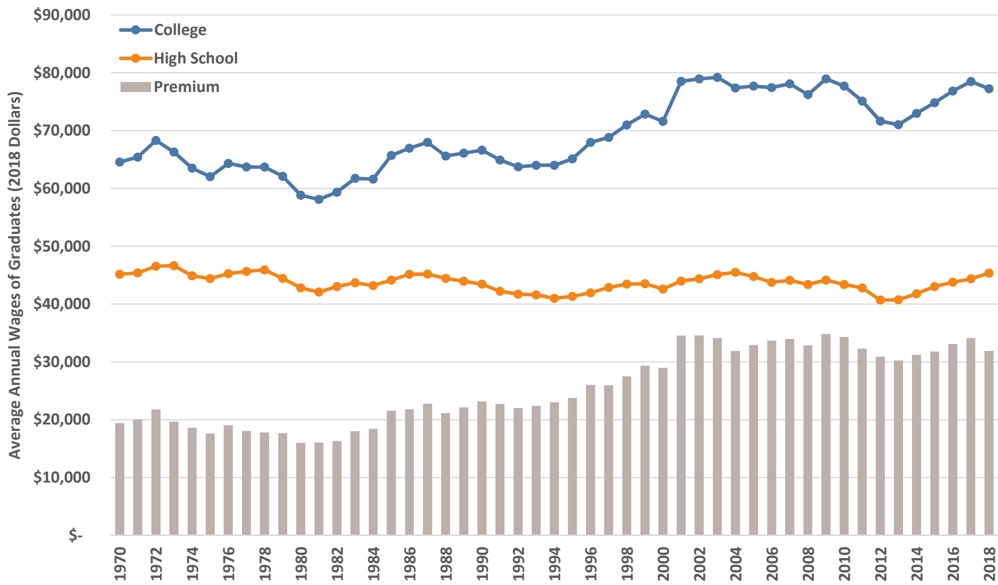

Figure 14.2. Average annual wages of graduates holding only a bachelor's degree and those holding only a high school diploma, as well as the college wage premium (i.e., the difference), in 2018 dollars. Source: NY Fed (Abel and Dietz 2019).

So far, we've looked at the data overall, but the financial returns on higher education will of course vary with several other factors. What about the dueling propositions that (1) higher education is a pathway to the middle class or (2) that it merely reproduces inequality? As Figure 14.3 illustrates, getting a degree makes a positive difference on mobility at all income levels and, owing to their size, public institutions do most of the moving (Reber et al. 2020). Adult children from families in the lowest income quintile move to higher income quintiles themselves in roughly equal proportions if they receive college degrees, whereas they remain overwhelmingly in the lowest income quintiles if they do not obtain a college degree. Perhaps less expected, adult children from families in the highest income quintile move to lower income quintiles, also in roughly equal proportions, if they do not receive college degrees, while those with college degrees remain overwhelmingly in the upper income quintiles. So, the positive and negative economic mobility induced by higher education is evident within one generation at all income levels—the first proposition is true. Regarding the second proposition, recall that college-going rates for students from low-income families are lower than for those from high-income families (see Section 7.2), so the income-based inequality of access to higher education ironically also reproduces that inequality (Witteveen and Attewell 2017a). Both are true simultaneously, and they underline the importance of increasing access to college for students from low-income families.

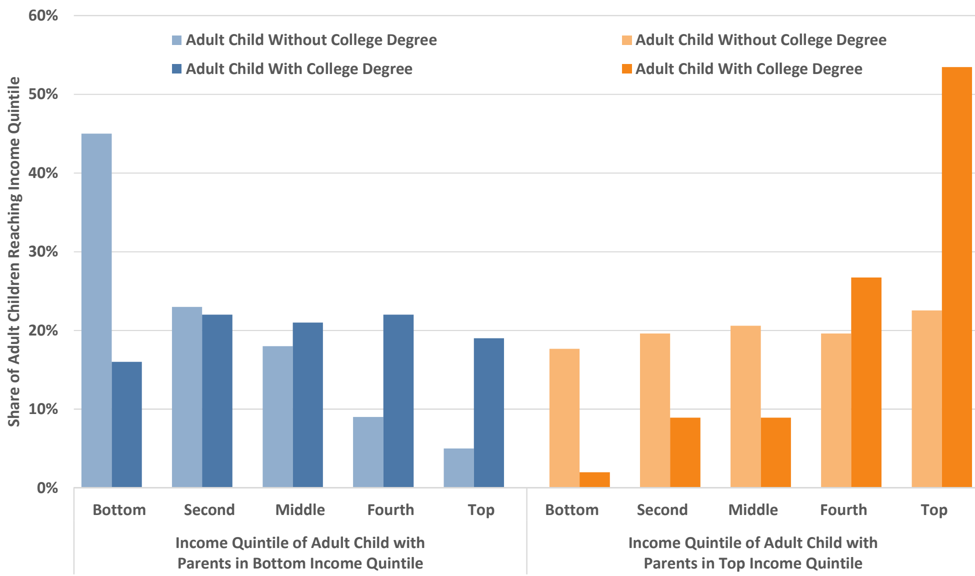

Figure 14.3. Economic mobility of adult children with and without a college degree from families with low and high income. Source: Brookings (Haskins 2016).

Obviously, the major subject of one's degree can also make an appreciable difference in earnings. Humanities and liberal arts degrees, in particular, seem to attract unfair attention for lower salaries and/or high unemployment rates. Few of these stereotypes really hold water, as shown by the wage and unemployment data in Figure 14.4. Education majors dominate the lowest salary bands, especially in mid-career earnings—it's no surprise that our K-12 school systems have such a challenge attracting and retaining teachers. While they are underpaid, education majors at least have the consolation of having the lowest unemployment rates. Other bachelor's degrees with low compensation include the performing arts (with the lowest starting salaries), fine arts, theology and social services. Of those, the fine arts also have a high unemployment rate, so perhaps only the passion-of-the-starving-artist stereotype has any basis in the data. The upper end of the wage distribution is populated mostly by technical fields: engineering of many kinds, economics, finance, accounting, and information systems. General business and business management majors are pretty much at the median, not as high as many may think. It turns out that many liberal arts majors are in the middle of the pack salary-wise, along with some sciences. As recent studies have confirmed, financially, liberal arts majors are as good a choice as many others and negative perceptions about liberal arts colleges and liberal arts majors are not well-founded (Hill and Pisacreta 2019; Rossman et al. 2020).

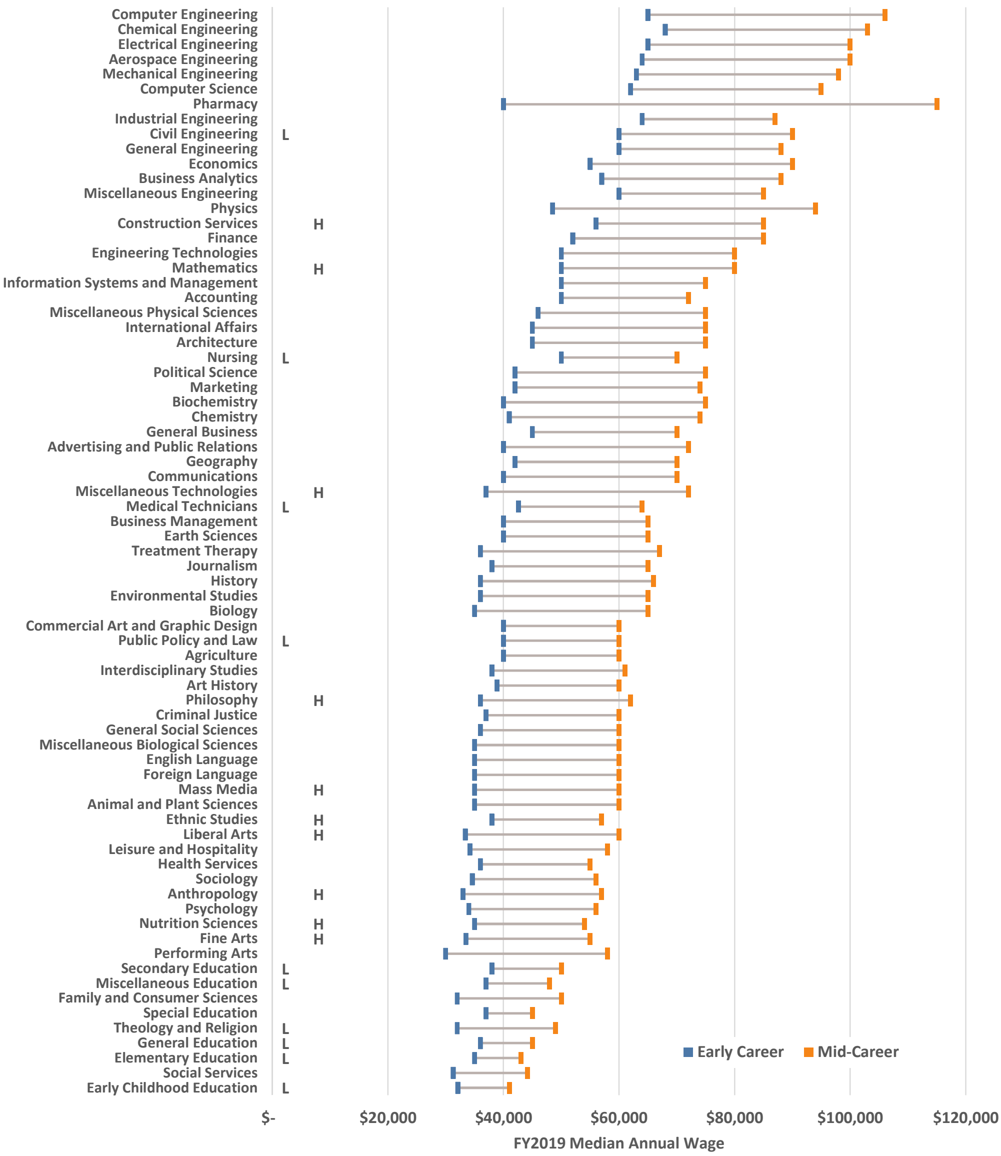

Figure 14.4. FY2017 early career (ages 22–37) and mid-career (ages 35–45) median wages for full-time workers with a bachelor's degree only, by major, with highest ten (H) and lowest ten (L) unemployment rates. Source: NY Fed (Federal Reserve Bank of New York 2019).

A third subdimension to the financial returns of a degree is the institution from which one graduates (technically you can attend several institutions and transfer courses, but the university on your résumé that awarded the degree is typically the one that counts). More specifically, how much does graduating from a selective institution affect earnings? This is another one of those college and university issues where popular perception and evidence don't always align. In certain economic classes the social pressure to attend the most selective institutions is intense and it can be a fraught process.[2] There is a constant stream of media articles ranking institutions on their graduates' earnings, and to make matters worse, even the US Department of Education's College Scorecard website lists earnings after graduation; at least it provides a range rather than a single average (US Department of Education 2020a). Of course, those earnings summaries are strongly influenced by fields of study offered, family income, demographics, geography, and what is termed "signaling"—the premium employers will pay for a graduate from an institution that is hard to get into. Any of these factors and others can strongly bias simple tabulations of earnings by school, and not surprisingly in such lists we see an earnings premium at expensive, elite institutions, or state flagships over smaller regional colleges, and so on. These same factors also feed into the rankings game—that exasperating topic gets a section all of its own, coming up next (Section 14.2).

Still, beyond perceptions of prestige and supposed quality, what is the selectivity effect on earnings after controlling for the confounding factors? Because rigorous research that controls for potential biases requires specialized surveys or cohort data over many years, there is only a handful of such studies for the US. An influential study of 27 institutions, mostly elite privates and a few top public flagships, found that among that group the overall selectivity effect on earnings was effectively zero (Dale and Krueger 2014). The study did find that Blacks, Hispanics, and first-generation graduates earned more if they graduated from the most selective schools in the study. A follow-on study confirmed the overall non-effect for men, but also found that women graduates of selective colleges had higher earnings than those from the (somewhat) less selective institutions in that small set, due in part to their greater workforce participation (Ge et al. 2018). Moving to a much broader set of schools, a recent nationally representative study of the selectivity effect on earnings for two cohort surveys, ten years and four years after graduation, found important earnings differences attributable to selectivity, as illustrated in Figure 14.5. However, the authors stressed how uneven those earnings payoffs are, with strong gender differences at equivalent institutions, contrasts by major, and the effects of family background (Witteveen and Attewell 2017b). The upshot is that for those in the rarified air of being admitted to the

2 The 2019 college admissions scandal, which included a number of celebrities, and in which dozens of wealthy families are alleged to have committed fraud and provided millions of dollars in bribes, shows the intensity of the social pressure and the lengths to which some people will go for entry into the "right" school.

nation's most elite institutions, there are positive financial effects for people of color and women, but for affluent parents and (generally white, male) students, the anxiety and almost absurd hair-splitting in choosing among those schools have essentially no financial (or academic, for that matter) benefit—it's all about prestige and signaling. However, for most students planning to attend most universities and colleges there is some financial advantage to attending a highly selective institution, but choice of major, academic preparation and other factors are just as important.

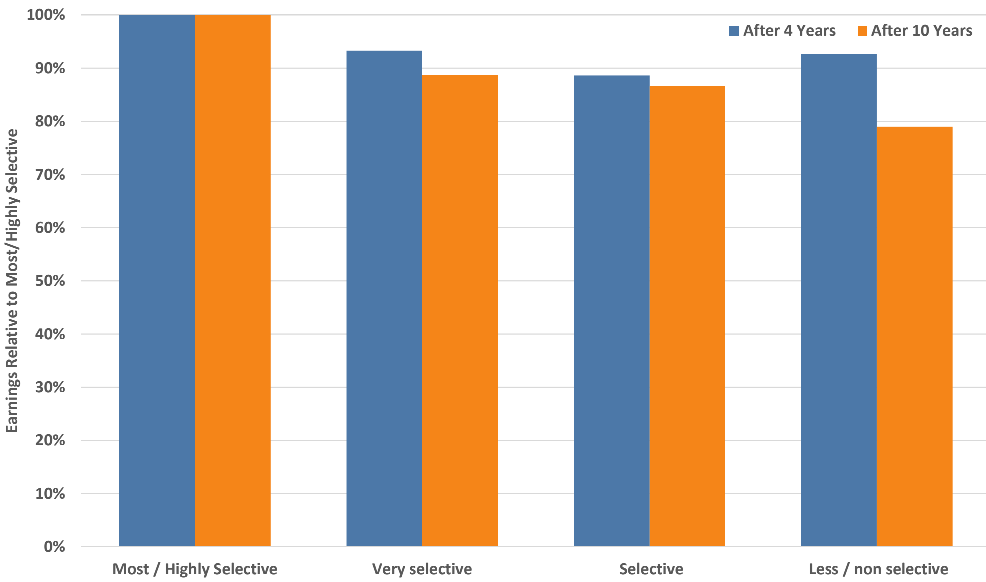

Figure 14.5. Average effects of college selectivity on earnings after controlling for multiple pre-college, college, and post-college factors, for bachelor's degree recipients representing a broad range of institutions four years and ten years after graduation. Source: Witteveen and Attewell (2017b).

14.2 Do university rankings have a financial impact?

If you want to have some nerdy fun at a cocktail party with a bunch of academic types, simply toss college rankings into the conversation and then stand back to enjoy what happens next. I guarantee an opiniated exchange. As part of a professional and popular culture in which rankings are ubiquitous, universities have a love-hate relationship with college rankings aimed at potential students and their parents, as well as with those that purport to assess research performance. If our program or institution does well in some ranking, well-known or obscure, naturally we proclaim our greatness from the rooftops (or at least our websites and press releases); if we don't appear as high as we believe we should, then we criticize the shallowness of the exercise, the terrible choices of metrics used, and how rankings can't measure what really counts anyway. There's more to it, of course, so allow me a brief dissertation on the pitfalls of ranking as important context, and I promise we will return to our question about whether or not rankings have a financial impact.

The fundamental drawback with many kinds of ranking is that they reduce a multidimensional question to a one-dimensional answer. This is also why they are so appealing—they (appear to) make a complex decision simple and easy. What is the best restaurant in the nation? The best car? The best state to live in? Because it's a matching problem, the soundest response is to determine best at what (attributes) and best for whom (needs). Unfortunately, websites and magazines that provide choice and complexity as the answer don't sell nearly as well as those that impose a one-size-fits-all answer, as the college guide industry found out when US News & World Report did just that in the 1980s. Many emulators and alternative rankings have sprung up since then; reputational surveys were the main source of information early on, but US News and most others now include publicly available and/or survey-response metrics in their weighting schemes. Research rankings, while largely playing to the industry instead of students and families, have followed much the same path.

Reputational rankings were (and still are) widely criticized, and justly so. Although it seems to make intuitive sense to ask "experts" what they think of the competition, most are poorly informed about current characteristics at other institutions and instead they provide biased opinions relying on informal and uneven knowledge: for example, where their friends happen to be, their own field or group, and previous rankings (Bastedo and Bowman 2010); inappropriate information, such as research prowess rather than quality of undergraduate instruction, or vice versa; and lagging, self-reinforcing notions of prestige. This latter attribute is the most pernicious because it creates stereotypical groups at the top, middle and bottom of the ranking that resist change and confer a halo effect independent of the data.[3]

Using data is a well-intentioned improvement over reputation although it isn't really possible to obtain comprehensive data on precisely what students and families would like to know. Beyond cost and location, they place primary importance on academic quality, something that is hard to pin down. The rankings partially approximate quality via metrics such as faculty/student ratios, amount of academic support, retention and graduation rates, alumni giving, and student selectivity (i.e., acceptance rate, yield, class rank, standardized test scores). Allocate some reasonable but completely arbitrary weights to each metric and, presto, you have a ranking that boils the "best" institutions down to a single number.

3 Where do you think Princeton Law School might rank against other law schools—probably in the top 20, like Princeton itself and many of its programs? Well, you'd be wrong, because Princeton doesn't have a law school. This marvelous anecdote on the halo effect in reputational rankings was uttered derisively by John Sexton, then the law dean at NYU (and subsequently its president), when he suggested where survey recipients for law school rankings would place the fictitious program. His rhetorical point was later proved correct by the judge who started Cooley Law School in Michigan; he surveyed 100 of his colleagues to see where they might place it on a list of 10 schools that included some big-name schools and some lesser-known ones, including Cooley. Also on his list was Penn State, which they ranked roughly in the middle, even though Penn State did not have a law school at the time (Harper 2013).

The single number is a core critique, and it holds for alternative rankings that emphasize value or mobility too. There are other critiques. Consistency and false precision are often raised—change your weights or update the noisy data each year and you'll find institutions moving up and down the rankings, sometimes dramatically. And you will be shocked—shocked—to learn that universities and programs attempt to manipulate their statistics in order to improve their standing.[4] For example, the percentage of alumni giving can be improved by asking every recent graduate to donate even just $1, or class sizes can be changed to ensure that there is a greater proportion just under the threshold, etc. Yet other criticisms underline how college rankings further promote the economic inequality between campuses that we saw in Section 7.2 (Wermund 2017). There are so many rankings being published that, in a twist of (apparently unrealized) irony, there are now rankings of rankings.

University research rankings embraced the emergence of digital publication and citation data and have mostly dropped reputational components. Still, they likewise combine metrics using arbitrary weightings to produce their annual lists and many of the same critiques apply. An added complication for program and department rankings is that disciplines align differently at every institution, and there is no way to divide up the continuum of knowledge into a consistent set of discrete disciplinary fields, and when you try there are serious lumping/splitting issues. Are neuroscience and psychology one giant field or two, or should they be further subdivided? How does one count a research paper that falls into multiple areas? What about influential books in the humanities versus the rapid-fire and cutting-edge publications in computer science that don't even make it into research journals anymore? Is a science-focused university "better" at research than one that is more oriented to the arts and humanities? The list goes on, but the rankings generally gloss over most of these issues, define their own fields and weightings, and drive on.

This can lead to meaningless comparisons and occasionally preposterous results. Two quick examples from my own university demonstrate the point. First, we are frequently top-ranked in water resources by one ranking, but in other rankings that field is variously within hydrology, civil engineering, earth science or environmental science. Our main department in this field used to be called Hydrology and Water Resources but it has since combined with another into Hydrology and Atmospheric

4 The film *Casablanca* contains dozens of delightful quotes including the one paraphrased here about gambling in Rick's Café. Other notables include these six in the top 100 movie quotes (to stick with the ranking theme), more than any other film: "Here's looking at you, kid." (#5); "I think this is the beginning of a beautiful friendship." (#20); "Play it, Sam. Play 'As Time Goes By.'" (#28) that is often misquoted as "Play it again, Sam."; "Round up the usual suspects." (#32); "We'll always have Paris." (#43); and, "Of all the gin joints in all the towns in all the world, she walks into mine." (#67). And now, because we cannot resist ranked lists, you want to know the same two things anyone else does—your favorite quote's rank and which one came out on top. You can look up the former and all the rest on AFI's website (American Film Institute 2019). For your edification and apropos our discussion of rankings, number one is "Frankly, my dear, I don't give a damn." from *Gone with the Wind*.

Sciences. So, are we number 1 or 20 or 50? Indeed, we have strength and distinction in a wide range of interdisciplinary water issues, but our ranking is completely dependent on how finely the fields are defined and is unconnected to a campus unit, which is not much use to students, researchers or administrators. Second example, the Shanghai subject rankings came out just a few days before this writing (Shanghai Ranking Consultancy 2020), and a couple of my department colleagues in Geography were grousing about how some other universities' programs could possibly be ranked higher than us. The most egregious case was Stanford at number 5 in the US—as one colleague pointed out in dismay, it has no Geography department and just one part-time card-carrying geographer. The rankings define the field so broadly as to be nonsensical for any practical purpose.

We are almost done with my exposition on important rankings issues before we discuss their financial impact. For the *coup de grâce* it is time to return to student-oriented rankings and face a straightforward fact revealed in the data. Despite the many variables that go into college rankings, the cold reality is that they basically measure just one thing: selectivity based on general academic preparation, i.e., standardized test scores (Wai et al. 2018a; 2018b). Figure 14.6 shows the overlapping distributions of 25th and 75th percentile SAT scores (combined Math plus Verbal, including the converted ACT equivalent where applicable) by institution rank in the US News ranking. The approximately 200 schools each in the National University ranking and Liberal Arts College ranking are plotted together. The relationship is simple and essentially linear, with correlations near 0.9, meaning that SAT selectivity explains 80% of the variance (R^2) in US News rankings. The same study found essentially parallel results for 5 other college rankings, including some that don't even use the SAT in their metrics (Wai et al. 2018a). So, important point number one, no matter the ranking approach, it will end up replicating the SAT distribution of colleges, which is to say the academic preparation of their students. Important point number two, which we know intuitively and also from Section 7.2, there is massive overlap in students' general academic preparation up and down the rankings of the schools that generally end up in the top 200 lists, and therefore the rankings cannot provide any meaningful separation between them, at least not anything close to the rank order precision that they are selling. While the top 30 or so in each list are distinct in their profiles from the bottom 30, most schools in between are hard to tell apart. We can go beyond the top 200 lists and look back at the identical interquartile ranges for all the schools in our data set by type (Figure 7.4). We saw that the R3-M3 institutions (that generally do not appear in the top rankings lists) indeed have a student academic preparation profile that is distinct from the major research universities and private baccalaureate colleges, within an overall pattern that is consistent with the notion of broad differentials bracketing plenty of overlap.

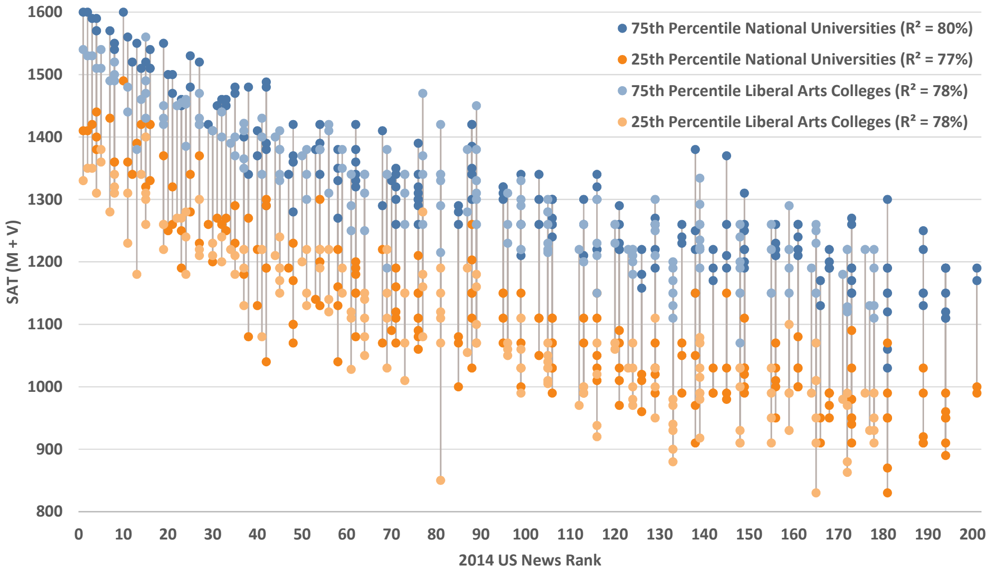

Figure 14.6. Overlapping distribution of 25th and 75th percentile SAT (Math + Verbal) scores by institution rank in the 2014 US News & World Report rankings of National Universities and Liberal Arts Colleges, including percent variance explained (R^2) for each. ACT scores were converted to SAT equivalents where applicable. Note that tied ranks have a corresponding number of neighboring missing ranks. Source: Wai et al. (2018a).

Now that we know that rankings are fraught with issues and that they mostly replicate an institution's underlying student academic preparation, one has to wonder why schools participate in the rankings and pay them attention at all. They do so because of the circular logic of an arms race: prospective students and parents use the rankings, which means they factor into the intense competition to gain and maintain prestige by recruiting the academically best-prepared students possible. Therefore, in addition to the benefits of bragging rights when an institution's ranking ticks upward, it's reasonable to hypothesize that schools might see an enrollment-related financial benefit or loss with a shift in rank, and they may change their spending as part of the jostling for position.

The research literature on the financial impacts of rankings is small, and those studies sometimes focus only on smaller subgroups of schools. Nonetheless, their findings are sufficient to help us understand the basic connections, as illustrated in Figure 14.7. Starting at the top, we know already about the very strong link between rankings and SAT, and not surprisingly the same goes for acceptance rate that is closely connected to academic preparation and selectivity (Meredith 2004; Wai et al. 2018a). As we might expect given what we learned about the earnings of graduates in the previous section (Section 14.1), absent the controls on all the biasing factors, there is a strong link between ranking and earnings (Dunlop 2018). Moving on to the heart of the question, there is a moderately strong statistical relationship to institutional expenditures, and while there are differences between large universities and baccalaureate colleges, investment in instruction is the primary area in which institutions alter their spending (roughly 7–9% more) when they move to a higher category or rank (Kim 2018). The pay of many university presidents includes performance incentives, and a few explicitly call out improvements in rankings. Several studies find no generalizable link or only partial links depending on study design and controls, such as recent work (Yeung et al. 2019) that identified a roughly 1% increase in pay per rank increase for presidents at public universities (but not private universities or liberal arts colleges). Regarding price and cost, one of the original studies in this area focused on small top-ranked schools only and found no link to sticker price (presumably because lower price would signal lower quality for these schools) but it did identify a moderately strong link to discounted tuition after aid (a 1% reduction for each drop in rank of 2 to 3 places; this also reduced net tuition), which is a less visible way to recruit students from a pool that may see a quality or quantity decline with lower rankings (Monks and Ehrenberg 1999).

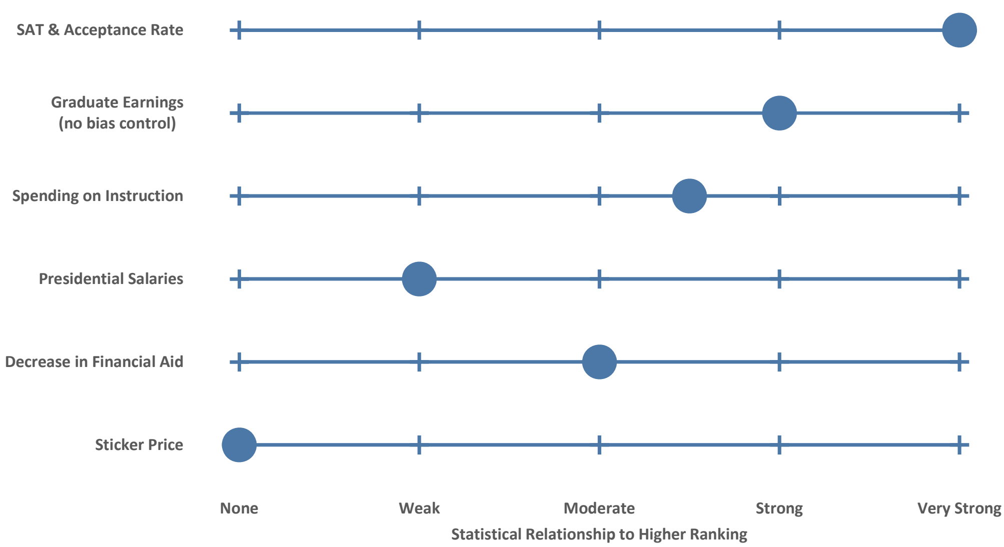

Figure 14.7. Summary of the strength of selected statistical relationships between institutional rankings and hypothesized related outcomes, based on the small literature of scholarly articles. See text for details.

On a related note, a recent study found that random samples of alumni ratings were a better predictor of graduates' income and well-being than popular college rankings and, interestingly, that higher total cost of attendance actually predicts lower satisfaction (Rothwell 2019). Additionally, if you're wondering what kind of resources would be needed to make a large move in the rankings, say from 35 to the top 20, one study did that for the US News rankings and found, unsurprisingly, that it would take hundreds of millions of dollars annually in highly focused investments (Gnolek et al. 2014). On a per-student FTE basis, this roughly aligns with the kind of money separating the highest-ranked schools from the rest.

After all this, you might be wondering if there are any rankings that are worth a look at all. There are, and they are the ones that provide categorical ratings rather than over-precise numerical rankings, often grouping schools into tiered bands or categories with transparent supporting information. Several popular college guides follow this model, as do the rankings for research universities that are still informally known as the Lombardi rankings after one of the originators (The Center for Measuring University Performance 2018). These all provide a good sense of where institutions are placed on various metrics without the headline-grabbing distractions of the latest questionable best-of lists.

14.3 What is the economic impact of a university?

It's almost axiomatic that universities are understood to be economic engines, locally, regionally and nationally. When I worked in university tech transfer, a wise colleague once clarified that, technically, the university is not the engine—instead, it produces the *fuel* for the engine. The indirect nature of the link to economic vitality is a critically important distinction. The prime mission of a university is not to create a vibrant economy directly, it is to create and transmit knowledge, largely by producing educated graduates. Those graduates do the vast bulk of creating and adding value that enables the growth of companies and jobs. Yes, universities can grow their own workforces and they can have secondary missions to produce technologies and spinoff companies, but those things generally represent a drop in the proverbial bucket compared to the total activity of an institution's graduates. Their knowledge and insights are the fuel required to run and grow the contemporary economy. In any case, the point of the metaphor is that universities bring intellectual, cultural, and other kinds of value to their community, including financial value, and many universities like to demonstrate what they are worth by calculating their economic impact.

We see these numbers all the time, whether it's the travel industry or the local manufacturing sector that contributes X billion dollars annually to the local economy. Exactly the same kinds of calculations are made to estimate the local economic contribution of a university. Importantly, most economic impact models focus on measurable spending and they ignore those (difficult to measure) broader human capital benefits of an educated workforce. The estimation process involves enumerating the fate of every dollar the university spends (e.g., employees' consumption spending, institutional contracts for services, contributions to state and local taxes) and using a multiplier to include the knock-on impacts. What's a multiplier? Let's say the university pays for some minor construction work performed by a local contractor: for every dollar spent on the contracting company, some of that dollar stays locally in the form of wages, taxes and materials, and some leaves the region as other taxes or materials not locally produced; of those local expenditures, the same cycle happens in turn, and so on in decreasing local amounts. That is the multiplier, and it is typically between 1 and 2. You may see incorrectly-labeled multipliers running as high as 10 or more, perhaps reflecting gross return to budget ("for every dollar the state spends at ABC State University, it sees 9 dollars in return" for an institution that gets 10% of its funding from the state), or the number of times the dollar cycles through the local economy, but those are not multipliers. Multipliers are derived from national studies and are adjusted for industry and location. The relevant multipliers, times the appropriate estimated contributions by category, will together add up to the total economic impact.

Ordinarily, an economic impact calculation is done by technical experts using complex estimation software, but the essence of the process can be shown using the simple worked example described in Table 14.1, which is based on a detailed example (Ambargis et al. 2014). In line 1, we can see that our example university has an operational expense budget of $750M. As we saw in Chapter 3, this set of expenses includes everything the institution spends on instruction, research, public service, academic support, student services, institutional support, financial aid, and auxiliary enterprises. Because we are using what is known as a Type II multiplier that accounts for between-sector effects and local household spending effects, we need to adjust the base amount to omit what local households spend at the university, thereby identifying just the new dollars entering the region. About 20% of the students are from the local region, so we multiply the base by 0.80 to reflect only the out-of-region students, resulting in an adjusted base of $600M. We will use a multiplier of 1.7 for university spending, which results in a total impact of $1,020M for this category.

Table 14.1. Simplified calculation of a university economic impact estimate. Dollar amounts in millions. Adapted and abridged from a BEA example (Ambargis et al. 2014).

Line	**Category**	**Base ($M)**	**Local Margin**	**Adjusted Base ($M)**	**Multiplier**	**Total Impact ($M)**
1.	Operational Expenses	750.0	0.80	600.0	1.7	1,020.0
2.	Capital Investments	10.0	0.14	1.4	1.6	2.2
3.	Student Spending	7.0	0.85	6.0	1.5	8.9
4.	Visitor Spending	2.0	0.80	1.6	1.8	2.9
5.	TOTAL	769.0		609.0	*1.7	1,034.0

**imputed overall multiplier*

The next category is the university's capital investment, which includes things like major equipment and building construction. For our example we'll assume a $10M investment in a new computer system, shown in line 2 of Table 14.1. The purchase is from a local vendor but the equipment is actually manufactured outside the region; based on typical wholesale margins we'll use 14% as the local share, which represents $1.4M in local spending. We use a multiplier of 1.6 for this sector that results in an impact of $2.2M for the capital category, obviously far less than the impact from operational expenses because the computer hardware was produced outside of the region.

Line 3 captures the effect of student spending on items like books and supplies, restaurants, groceries, entertainment, housing, etc. This information can be gathered from the university's survey of student spending, taking care to count only what is spent locally in the region and not at the university (i.e., excluding meal plans and residence halls). In practice we would use local margins, adjusted amounts and the relevant multipliers for each spending sub-category and add them up for an overall impact; for simplicity here, we'll assume an average local adjustment of 85% retained locally that results in an adjusted base of $6M, with an average multiplier for the whole category of 1.5, giving us an estimate of $8.9M for the impact of student spending.

Visitor spending must be directly attributable to the university, such as visiting parents, conference attendees, or out-of-town patrons of campus sporting or arts events (those particular impacts are smaller and tougher to estimate because of their one-time nature). Visitor spending goes primarily to lodging and restaurants, the bulk of which are local in nature, while shopping purchases must be adjusted to the appropriate local retail margin. In line 4, we assume 80% on average across the category and apply it to base visitor spending of $2M (also estimated from survey data) for an adjusted amount of $1.6M. We use an average multiplier of 1.8 for the category, again for simplicity, which leads us to an impact of $2.9M for visitor spending.

The total amounts are on line 5, where total base spending of $769M ends up at $609M after adjustments to count only the funds that stay in the economy of the local region. The total estimated economic impact of that spending is $1,034M, which if we divide it by the adjusted base gives us an imputed multiplier of 1.7 overall. For our example university, it could claim that it contributed just over $1B to the economy of the local region. Naturally, that's a relatively large proportion of economic activity if this campus is located in a college town versus it being located in a major city.

The impact calculation described above is the contribution-based version and it tends to be the most generous approach. Imagine adding up all the contribution-based impacts for every enterprise in a region—you would get a number larger than the local economy because you'd be double-counting (or triple or more) many of those multiplier effects across the different sectors. More sophisticated economic impact models can account for the input costs more conservatively, and they can calculate only the net new and retained dollars in the region attributable to the university—essentially what would be lost if it didn't exist and those services were not consumed or spent elsewhere (Christophersen et al. 2014). Now, in that case, why would an institution want to decrease the estimated size of its impact—surely a university would want the biggest number possible, especially a public university that could use the impact number in its arguments for more resources from the state? It turns out, as I mentioned earlier, that decision-makers see these kinds of economic impact estimates from all quarters, and unrealistic numbers will simply produce disbelief. So, it's important to present economic impact figures properly, noting assumptions, the definition of the local region, and avoiding the multiple pitfalls that can lead to double-counting (Siegfried et al. 2007). It's also smart to augment the narrow economic impact number with additional economically-related data (e.g., patents, licenses, and startups) as well as information on graduates and knowledge production to address the fundamental point regarding development of human capital and its societal benefits. Unfortunately, it is hard to capture these effects in local regions (because, for example, graduates move away and are substituted in from other universities, and there is a scale mismatch in contribution to the number of people with degrees in the national economy), so these overall societal benefits of higher education tend to accrue at broader regional and national scales instead (Moretti 2004; Rothwell 2015; Florida 2016; Valero and Van Reenen 2019).

14.4 Our business model: what is it and how do we manage it?

The term "business model" came into vogue during the late 1990s as the dot.com boom was underway, although the concept has been around for much longer. The question "What is your business model?" is often a proxy for "How do you make money?" that in turn depends on the answer to "For whom do you add value?" For universities the answers are simple, at least on the surface: we add value for students and society and they pay us for it (although the relative proportions have changed considerably, see Chapters 2 and 4). Some universities rely on people paying more for prestige, others rely on volume at value pricing, others on niche specialties, and so on. Prestige can come from selectivity and/or research prowess—in other words, not just knowledge delivery, but knowledge discovery (by the way, the business model for research is for sponsors to offset the cost of research, as we saw in Chapter 8). Looking across the US higher education landscape, there are many permutations on the basic business model that has been in place seemingly forever.

But the winds of change are always blowing: correctly anticipating, or failing to anticipate, changes in the environment and how a university adds value can lead to greater success or to failure. Current examples of the former include schools that have embraced online education, while some non-elite small liberal arts colleges are examples of the latter (we'll cover more on this in the following sections of this chapter). These changes can be evolutionary as above, or more revolutionary as we've seen with the digital revolution in other sectors (nobody wants to be Kodak making film when digital cameras took over). Much has been written on disruptive innovation since Clayton Christensen coined the term (Bower and Christensen 1995), which was based on the observation that "one of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change." While established players are focused on sustaining innovation and becoming better in their own niche for those they currently serve, new upstarts, often with an initially lower-quality product, focus on an underserved niche or adding a new kind of value (remember when Netflix started, you had to wait days for the DVD to arrive in the mail, and even when they started streaming video it was relatively poorer quality—as the value improved, people switched away from neighborhood video rentals and we know what happened to Blockbuster in the end). The hard part is knowing what will be a fad versus what represents a deeper change: a recent example in higher education was the debut of MOOCs that fizzled initially but that haven't yet disappeared either (see Section 6.11). There are dozens of essays in the technology-will-revolutionize-higher-ed's-business-model genre, such as one topical piece wondering if universities will go the way of CDs and cable television (Smith 2020).

The most eloquent and insightful writing I know of regarding business models doesn't use the term at all: Peter Drucker, the famous scholar of organizations and management, called it the Theory of the Business in a 1994 article (Drucker 1994). Paraphrasing him, at its core is the idea that what we call a business model is a set of assumptions upon which the university has been built, is being run, that shape its behavior, determine its choices about what to do and what not to do, and characterize what the university believes are valuable outcomes. It also includes assumptions about the markets in which the university operates, the students and stakeholders it serves versus its competitors, their values and behavior, the changing role of technology, the university's own strengths and weaknesses, and assumptions about what society pays a university to do. Drucker's point is that every organization has a theory of the business, and he cites the genesis of the modern comprehensive research university by Wilhelm von Humboldt in 1809 as a powerful example of what a clear, consistent, and focused theory can enable. He goes on to describe how checked and unchecked assumptions about the theory of the business explains successes and failures of well-known organizations.

With this broader view we can see that there are almost countless ways in which the business model assumptions of all universities and colleges, as well as individual institutions, are being challenged today. Can we assume that students and families will continue to want a four-year residential experience? Are we pricing ourselves out of the market? Who is serving the students (of all ages and backgrounds) who don't attend our institution? Do we focus on the one thing we do best, or do we diversify our offerings and delivery channels? And of course, how is technology reshaping almost everything in higher education, and what does it mean for the sector and our institution?

Answering those questions for our own institutions will give us a clearer picture of our current business models and where they are headed, which brings us to something called the "iron triangle," also known as the unattainable triangle or the triple constraint. The iron triangle is essentially a lay Theory of Production: it describes the principles by which a university selects the quantity and quality of outputs it wants (graduates, knowledge) and the quality and quantity of inputs it will employ (factors of production such as labor and facilities and their associated costs, as well as the number and academic preparedness of its students). The iron triangle of higher education is illustrated in Figure 14.8. It is essentially the higher education version of the faster-better-cheaper triangle from project management, except in our case it summarizes the constraints of access instead of time, along with quality, and cost.[5] These three management constraints for higher education, quality, access, and low cost, constitute a three-way trade-off in which it is impossible to maximize all three vertices simultaneously. As Arne Duncan (2009), US Secretary of Education at the time, put it, "I often hear that managing the multiple missions of higher education today is akin to being caught in the infamous 'iron triangle.' Every college president and every governing board wants to simultaneously improve quality, increase access—and yet constrain costs. To college executives, these three sides of the iron triangle—quality, access, and cost—often seem like mutually conflicting choices. Elevating quality raises costs. Increasing access can dilute quality. And reducing costs impairs both quality and access. ... In the standard formulation, the only way out of the iron triangle is to secure unlimited resources, either in the form of bigger endowments or state and federal support."

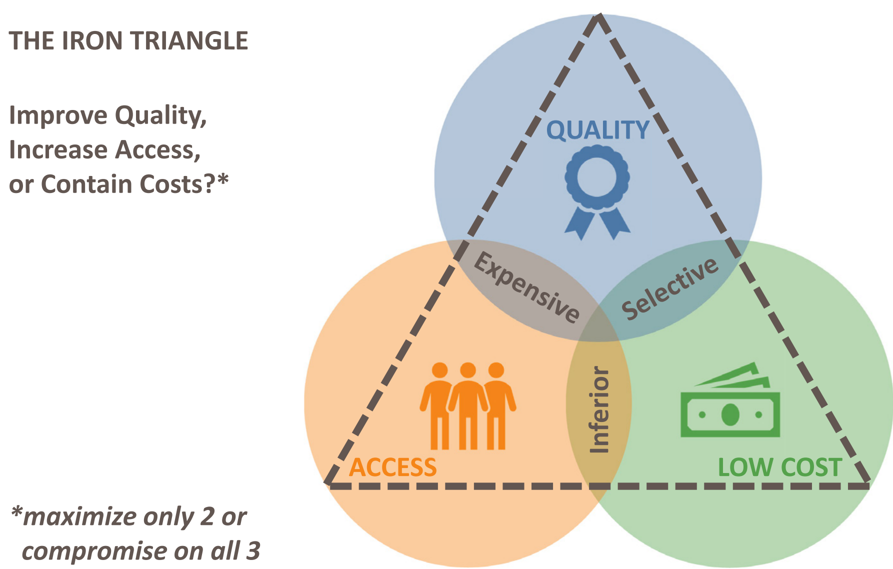

Figure 14.8. Schematic of the iron triangle of higher education, illustrating the three-way trade-offs between improving quality of education, increasing access to the institution, and constraining costs.

5 Healthcare has essentially the same iron triangle as higher education: improving quality of care, expanding access to patients, and lowering costs.

In addition to external resources that can help buy an institution out of the dilemma, or at least ameliorate the compromise, many have touted the promise of technology to do the same. New instructional technologies definitely have the capacity to modify each corner of this triangular playing field but, more precisely, that change will depend on how higher education providers implement the technology in a business model. Revisiting my point above regarding disruption, new providers or existing institutions that want to shift their advantage in the iron triangle will often do so by focusing on an underserved market niche and/or by contributing a new kind of value. A successful new offering redefines the quality-access-cost proposition to students and families in such a way that they increasingly choose it over existing options (more on this in the following sections, 14.5 and 14.6).

There are also constant changes in the iron triangle as institutions adapt and compete in a dynamic market, so even if an institution chooses its point of compromise in the triangle, its relative position compared to other schools will therefore shift over time. Make no mistake, the compromise point is a deliberate choice, whether it is made actively or passively, overtly or covertly. Few institutions are upfront about the point or points of the triangle that they choose not to maximize: elite institutions are by definition highly selective/low access and expensive, but they can offset a small part of their access compromise and related perceptions by offering scholarships to increase access; a particular kind of for-profit school, many of which have since shrunk or closed, maximized access while they compromised on quality and used the availability of federal loans to offset cost. Most other types of institution are somewhere in the middle, such as large public universities that are able to balance moderate access with good quality at modest cost. As someone who works at such an institution, we would never say that out loud—we are proud to offer a world-class education for many qualified students at a very affordable rate (certainly for in-state students), but it is also true that we are not as accessible as a regional comprehensive campus, our students don't get all the qualities of an elite private education, and our classes cost more than similar ones at the local community college.

Because institutions are continually evaluating and evolving their business models, experimenting with novel approaches and technologies while dealing with the realities of production in the iron triangle, and because US higher education is highly competitive and highly segmented across many dimensions of the market, there are good odds that the sector will be sufficiently innovative to survive and succeed. That's the sector—individual schools are a different story as they do or don't adapt to inevitable change—without doubt some new stars will emerge as others fade. But we should not be complacent about the sector either, because we all have blind spots: what if our highly regionalized sector is consumed by a national or international megabrand (think local mom and pop stores before and after Walmart, or local bookstores before and after Amazon). It's worth closing with a caution to be vigilant about our business model, because as Drucker (1994) said, "Some theories of the business are so powerful that they last for a long time. But eventually every one becomes obsolete."

14.5 Which schools are most at risk for closing, especially with COVID-19?

Colleges and universities close for one simple reason: their revenues cannot keep up with expenses and eventually they run out of cash. Historically, the number of closures (and related mergers) is small relative to the size of the higher education sector, just a few per year when there is not a larger financial crisis underway (Education Dive 2020). While college closures make headlines, the typical annual rate represents just a fraction of 1%. College closures in recent years have been limited to small nonprofit private colleges, with the notable exceptions of several much larger for-profit institutions that collapsed after student loan scandals (see Sections 4.5 and 7.12). There are two broad reasons that small colleges have been the most affected: (i) structurally speaking, they are the most vulnerable size of institution because small institutions typically have a narrower revenue diversity than large institutions, which both limits income options and reduces their ability to downsize and cut expenses, and also because there are simply fewer functions and areas available to cut—a shrinking small college gets to the point where it is below a viable size before a large institution does; (ii) the market for non-elite small colleges has been challenging, more so for those in small towns "off the interstate" that have struggled to diversify into professional and other revenue-generating programs relative to their urban counterparts. Is it only small colleges that need to worry, or might another economic downturn increase the closure risk for other kinds of schools?

As I write, it is the fall of 2020 and the COVID-19 pandemic is still in full swing. Lots of financial unknowns remain, even as institutions manage their way through the academic year, hoping to keep as much of their tuition revenue intact as they can despite widespread shifts to online delivery and limited in-person classes, along with weaker enrollment. It's only natural that talk of more widespread college closures has increased, just as it did during the Great Recession. There are some important differences between the two economic events for higher education. During and after the recession that began in FY2009, college enrollment-related revenues did not plummet despite other budgetary stresses, and therefore the college closure numbers were not especially large. As often happens in economic downturns, some people turned to higher education to obtain a first or second degree. which helped to bolster otherwise weaker institutional finances. However, the enrollment and tuition situation resulting from the COVID-19 pandemic is quite different, because the anticipated enrollment decreases directly affect tuition revenue, room and board revenue, in-state/out-of-state shifts, and discounting (Burke 2020). Any prognoses I utter here are made in the early days of the financial fallout for higher education, and by the time you see this in print as a reader you will have the considerable benefit of hindsight.

Whether caused by the pandemic or by more prosaic struggles with their financial situation in other years, institutions can undertake a variety of actions to shore up revenue and to cut costs, many of which apply to both situations. At the moment these include special scholarships to keep students enrolled (Johnson and Edwards 2020), lowering tuition and moving to online instruction (Whitford 2020c), hoping for stimulus funding (Seltzer 2020c), adjusting to the reality of fundraising declines (Whitford 2020a), undertaking furloughs and layoffs (The Chronicle of Higher Education 2020), making cuts to athletics programs (Rishe 2020), and dealing with new costs for cleaning facilities and disease testing for students and employees (Lederman 2020). Other actions in the mix include early retirement/voluntary separation programs, reducing employee benefits, endowment drawdowns, elimination of administrator, staff and non-tenured faculty positions, and abolishing underperforming academic programs (Lederman 2020). On the revenue side, institutions that rely on endowments experienced a major drop in the stock market as the pandemic emerged, and although the market had largely recovered by summer of 2020, the future is murky with much market uncertainty. Discounting has also continued apace (Whitford 2020b). Public institutions are anticipating the effects of lower state revenues and associated appropriations to higher education, which are expected to be lower for several years as the pandemic-related economic downturn plays out. This pattern was the case during the Great Recession, when the market recovery (that dictates endowment income) happened much faster than for state budgets (and the revenue they supply for public universities), a contrast of one or two years versus five to ten, with some of the latter never returning to pre-recession levels (see Section 4.7).

It's a fool's errand to predict which specific institutions in poor financial shape will or will not actually close in the coming few years—even with the added financial stress of the pandemic—although it doesn't stop some trying (Brown 2020). No analyst has access to sufficiently detailed and up-to-date financial information for every institution to make definitive pronouncements about exactly which institutions will close, and the specter of imminent closure can itself help bring about heroic measures that sometimes lead to a reprieve at the eleventh hour. For example, Sweet Briar College staved off an announced closure in 2015 with a historic fundraising effort, among other things (Woo 2018). However, it is possible to identify institutions exhibiting signs of serious financial risk using indicators from the comprehensive national-level data in IPEDS. Although that dataset has a reporting lag of a couple of years, it nonetheless enables assessments of financial risk for all institutions. Such studies appear from time to time, including ratings from the Federal Government and private companies that name names and that have been heavily criticized (Seltzer 2020b). A recent book on the topic specifically outlined key indicators and presented a financial stress test for colleges (Zemsky et al. 2020), and you can look up any institution using an online tool (D'Amato 2020). Understandably, there is now even wider interest in the possibility of campus closures given the anticipated financial fallout of the pandemic in FY2021 and beyond (Kelchen 2020).

We've covered all the essential variables mentioned in such studies earlier in this book, and they each attempt to capture financial health using key factors and their trends (Lyken-Segosebe and Shepherd 2013; Parthenon-EY 2016; Raymond 2019; Zemsky et al. 2020). If you've read through the earlier chapters, you won't be surprised to learn that there is no one-size-fits-all metric, and that it takes a set of indicators to make a fuller assessment. So, we'll work through an example and do exactly that: assemble a set of relevant variables and trends that we will then combine to create an index of institutional financial risk. This is not a fully comprehensive list, but it does include a number of the main indicators mentioned in the literature:

- *First-year enrollment:* the size of the incoming class is a leading indicator of overall enrollment, and a shrinking first-year cohort (in the absence of higher net tuition per student) will lead to less income in the current year and subsequent years as the smaller cohort moves through;
- *Overall enrollment:* a measure of institution size and the basis of net tuition revenue, with a sustained declining trend portending serious income challenges;
- *Retention rate:* a low and/or decreasing retention rate directly affects overall enrollment and tuition revenue, and may signal additional issues with instruction or student support;
- *Share of students enrolled in online programs:* an institution without online programs has one less alternative revenue source;
- *Discount rate:* institutions struggling with enrollment often try to help recruitment by making larger financial aid offers, and thus a high or increasing discount rate reduces net revenue and can signal trouble;
- *Share of total revenue from tuition:* a high or increasing dependence on tuition revenue indicates low or diminishing income from other sources that could otherwise augment the revenue portfolio;
- *Share of total revenue from auxiliary enterprises:* some institutions can become overly reliant on residence hall and dining revenues, so a larger share of auxiliary revenue can flag problems;
- *Expenditures per student:* if enrollments are shrinking and the institution is not simultaneously cutting back on expenditures, the resulting rise in expenditures per FTE will be unsustainable;
- *Endowment:* the size of the endowment is a proxy for endowment payout, with a small endowment contributing little to overall revenue and a declining endowment relative to others likely signaling a drawdown to cover operating expenses.

For each of these indicators we can choose to use the value for the most currently available year (FY2018 as of this writing) as well as recent trend data—I've picked the five-year trend FY2014–FY2018. To make the data easily comparable, the basic amount and the slope of the trend for each indicator are converted into percentile ranks. It is then a simple matter of creating a composite index of financial risk, which in our example I've done by tallying the number of indicators falling into the riskiest decile (i.e., the worst 10% for that indicator across all institutions). So, for example, if the trend of an institution's first-year enrollment placed it among the worst 10% of institutions, its index score would increase by 1 count. If that same institution also placed among the highest 10% in share of total revenue from tuition, its index score would increase by 1 more, for a total of 2 indices in the riskiest decile. There are multiple ways to construct such an index, using a weighting scheme for example, or going into the next decile bands. Bearing in mind that each indicator is noisy and imprecise, and therefore not wanting to over-engineer the exercise, I prefer something that is simple to understand and interpret. So, we'll go with the straightforward tally in our example.

With our approach in place, the only thing left to decide is which indicators to include in the index. Again, there is no single correct answer and in practice one would construct a set of simpler and more complex combinations. I decided to go with the following for our example: the five-year trends for all of the above indicators except for online enrollment, and the basic amount for discount rate, shares of revenue from tuition and from auxiliaries, and the share of online enrollments. I didn't select the remaining basic amounts because they would overly emphasize institution size, and I didn't include the trend in online enrollment because there are many schools with no online programs and the current amount of online activity seems most relevant. Reasonable people may differ on these choices, but give or take an indicator or two the overall results are not dissimilar.

The results for our index as described are illustrated in Figure 14.9, which includes both the percentage and actual number of institutions with risk indicator tallies by type of institution. It's important to see both the relative share of institutions at some financial risk as well as the absolute numbers of those institutions. Both public and private BAS institutions have high percentage counts on our index, but there are relatively few public baccalaureate colleges and about ten times as many private ones, with the result that there are dozens of private baccalaureate colleges with 3 or more indicators in the riskiest deciles. The same logic applies to the R3-M3 private universities—they are the most numerous of all the institution types in our data set (over 400) and even with a somewhat lower share of institutions at risk they have similarly high absolute numbers of those institutions. Although none of our indicators explicitly highlighted institution size, it's clear that schools with a higher composite financial risk index are overwhelmingly comprised of smaller institutions. The combined number of R1 and R2 institutions on the risk radar is less than 10. Thus, as we've seen in many of the previous chapters, there are key market and business factors leading to a higher proportion of smaller institutions exhibiting indicators of financial stress.

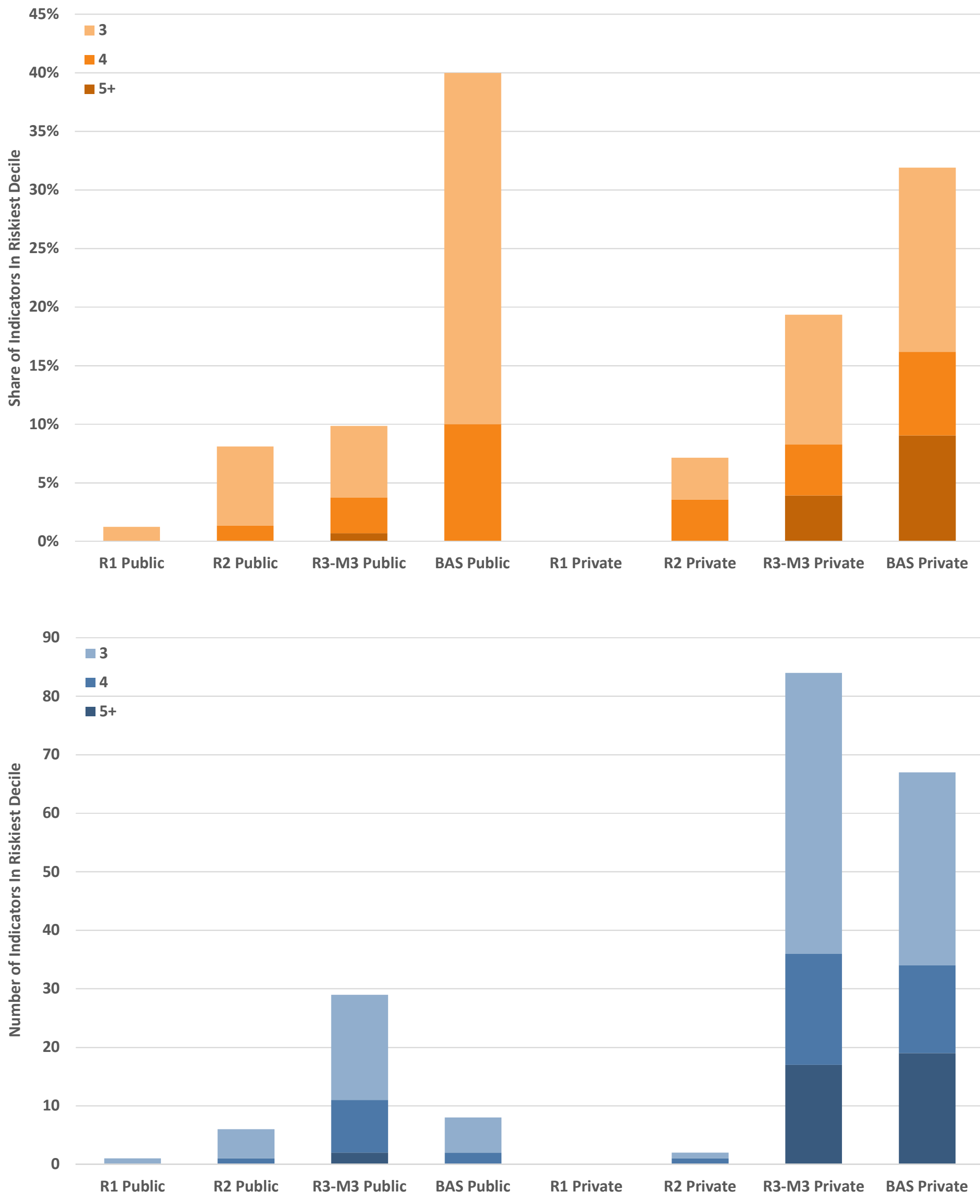

Figure 14.9. Composite index showing the share (upper panel) and number (lower panel) of institutions with counts of financial risk indicators in the riskiest decile, by Carnegie classification and control. See text for details. Source: IPEDS (2020).

The obvious next question is how many of these schools registering on the index might actually close? One way to get a feel for that is to look at institutions in our data set that have indeed closed; there are 9 that have closed since 2016 (Education Dive 2020). As it happens, 1 was a public baccalaureate college while all the others were private, of which 6 were R3-M3 institutions and 2 were baccalaureate colleges.

Four of the closed schools had 4 and 5 indicators in the riskiest deciles on our composite index, although the other scores range from 0 to 7 (the one with 0 was a separately-reporting branch campus that had several indicators in the second-riskiest decile). Scores of 4 or 5 are therefore concerning but imprecise—there are as many as 75 institutions with an index of 4 or more. Many of those institutions will be resourceful and will make the hard decisions to scope their expenditures to their revenues, and they will survive. Despite valiant attempts, others may not be able to generate enough cash to pay for minimal operations and they will have to close. That number is far smaller than 75, as we've only seen two or three closings per year for the period covered by the data and immediately afterwards. Thus, the imprecision in this sort of exercise is worth underlining again—just because dozens might be in the danger zone that caused others to close does not mean that those dozens will also close.[6] That's worth a follow-on repeat of something else already mentioned, that institution-specific details and behaviors make a critical difference to survival or closure when an institution is in an existential crisis.

Yet, if financial conditions suddenly worsen, as is currently anticipated with a decrease in tuition revenue due to the effects of COVID-19, then that will obviously ratchet up the financial stress for all institutions and it may be a "last straw that breaks the camel's back" for a greater number of at-risk institutions than we would otherwise expect. It's worth underlining the imprecision yet again, because a slight change in the construction of the index or the indicators will drive the overall assessment higher or lower, even if the broad patterns are similar. That said, if we see a couple of closings per year in "normal" years then a major revenue shortfall (say, 10%, 20% or even 30%) as a result of the pandemic will surely increase the number of closings.

14.6 What are the long-term financial futures for higher education?

As the quip says, it's difficult to make predictions, especially about the future.[7] It's as true for the future of higher education as anything else, although that hasn't slowed the production of articles and books on the topic that prognosticate on the future of the sector. Our time-focus here is the longer view, a decade or two, trying to understand the broader forces and trends at work that will affect both the academic and financial business of universities, intertwined as they inevitably are.

6 This mistake is a version of the ecological fallacy, which is to incorrectly infer conclusions about individuals based on group-level data. Here, it intersects with its cousin, the exception fallacy, which is to incorrectly infer conclusions about a group based on an unusual individual. Two respective examples to illustrate the distinction: small colleges have higher financial risk indicators overall, so a specific small college is at higher financial risk (ecological fallacy); this individual small college closed, so all small colleges are at risk of closure (exception fallacy).

7 Being trained in weather and climate where predictions are part of the trade, I heard this humorous saying early in my career. Although I'd always heard it attributed to Yogi Berra, the "philosopher of baseball," it turns out that many people are alleged to have coined the phrase including Niels Bohr, Samuel Goldwyn, and Mark Twain, but it is likely a Danish proverb (O'Toole 2013).

If we've seen anything in the trends that we've covered section by section in this book, it is that very few components of higher education have remained static—virtually every aspect of how the money works in and around universities has shifted and is shifting in some way. Whether it was the GI Bill, massive state investments and enrollment growth in the 1960s and 1970s, expansion of Pell grants, federal research investment, state funding decreases since the 1980s, the expanding role of philanthropy, or the online transformation currently underway, institutions are continually having to adapt and compete. In the international arena, the second half of the twentieth century saw the ascendancy of US higher education and research relative to the UK and Europe's prior dominance, and although the US is still pre-eminent it seems that fast-growing China is an emerging and potentially even more dominant competitor.

Opinions on the future of higher education variously cover almost a dozen subtopics (and I say opinions as they are usually informed insights rather than representing results from the formal research literature). Most of them deal with the implications of several fairly obvious trends, while some commentators point out relevant but less-commonly mentioned elements; none of them will be a surprise for readers who have spent time with the earlier chapters of this book. Hyperbole is a defining feature of many of these opinion pieces because bold claims attract readers. Thus, as we go through them below, I have tried to temper the exuberance where necessary and highlight aspects that deserve consideration:

- *Smaller institutions will struggle and more will close:* Clayton Christensen's claim of nearly a decade ago that half of the 4,000 colleges and universities in the US would be bankrupt by now (Lederman 2017) forces one to paraphrase Mark Twain's famous line to say that rumors of higher education's demise have been greatly exaggerated. Overstatement notwithstanding, he was calling attention to the potential for disruptive innovation as evidenced by the challenged business model and poor financial health indicators for smaller institutions, particularly for the non-elite privates, that we've seen throughout this book and especially in the previous section. Based on those data, it's easy to see why several commentators believe that well-endowed, highly selective liberal arts colleges will survive while the private nonprofit sector overall will experience a decline, and that mergers are unlikely to save them either (Mintz 2019a; Witt and Coyne 2019).
- *Demographic enrollment decreases:* Traditional higher education can see its entering class coming with an eighteen-year advance notice as the demographic baby booms and busts make their way through the K-12 system. When demographers and enrollment managers model future class-sizes they include not only birth cohort size but likely college-going rates, geographic differences, immigration and more. Nationally, we are on a high school graduate plateau that began in about 2010 and that will start to decline around 2026, and for areas like the Northeast and Midwest the numbers

of college-going high school graduates will dip by 10–20% (Fox 2019). To the previous point on small institutions, these enrollment differences will fall unevenly across types of institutions (Conley 2019), so competition for recruitment is therefore likely to increase in that way as well as across geographic regions.

- *Online and digital instructional technologies will continue to expand:* As with almost every other sector, the digital revolution is transforming higher education. While the simplistic and overhyped early prophecies about online providers rapidly upending higher education in a parallel to the newspaper business were false, there are few observers that doubt the deep and widespread implications of digital instructional technologies for teaching and institutional business models. Interestingly, the COVID-19 pandemic has simultaneously accelerated adoption of hybrid online education and where it adds value, while also highlighting exactly what students dislike about online and what they value about the in-person experience. There will be shifting demand for both in the future and institutions will be jockeying for position accordingly—it's all about which institutions adopt these technologies and approaches, how far the transformation goes, and how fast it occurs. Section 6.11 describes the changes underway in online education and how it is being incorporated complexly depending on each kind of institution's market niche. We shouldn't forget that it's not just online delivery but other related technologies such as adaptive learning, interactive textbooks, virtual environments and more that are part of this transformation, even for in-person classes. One major unknown in the online space is the role of consolidation. Higher education is relatively unconsolidated compared to many other sectors because of its intrinsic structure (at least for public institutions), with several state systems representing the largest consolidated entities. There are no dominant national brands or chains, and it is unclear if higher education will continue in that mode (e.g., online news outlets although there is some consolidation) or if in the longer run the nature of online technology will produce a set of dominant players (e.g., retail with Amazon and Walmart).
- *Credentialing and unbundling are not yet a major force:* An in-person campus experience is the ultimate bundled service, with classes, a learning community, room and board, teaching, research, arts and culture events, athletics, and social life all in one package for four years (Roth 2020). At about the same time MOOCs burst on the scene, educational technology pundits were heralding the great unbundling of college (Selingo 2013) and promoting (digital) credentials for courses and even micro-credentials for the equivalent of course subtopics. This view seems to emanate most strongly from the technology sector and employers; for example, Apple's Tim Cook

has mentioned that coding is a skill that is easily credentialed and that only half of the company's employees have a four-year degree (Eadicicco 2019). Universities are definitely offering one-off courses (and have for decades) and MOOCs are still evolving their niche now that the hype has died down (Impey 2020). While unbundling, like online more broadly, undoubtedly expands access to those who are wanting or able to undertake less than an entire degree, there are no strong signs yet of a great unbundling that realigns higher education and changes the core demand for degrees.

- *Stratification and differentiation will continue:* We've made distinctions between types of institutions throughout this book, and for good reason, because as we've seen, those differences have been intensifying over time. Universities that do well in their niches are likely to continue doing well, such as the top public and private research campuses, elite liberal arts colleges, and specialized institutes of technology: they have diverse revenue streams, more tenured faculty, impressive facilities, and an ability to recruit academically well-prepared students (Mintz 2019b). In contrast, the types of institutions with serious resource challenges are struggling, such as small private colleges and public regional campuses. The amplification of differences is seen in enrollments, student preparedness and selectivity, part-time and non-tenured versus tenured faculty ratios, private endowments versus public funding, and more. This situation has been termed higher education's "gilded age" in which wealth and prestige are increasingly concentrated at elite campuses while the disparity grows between those institutions and the rest—essentially the middle class of US higher education will increasingly be divided between the rich getting richer and the poor getting poorer (Rosenberg 2019). Some think that institutions that succeed despite these pressures will be innovative and entrepreneurial in their approach to developing new niches in the higher education ecosystem, whether that be specialized training programs for industry, opening up national and international markets (physical or virtual), focusing on career-oriented majors and job skills, and changing delivery modes away from the fixed semester (Mintz 2019c).
- *Research will need to be appropriately prioritized:* Research is a net expense to universities and colleges, whether it is funded research or scholarship without external grants, as we saw in Chapter 8. Federal grants do not fully reimburse the complete overhead costs of research, and faculty workload allocation to research is subsidized from other revenue sources such as tuition, state, or investment income. While higher education's research productivity and prowess has never been higher, the majority of institutions play a relatively minor role and they incur subsidy costs to do so. While it is in their academic interest to foreground research and scholarship,

the association of research with academic prestige is such that not many universities and colleges are willing to state outright that research is not their priority, even if that is the reality of their business model, niche, and financial situation. As a recent paper projected, smaller institutions in particular will need to restrict research activities in order to focus on the core educational mission (Rouse and Lombardi 2018).

- *New models and brands will emerge:* In the early days of online higher education, its low-cost and implied (but incorrect) low-quality image kept many top public and private universities out of the game. If MOOCs did anything, they associated the top university brands with low-cost online instruction in a way that arguably expanded rather than diluted their brands, preserving important aspects of their exclusivity (the elite in-person experience). There is some debate that this trend may be the equivalent of a luxury brand being sold at an outlet store, the very act of which undermines the high-price to high-quality equivalency that the market assumes (Newton 2018b). That narrow issue aside, a number of major universities have developed and are continuing to develop big names and market share in the domestic and international online space (e.g., Southern New Hampshire University, Maryland, and Purdue; more about international coming next), a trend that seems set to continue, especially in online professional master's and continuing education (Mintz 2019a). A small number of new models are being tried as well, like Minerva and Foundry, both for-profit and out of Silicon Valley, the former in an elite mold and the latter aimed at basic management skills training (Blumenstyk 2018). Other possible models are pure speculation, such as dreamy elitist cyborg mashups between major tech companies and top institutions—think Apple-MIT, or Facebook-Harvard (Walsh 2020).
- *Global education is still a growth market:* While we may be reaching peak US higher education, there's a long way to go until we reach peak global higher education, as it has been cleverly phrased (Kim 2019). Higher education enrollments are expected to double, triple and even quadruple in some parts of the world (Calderon 2018). Despite the ups and downs of domestic politics, international relations, pandemic travel restrictions, and economic conditions more broadly, some US universities have made the international market a significant part of their business strategy. The same is true of universities in many other high-income countries, with Australia being the most visible. While recruitment of international students to in-person (and online) programs in the US will continue, the international growth market is largely in-country rather than having students move to a university in the US or elsewhere. Based on experiences of the last decade or two, significant participation in satisfying international demand will probably

not be satisfied via expensive physical campuses abroad that duplicate their home institutions (see Section 6.12). Instead, it appears that major scaling will more likely involve collaborations with local institutions and a blend of online and in-person delivery, such as the microcampus approach (Redden 2017; Calderon 2018).

- *Climate change risks will need to be addressed:* Climate change arrives not with the slow-moving averages but with extreme events. Campuses need to plan for the financial (and of course other) impacts of elevated climate risks, such as sea-level rise, floods, severe weather, record heat, wildfires, and disease, as well as less obvious impacts such as insurance changes, shifting utility costs, more frequent brownouts and blackouts, local water quality impacts for those with their own water supplies, and travel disruptions. Many of these risks involve physical infrastructure and thus they cannot be addressed overnight and they may require significant capital (Gardner 2019). In addition to fossil fuel divestment (see Section 13.5), many institutions have implemented recycling programs, added solar panels, and built or retrofitted energy-efficient buildings to mitigate future climate change. Of course, many universities are already involved in preparing their students and society for climate disruptions. Still, climate impacts to the institutional bottom line have not received as much attention. There is a strong business case for climate resilience planning (Holland 2015) and campuses will increasingly need to prioritize lowering climate risk as part of facilities and financial planning. For many, this will need to include collaboration with their neighboring communities (Woodside 2018).
- *Universities will need to face athletics costs and football injuries:* We covered athletics extensively in Chapter 12, and it's plain that many institutions with challenging budgets will not be able to continue subsidizing athletics programs at current levels. This is as true for many Division I institutions as it is in lower divisions. For high-profile conferences, athlete compensation is on the horizon too (Anderson 2020a). Furthermore, it appears that the mounting evidence of health issues in football from concussion and subsequent brain disease is leading to mounting legal spending and the anticipation of greater risk of lawsuits and associated damages (Seltzer 2019c). Taken together, it appears that institutions will be facing tough decisions about athletics in the coming decades.
- *Higher education's trend towards a private good will be challenged:* Although many people in US public higher education (and not a few outside it too) see it as a public good, one where all of society benefits from educating many individuals, the evident reality of decades of decreases in state funding per student underlines its increasing treatment as a private good, one where the

> benefits of the education accrue primarily to the individual. Federal support for students and for research (at public and private institutions) has been much stronger, although not always keeping pace with need either. These trends were covered in Chapters 4 and 8. While the overall slide towards even less state support does not yet seem over, the related increases in costs to students, along with increased prices at private institutions, eventually brought calls for free or low-cost college education to the forefront of the national policy debate during the 2020 election cycle. There are a myriad policy details and plans, such as first-dollar, last-dollar, and debt-free, two-year versus four-year institutions, and more (Mangan 2019; see also Box 7.2). Unsurprisingly, the public-good/private-good view of who should pay for college has partisan dimensions (Kreighbaum 2019a), with candidates and think-tanks arraying their proposals and arguments on both sides (Anderson 2019; Whistle 2020). Whatever the immediate outcomes, it is clear that the policy battleground is established and won't be going away in the foreseeable future.

Higher education is a large and complex sector with many examples of schools already inventing new approaches that both create and respond to the various trends I've mentioned. Some authors have even taken to blue-sky speculation about what kinds of new university might emerge (Jaschik 2019a). I am hopeful that institutions will face these futures as an ensemble of challenges *and* opportunities, adapting and innovating as they have always done.

Epilogue

I opened this book by saying that universities are fascinating institutions; I also posited that there is plenty of common knowledge on campuses about how their academic wheels turn, and that there is much written about managing people, but that an appreciation and understanding about how the money works in and around colleges and universities is not widespread and sometimes borders on the mythical. I hope I have shown you, gentle reader, that the business of universities and their financing can be as fascinating as almost any other question that these institutions address. Certainly, if you've made it from the introduction to this point, your understanding of how the money works is miles ahead of most people in and around a campus.

I want to stress that, although this book is all about money and the business of the university, I am most certainly *not* a proponent of a "corporate" university run as if it were a conventional business. Despite the absolute necessity for the academy to be focused on asking and answering the big questions and the teaching thereof, I am also, as you've seen, under no illusions that a contemporary US campus can exist as an intellectual collective that ignores financial realities. It is precisely this tension, in which we simultaneously seek Truth and underwrite that quest by providing access to the American dream through education, that makes our many colleges and universities so fascinating.

In closing, I trust I have provided you with valuable and practical insights into the multiplicity of funding flows and financial relationships that sustain our marvelous institutions of learning, showing you along the way how the money really works in and around them—how they function and grow, in all connotations of the saying, like nobody's business.

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About the Author

Andrew C. Comrie is a professor and former provost with over two decades of administrative experience at the University of Arizona. In addition to ongoing academic appointments in geography and interdisciplinary climate science, he has served in successive administrative positions as a Degree Program Director, Department Head, Associate Vice President for Research, Dean of the Graduate College, and as Senior Vice President for Academic Affairs and Provost. A graduate of the University of Cape Town and the Pennsylvania State University, he has served as a scientific journal editor and he is the author of over 100 professional publications.

Appendices

Appendix A: Institutions in the Data Set

The 1174 institutions and their institution-type characteristics used for analysis throughout this book. The Carnegie Classification is the 2015 Basic Carnegie Classification (Indiana University Center for Postsecondary Research 2015), as follows: R1, R2, R3—Doctoral Universities with Highest, Higher & Moderate research activity; M1, M2, M3—Master's Colleges & Universities with Large, Medium & Smaller programs; BAS—Baccalaureate Colleges with an Arts & Sciences Focus.

Institution Name	**Location**	**Control**	**Carnegie**
Abilene Christian University	Abilene, TX	Private	M1
Adams State University	Alamosa, CO	Public	M1
Adelphi University	Garden City, NY	Private	R3
Agnes Scott College	Decatur, GA	Private	BAS
Alabama A&M University	Normal, AL	Public	M1
Alabama State University	Montgomery, AL	Public	M2
Alaska Pacific University	Anchorage, AK	Private	M3
Albany State University	Albany, GA	Public	M2
Albertus Magnus College	New Haven, CT	Private	M2
Albion College	Albion, MI	Private	BAS
Albright College	Reading, PA	Private	BAS
Alcorn State University	Alcorn State, MS	Public	M2
Alfred University	Alfred, NY	Private	M2
Allegheny College	Meadville, PA	Private	BAS
Allen University	Columbia, SC	Private	BAS
Alma College	Alma, MI	Private	BAS
Alvernia University	Reading, PA	Private	M2
Alverno College	Milwaukee, WI	Private	M2
American International College	Springfield, MA	Private	R3
American Jewish University	Los Angeles, CA	Private	BAS
American University	Washington, DC	Private	R2
Amherst College	Amherst, MA	Private	BAS

Institution Name	Location	Control	Carnegie
Amridge University	Montgomery, AL	Private	M3
Anderson University	Anderson, SC	Private	M2
Anderson University	Anderson, IN	Private	M2
Andrews University	Berrien Springs, MI	Private	R3
Angelo State University	San Angelo, TX	Public	M1
Anna Maria College	Paxton, MA	Private	M2
Appalachian State University	Boone, NC	Public	M1
Aquinas College	Grand Rapids, MI	Private	M3
Arcadia University	Glenside, PA	Private	M1
Arizona State University-Tempe	Tempe, AZ	Public	R1
Arkansas State University-Main Campus	Jonesboro, AR	Public	M1
Arkansas Tech University	Russellville, AR	Public	M1
Armstrong State University	Savannah, GA	Public	M1
Asbury University	Wilmore, KY	Private	M3
Ashland University	Ashland, OH	Private	R3
Assumption College	Worcester, MA	Private	M2
Auburn University	Auburn, AL	Public	R2
Auburn University at Montgomery	Montgomery, AL	Public	M1
Augsburg University	Minneapolis, MN	Private	M1
Augusta University	Augusta, GA	Public	R2
Augustana College	Rock Island, IL	Private	BAS
Aurora University	Aurora, IL	Private	M1
Austin College	Sherman, TX	Private	BAS
Austin Peay State University	Clarksville, TN	Public	M1
Ave Maria University	Ave Maria, FL	Private	BAS
Avila University	Kansas City, MO	Private	M2
Azusa Pacific University	Azusa, CA	Private	R3
Baker University	Baldwin City, KS	Private	M1
Baldwin Wallace University	Berea, OH	Private	M1
Ball State University	Muncie, IN	Public	R2
Bard College	Annandale-On-Hudson, NY	Private	BAS
Bard College at Simon’s Rock	Great Barrington, MA	Private	BAS
Barnard College	New York, NY	Private	BAS
Barry University	Miami, FL	Private	R3
Bates College	Lewiston, ME	Private	BAS
Bay Path University	Longmeadow, MA	Private	M1
Baylor University	Waco, TX	Private	R2
Belhaven University	Jackson, MS	Private	M1

Institution Name	Location	Control	Carnegie
Bellarmine University	Louisville, KY	Private	M1
Bellevue University	Bellevue, NE	Private	M1
Belmont University	Nashville, TN	Private	M1
Beloit College	Beloit, WI	Private	BAS
Bemidji State University	Bemidji, MN	Public	M3
Benedictine University	Lisle, IL	Private	R3
Bennington College	Bennington, VT	Private	BAS
Bentley University	Waltham, MA	Private	M1
Berea College	Berea, KY	Private	BAS
Berry College	Mount Berry, GA	Private	M3
Bethany College	Bethany, WV	Private	BAS
Bethany Lutheran College	Mankato, MN	Private	BAS
Bethel College-Indiana	Mishawaka, IN	Private	M3
Bethel College-North Newton	North Newton, KS	Private	BAS
Bethel University	McKenzie, TN	Private	M1
Bethel University	Saint Paul, MN	Private	M1
Bethune-Cookman University	Daytona Beach, FL	Private	BAS
Binghamton University	Vestal, NY	Public	R2
Biola University	La Mirada, CA	Private	R3
Birmingham Southern College	Birmingham, AL	Private	BAS
Black Hills State University	Spearfish, SD	Public	M3
Bloomfield College	Bloomfield, NJ	Private	BAS
Bloomsburg University of Pennsylvania	Bloomsburg, PA	Public	M1
Boise State University	Boise, ID	Public	R3
Boston College	Chestnut Hill, MA	Private	R1
Boston University	Boston, MA	Private	R1
Bowdoin College	Brunswick, ME	Private	BAS
Bowie State University	Bowie, MD	Public	M1
Bowling Green State University-Main Campus	Bowling Green, OH	Public	R2
Bradley University	Peoria, IL	Private	M2
Brandeis University	Waltham, MA	Private	R1
Brandman University	Irvine, CA	Private	M1
Brenau University	Gainesville, GA	Private	M1
Bridgewater College	Bridgewater, VA	Private	BAS
Bridgewater State University	Bridgewater, MA	Public	M1
Brigham Young University-Provo	Provo, UT	Private	R2
Brown University	Providence, RI	Private	R1
Bryan College-Dayton	Dayton, TN	Private	M3

Institution Name	Location	Control	Carnegie
Bryant University	Smithfield, RI	Private	M2
Bryn Athyn College of the New Church	Bryn Athyn, PA	Private	BAS
Bryn Mawr College	Bryn Mawr, PA	Private	BAS
Bucknell University	Lewisburg, PA	Private	BAS
Butler University	Indianapolis, IN	Private	M1
Cabrini University	Radnor, PA	Private	M1
Cairn University-Langhorne	Langhorne, PA	Private	M3
Caldwell University	Caldwell, NJ	Private	M2
California Baptist University	Riverside, CA	Private	M1
California Institute of Technology	Pasadena, CA	Private	R1
California Lutheran University	Thousand Oaks, CA	Private	M1
California Polytechnic State University-San Luis Obispo	San Luis Obispo, CA	Public	M1
California State Polytechnic University-Pomona	Pomona, CA	Public	M1
California State University-Bakersfield	Bakersfield, CA	Public	M1
California State University-Channel Islands	Camarillo, CA	Public	M3
California State University-Chico	Chico, CA	Public	M1
California State University-Dominguez Hills	Carson, CA	Public	M1
California State University-East Bay	Hayward, CA	Public	M1
California State University-Fresno	Fresno, CA	Public	R3
California State University-Fullerton	Fullerton, CA	Public	R3
California State University-Long Beach	Long Beach, CA	Public	M1
California State University-Los Angeles	Los Angeles, CA	Public	M1
California State University-Monterey Bay	Seaside, CA	Public	M2
California State University-Northridge	Northridge, CA	Public	M1
California State University-Sacramento	Sacramento, CA	Public	M1
California State University-San Bernardino	San Bernardino, CA	Public	M1
California State University-San Marcos	San Marcos, CA	Public	M2
California State University-Stanislaus	Turlock, CA	Public	M1
California University of Management and Sciences	Anaheim, CA	Private	M2
California University of Pennsylvania	California, PA	Public	M1
Calumet College of Saint Joseph	Whiting, IN	Private	M3
Cambridge College	Cambridge, MA	Private	M1
Cameron University	Lawton, OK	Public	M2
Campbell University	Buies Creek, NC	Private	M1
Campbellsville University	Campbellsville, KY	Private	M1
Canisius College	Buffalo, NY	Private	M1
Capital University	Columbus, OH	Private	M2

Institution Name	Location	Control	Carnegie
Cardinal Stritch University	Milwaukee, WI	Private	R3
Carleton College	Northfield, MN	Private	BAS
Carlow University	Pittsburgh, PA	Private	M1
Carnegie Mellon University	Pittsburgh, PA	Private	R1
Carroll University	Waukesha, WI	Private	M3
Carson-Newman University	Jefferson City, TN	Private	M2
Carthage College	Kenosha, WI	Private	BAS
Case Western Reserve University	Cleveland, OH	Private	R1
Catholic University of America	Washington, DC	Private	R2
Centenary College of Louisiana	Shreveport, LA	Private	BAS
Centenary University	Hackettstown, NJ	Private	M2
Central College	Pella, IA	Private	BAS
Central Connecticut State University	New Britain, CT	Public	M1
Central Michigan University	Mount Pleasant, MI	Public	R2
Central Washington University	Ellensburg, WA	Public	M1
Centre College	Danville, KY	Private	BAS
Chadron State College	Chadron, NE	Public	M2
Chaminade University of Honolulu	Honolulu, HI	Private	M1
Champlain College	Burlington, VT	Private	M2
Chapman University	Orange, CA	Private	M1
Charleston Southern University	Charleston, SC	Private	M2
Charter Oak State College	New Britain, CT	Public	BAS
Chatham University	Pittsburgh, PA	Private	M1
Chestnut Hill College	Philadelphia, PA	Private	M1
Cheyney University of Pennsylvania	Cheyney, PA	Public	BAS
Chicago State University	Chicago, IL	Public	M2
Christian Brothers University	Memphis, TN	Private	M2
Christopher Newport University	Newport News, VA	Public	M3
Citadel Military College of South Carolina	Charleston, SC	Public	M1
City University of Seattle	Seattle, WA	Private	M1
Claflin University	Orangeburg, SC	Private	BAS
Claremont McKenna College	Claremont, CA	Private	BAS
Clarion University of Pennsylvania	Clarion, PA	Public	M1
Clark Atlanta University	Atlanta, GA	Private	R2
Clark University	Worcester, MA	Private	R3
Clarkson University	Potsdam, NY	Private	R3
Clayton State University	Morrow, GA	Public	M2
Clemson University	Clemson, SC	Public	R1

Institution Name	Location	Control	Carnegie
Cleveland State University	Cleveland, OH	Public	R2
Coastal Carolina University	Conway, SC	Public	M1
Coe College	Cedar Rapids, IA	Private	BAS
Colby College	Waterville, ME	Private	BAS
Colgate University	Hamilton, NY	Private	BAS
College of Charleston	Charleston, SC	Public	M1
College of Mount Saint Vincent	Bronx, NY	Private	M3
College of Our Lady of the Elms	Chicopee, MA	Private	M3
College of Saint Benedict	Saint Joseph, MN	Private	BAS
College of Saint Elizabeth	Morristown, NJ	Private	M2
College of Saint Mary	Omaha, NE	Private	M3
College of Staten Island CUNY	Staten Island, NY	Public	M1
College of the Atlantic	Bar Harbor, ME	Private	BAS
College of the Holy Cross	Worcester, MA	Private	BAS
College of William and Mary	Williamsburg, VA	Public	R2
Colorado Christian University	Lakewood, CO	Private	M2
Colorado College	Colorado Springs, CO	Private	BAS
Colorado School of Mines	Golden, CO	Public	R2
Colorado State University-Fort Collins	Fort Collins, CO	Public	R1
Colorado State University-Pueblo	Pueblo, CO	Public	M2
Columbia College	Columbia, SC	Private	M2
Columbia College	Columbia, MO	Private	M1
Columbia College Chicago	Chicago, IL	Private	M2
Columbia International University	Columbia, SC	Private	M2
Columbia University in the City of New York	New York, NY	Private	R1
Columbus State University	Columbus, GA	Public	M1
Concord University	Athens, WV	Public	M3
Concordia College at Moorhead	Moorhead, MN	Private	BAS
Concordia University-Chicago	River Forest, IL	Private	M1
Concordia University-Irvine	Irvine, CA	Private	M1
Concordia University-Nebraska	Seward, NE	Private	M1
Concordia University-Saint Paul	Saint Paul, MN	Private	M1
Concordia University-Texas	Austin, TX	Private	M1
Concordia University-Wisconsin	Mequon, WI	Private	M1
Connecticut College	New London, CT	Private	BAS
Converse College	Spartanburg, SC	Private	M2
Coppin State University	Baltimore, MD	Public	M3
Corban University	Salem, OR	Private	M3

Institution Name	Location	Control	Carnegie
Cornell College	Mount Vernon, IA	Private	BAS
Cornell University	Ithaca, NY	Private	R1
Cornerstone University	Grand Rapids, MI	Private	M1
Covenant College	Lookout Mountain, GA	Private	BAS
Creighton University	Omaha, NE	Private	M1
Cumberland University	Lebanon, TN	Private	M2
CUNY Bernard M Baruch College	New York, NY	Public	M1
CUNY Brooklyn College	Brooklyn, NY	Public	M1
CUNY City College	New York, NY	Public	M1
CUNY Hunter College	New York, NY	Public	M1
CUNY John Jay College of Criminal Justice	New York, NY	Public	M1
CUNY Lehman College	Bronx, NY	Public	M1
CUNY Queens College	Queens, NY	Public	M1
Curry College	Milton, MA	Private	M2
D'Youville College	Buffalo, NY	Private	M1
Daemen College	Amherst, NY	Private	M1
Dakota State University	Madison, SD	Public	M3
Dallas Baptist University	Dallas, TX	Private	R3
Dartmouth College	Hanover, NH	Private	R2
Davenport University	Grand Rapids, MI	Private	M1
Davidson College	Davidson, NC	Private	BAS
Davis & Elkins College	Elkins, WV	Private	BAS
Delaware State University	Dover, DE	Public	M2
Delaware Valley University	Doylestown, PA	Private	M3
Delta State University	Cleveland, MS	Public	M1
Denison University	Granville, OH	Private	BAS
DePaul University	Chicago, IL	Private	R3
DePauw University	Greencastle, IN	Private	BAS
DeSales University	Center Valley, PA	Private	M1
Dickinson College	Carlisle, PA	Private	BAS
Dillard University	New Orleans, LA	Private	BAS
Doane University-Arts & Sciences	Crete, NE	Private	BAS
Doane University-Graduate and Professional Studies	Lincoln, NE	Private	M1
Dominican College of Blauvelt	Orangeburg, NY	Private	M3
Dominican University	River Forest, IL	Private	M1
Dominican University of California	San Rafael, CA	Private	M2
Drake University	Des Moines, IA	Private	M1

Institution Name	Location	Control	Carnegie
Drew University	Madison, NJ	Private	BAS
Drexel University	Philadelphia, PA	Private	R2
Drury University	Springfield, MO	Private	M2
Duke University	Durham, NC	Private	R1
Duquesne University	Pittsburgh, PA	Private	R2
Earlham College	Richmond, IN	Private	BAS
East Carolina University	Greenville, NC	Public	R2
East Central University	Ada, OK	Public	M1
East Stroudsburg University of Pennsylvania	East Stroudsburg, PA	Public	M2
East Tennessee State University	Johnson City, TN	Public	R3
East-West University	Chicago, IL	Private	BAS
Eastern Connecticut State University	Willimantic, CT	Public	M3
Eastern Illinois University	Charleston, IL	Public	M1
Eastern Kentucky University	Richmond, KY	Public	M1
Eastern Mennonite University	Harrisonburg, VA	Private	M3
Eastern Michigan University	Ypsilanti, MI	Public	R3
Eastern Nazarene College	Quincy, MA	Private	M3
Eastern New Mexico University-Main Campus	Portales, NM	Public	M2
Eastern Oregon University	La Grande, OR	Public	M3
Eastern University	Saint Davids, PA	Private	M1
Eastern Washington University	Cheney, WA	Public	M1
Eckerd College	Saint Petersburg, FL	Private	BAS
Edgewood College	Madison, WI	Private	R3
Edinboro University of Pennsylvania	Edinboro, PA	Public	M1
Elizabeth City State University	Elizabeth City, NC	Public	M3
Elizabethtown College	Elizabethtown, PA	Private	BAS
Elmhurst College	Elmhurst, IL	Private	M2
Elmira College	Elmira, NY	Private	BAS
Elon University	Elon, NC	Private	M2
Embry-Riddle Aeronautical University-Daytona Beach	Daytona Beach, FL	Private	M1
Emerson College	Boston, MA	Private	M1
Emmanuel College	Boston, MA	Private	BAS
Emory & Henry College	Emory, VA	Private	BAS
Emory University	Atlanta, GA	Private	R1
Emporia State University	Emporia, KS	Public	M1
Endicott College	Beverly, MA	Private	M1
Erskine College	Due West, SC	Private	BAS

Institution Name	Location	Control	Carnegie
Evangel University	Springfield, MO	Private	M3
Fairfield University	Fairfield, CT	Private	M1
Fairleigh Dickinson University-Metropolitan Campus	Teaneck, NJ	Private	M1
Fairmont State University	Fairmont, WV	Public	M3
Fashion Institute of Technology	New York, NY	Public	M3
Faulkner University	Montgomery, AL	Private	M3
Fayetteville State University	Fayetteville, NC	Public	M2
Felician University	Lodi, NJ	Private	M3
Ferris State University	Big Rapids, MI	Public	M2
Fisk University	Nashville, TN	Private	BAS
Fitchburg State University	Fitchburg, MA	Public	M1
Florida Agricultural and Mechanical University	Tallahassee, FL	Public	R2
Florida Atlantic University	Boca Raton, FL	Public	R2
Florida Gulf Coast University	Fort Myers, FL	Public	M1
Florida Institute of Technology	Melbourne, FL	Private	R2
Florida International University	Miami, FL	Public	R1
Florida Southern College	Lakeland, FL	Private	M3
Florida State University	Tallahassee, FL	Public	R1
Fontbonne University	Saint Louis, MO	Private	M1
Fordham University	Bronx, NY	Private	R2
Fort Hays State University	Hays, KS	Public	M1
Fort Lewis College	Durango, CO	Public	BAS
Fort Valley State University	Fort Valley, GA	Public	M3
Framingham State University	Framingham, MA	Public	M1
Francis Marion University	Florence, SC	Public	M3
Franciscan University of Steubenville	Steubenville, OH	Private	M2
Franklin and Marshall College	Lancaster, PA	Private	BAS
Franklin College	Franklin, IN	Private	BAS
Franklin Pierce University	Rindge, NH	Private	M2
Freed-Hardeman University	Henderson, TN	Private	M3
Fresno Pacific University	Fresno, CA	Private	M1
Friends University	Wichita, KS	Private	M1
Frostburg State University	Frostburg, MD	Public	M1
Furman	Greenville, SC	Private	BAS
Gallaudet University	Washington, DC	Private	M2
Gannon University	Erie, PA	Private	M1
Gardner-Webb University	Boiling Springs, NC	Private	R3

Institution Name	Location	Control	Carnegie
Geneva College	Beaver Falls, PA	Private	M2
George Fox University	Newberg, OR	Private	M1
George Mason University	Fairfax, VA	Public	R1
George Washington University	Washington, DC	Private	R1
Georgetown College	Georgetown, KY	Private	BAS
Georgetown University	Washington, DC	Private	R1
Georgia College & State University	Milledgeville, GA	Public	M1
Georgia Institute of Technology-Main Campus	Atlanta, GA	Public	R1
Georgia Southern University	Statesboro, GA	Public	R3
Georgia Southwestern State University	Americus, GA	Public	M2
Georgia State University	Atlanta, GA	Public	R1
Georgian Court University	Lakewood, NJ	Private	M2
Gettysburg College	Gettysburg, PA	Private	BAS
Goddard College	Plainfield, VT	Private	M2
Golden Gate University-San Francisco	San Francisco, CA	Private	M1
Gonzaga University	Spokane, WA	Private	M1
Gordon College	Wenham, MA	Private	BAS
Goucher College	Baltimore, MD	Private	BAS
Governors State University	University Park, IL	Public	M1
Grace College and Theological Seminary	Winona Lake, IN	Private	M3
Graceland University-Lamoni	Lamoni, IA	Private	M2
Grambling State University	Grambling, LA	Public	M1
Grand Valley State University	Allendale, MI	Public	M1
Green Mountain College	Poultney, VT	Private	M3
Greenville University	Greenville, IL	Private	M3
Grinnell College	Grinnell, IA	Private	BAS
Guilford College	Greensboro, NC	Private	BAS
Gustavus Adolphus College	Saint Peter, MN	Private	BAS
Gwynedd Mercy University	Gwynedd Valley, PA	Private	M2
Hamilton College	Clinton, NY	Private	BAS
Hamline University	Saint Paul, MN	Private	M1
Hampden-Sydney College	Hampden-Sydney, VA	Private	BAS
Hampshire College	Amherst, MA	Private	BAS
Hampton University	Hampton, VA	Private	M2
Hanover College	Hanover, IN	Private	BAS
Hardin-Simmons University	Abilene, TX	Private	M2
Harding University	Searcy, AR	Private	M1
Harrisburg University of Science and Technology	Harrisburg, PA	Private	M3

Institution Name	**Location**	**Control**	**Carnegie**
Hartwick College	Oneonta, NY	Private	BAS
Harvard University	Cambridge, MA	Private	R1
Harvey Mudd College	Claremont, CA	Private	BAS
Haverford College	Haverford, PA	Private	BAS
Hawaii Pacific University	Honolulu, HI	Private	M1
Heidelberg University	Tiffin, OH	Private	M3
Henderson State University	Arkadelphia, AR	Public	M2
Hendrix College	Conway, AR	Private	BAS
Heritage University	Toppenish, WA	Private	M3
Hiram College	Hiram, OH	Private	BAS
Hobart William Smith Colleges	Geneva, NY	Private	BAS
Hodges University	Naples, FL	Private	M3
Hofstra University	Hempstead, NY	Private	R3
Hollins University	Roanoke, VA	Private	BAS
Holy Cross College	Notre Dame, IN	Private	BAS
Holy Family University	Philadelphia, PA	Private	M1
Holy Names University	Oakland, CA	Private	M2
Hood College	Frederick, MD	Private	M1
Hope College	Holland, MI	Private	BAS
Hope International University	Fullerton, CA	Private	M2
Houghton College	Houghton, NY	Private	BAS
Houston Baptist University	Houston, TX	Private	M2
Howard University	Washington, DC	Private	R2
Humboldt State University	Arcata, CA	Public	M2
Idaho State University	Pocatello, ID	Public	R3
Illinois College	Jacksonville, IL	Private	BAS
Illinois Institute of Technology	Chicago, IL	Private	R2
Illinois State University	Normal, IL	Public	R2
Illinois Wesleyan University	Bloomington, IL	Private	BAS
Immaculata University	Immaculata, PA	Private	R3
Indiana State University	Terre Haute, IN	Public	R3
Indiana University of Pennsylvania-Main Campus	Indiana, PA	Public	R3
Indiana University-Bloomington	Bloomington, IN	Public	R1
Indiana University-East	Richmond, IN	Public	M3
Indiana University-Northwest	Gary, IN	Public	M2
Indiana University-Purdue University-Fort Wayne	Fort Wayne, IN	Public	M1

Institution Name	Location	Control	Carnegie
Indiana University-Purdue University-Indianapolis	Indianapolis, IN	Public	R2
Indiana University-South Bend	South Bend, IN	Public	M2
Indiana University-Southeast	New Albany, IN	Public	M1
Indiana Wesleyan University-Marion	Marion, IN	Private	M1
Iona College	New Rochelle, NY	Private	M1
Iowa State University	Ames, IA	Public	R1
Ithaca College	Ithaca, NY	Private	M1
Jackson State University	Jackson, MS	Public	R2
Jacksonville State University	Jacksonville, AL	Public	M1
Jacksonville University	Jacksonville, FL	Private	M1
James Madison University	Harrisonburg, VA	Public	M1
Jefferson (Philadelphia University + Thomas Jefferson University)	Philadelphia, PA	Private	M1
John Brown University	Siloam Springs, AR	Private	M2
John Carroll University	University Heights, OH	Private	M1
Johns Hopkins University	Baltimore, MD	Private	R1
Johnson & Wales University-Providence	Providence, RI	Private	M1
Johnson C Smith University	Charlotte, NC	Private	BAS
Johnson State College	Johnson, VT	Public	M3
Judson College	Marion, AL	Private	BAS
Judson University	Elgin, IL	Private	M3
Juniata College	Huntingdon, PA	Private	BAS
Kalamazoo College	Kalamazoo, MI	Private	BAS
Kansas State University	Manhattan, KS	Public	R1
Kean University	Union, NJ	Public	M1
Keene State College	Keene, NH	Public	M3
Keiser University-Ft Lauderdale	Fort Lauderdale, FL	Private	M1
Kent State University at Kent	Kent, OH	Public	R2
Kenyon College	Gambier, OH	Private	BAS
Kettering University	Flint, MI	Private	M2
Keuka College	Keuka Park, NY	Private	M2
King University	Bristol, TN	Private	M1
King's College	Wilkes-Barre, PA	Private	M3
Knox College	Galesburg, IL	Private	BAS
Kutztown University of Pennsylvania	Kutztown, PA	Public	M1
La Salle University	Philadelphia, PA	Private	M1
La Sierra University	Riverside, CA	Private	M3

Institution Name	Location	Control	Carnegie
Lafayette College	Easton, PA	Private	BAS
LaGrange College	Lagrange, GA	Private	BAS
Lake Erie College	Painesville, OH	Private	M3
Lake Forest College	Lake Forest, IL	Private	BAS
Lakeland University	Plymouth, WI	Private	M1
Lamar University	Beaumont, TX	Public	R3
Langston University	Langston, OK	Public	M2
Lasell College	Newton, MA	Private	M2
Lawrence Technological University	Southfield, MI	Private	M1
Lawrence University	Appleton, WI	Private	BAS
Le Moyne College	Syracuse, NY	Private	M1
Lebanon Valley College	Annville, PA	Private	M3
Lee University	Cleveland, TN	Private	M2
Lehigh University	Bethlehem, PA	Private	R2
Lenoir-Rhyne University	Hickory, NC	Private	M3
Lesley University	Cambridge, MA	Private	R3
LeTourneau University	Longview, TX	Private	M2
Lewis & Clark College	Portland, OR	Private	BAS
Lewis University	Romeoville, IL	Private	M1
Liberty University	Lynchburg, VA	Private	R3
Lincoln Memorial University	Harrogate, TN	Private	M1
Lincoln University	Jefferson City, MO	Public	M3
Lincoln University	Lincoln University, PA	Public	M2
Lindenwood University	Saint Charles, MO	Private	R3
Lindsey Wilson College	Columbia, KY	Private	M1
Linfield College-McMinnville Campus	McMinnville, OR	Private	BAS
Lipscomb University	Nashville, TN	Private	R3
LIU Brooklyn	Brooklyn, NY	Private	M1
LIU Post	Brookville, NY	Private	M1
Lock Haven University	Lock Haven, PA	Public	M2
Longwood University	Farmville, VA	Public	M2
Louisiana College	Pineville, LA	Private	M2
Louisiana State University and Agricultural & Mechanical College	Baton Rouge, LA	Public	R1
Louisiana State University-Alexandria	Alexandria, LA	Public	BAS
Louisiana State University-Shreveport	Shreveport, LA	Public	M2
Louisiana Tech University	Ruston, LA	Public	R3
Lourdes University	Sylvania, OH	Private	M2

Institution Name	Location	Control	Carnegie
Loyola Marymount University	Los Angeles, CA	Private	M1
Loyola University Chicago	Chicago, IL	Private	R2
Loyola University Maryland	Baltimore, MD	Private	M1
Loyola University New Orleans	New Orleans, LA	Private	M1
Lubbock Christian University	Lubbock, TX	Private	M2
Luther College	Decorah, IA	Private	BAS
Lycoming College	Williamsport, PA	Private	BAS
Lynchburg College	Lynchburg, VA	Private	M2
Lynn University	Boca Raton, FL	Private	M1
Lyon College	Batesville, AR	Private	BAS
Macalester College	Saint Paul, MN	Private	BAS
Madonna University	Livonia, MI	Private	M1
Maharishi University of Management	Fairfield, IA	Private	M1
Malone University	Canton, OH	Private	M2
Manhattan College	Riverdale, NY	Private	M2
Manhattanville College	Purchase, NY	Private	M1
Mansfield University of Pennsylvania	Mansfield, PA	Public	M3
Marian University	Fond Du Lac, WI	Private	M2
Marian University	Indianapolis, IN	Private	M2
Marist College	Poughkeepsie, NY	Private	M1
Marlboro College	Marlboro, VT	Private	BAS
Marquette University	Milwaukee, WI	Private	R2
Marshall University	Huntington, WV	Public	M1
Martin University	Indianapolis, IN	Private	BAS
Mary Baldwin University	Staunton, VA	Private	M2
Marygrove College	Detroit, MI	Private	M1
Marymount Manhattan College	New York, NY	Private	BAS
Marymount University	Arlington, VA	Private	M1
Maryville College	Maryville, TN	Private	BAS
Maryville University of Saint Louis	Saint Louis, MO	Private	R3
Marywood University	Scranton, PA	Private	M1
Massachusetts College of Liberal Arts	North Adams, MA	Public	BAS
Massachusetts Institute of Technology	Cambridge, MA	Private	R1
Massachusetts Maritime Academy	Buzzards Bay, MA	Public	M3
McDaniel College	Westminster, MD	Private	BAS
McKendree University	Lebanon, IL	Private	M1
McNeese State University	Lake Charles, LA	Public	M1
Medaille College	Buffalo, NY	Private	M1

Institution Name	Location	Control	Carnegie
Mercer University	Macon, GA	Private	R3
Mercy College	Dobbs Ferry, NY	Private	M1
Mercyhurst University	Erie, PA	Private	M2
Meredith College	Raleigh, NC	Private	BAS
Merrimack College	North Andover, MA	Private	M2
Methodist University	Fayetteville, NC	Private	M3
Metropolitan College of New York	New York, NY	Private	M1
Metropolitan State University	Saint Paul, MN	Public	M1
Metropolitan State University of Denver	Denver, CO	Public	M2
Miami University-Oxford	Oxford, OH	Public	R2
Michigan State University	East Lansing, MI	Public	R1
Michigan Technological University	Houghton, MI	Public	R2
Mid-America Christian University	Oklahoma City, OK	Private	M2
MidAmerica Nazarene University	Olathe, KS	Private	M2
Middle Tennessee State University	Murfreesboro, TN	Public	R3
Middlebury College	Middlebury, VT	Private	BAS
Midway University	Midway, KY	Private	M3
Midwestern State University	Wichita Falls, TX	Public	M2
Millersville University of Pennsylvania	Millersville, PA	Public	M1
Mills College	Oakland, CA	Private	M1
Millsaps College	Jackson, MS	Private	BAS
Milwaukee School of Engineering	Milwaukee, WI	Private	M3
Minnesota State University Moorhead	Moorhead, MN	Public	M2
Minnesota State University-Mankato	Mankato, MN	Public	M1
Minot State University	Minot, ND	Public	M2
Misericordia University	Dallas, PA	Private	M2
Mississippi College	Clinton, MS	Private	M1
Mississippi State University	Mississippi State, MS	Public	R2
Mississippi University for Women	Columbus, MS	Public	M3
Mississippi Valley State University	Itta Bena, MS	Public	M3
Missouri Baptist University	Saint Louis, MO	Private	M1
Missouri State University-Springfield	Springfield, MO	Public	M1
Missouri University of Science and Technology	Rolla, MO	Public	R2
Molloy College	Rockville Centre, NY	Private	M1
Monmouth College	Monmouth, IL	Private	BAS
Monmouth University	West Long Branch, NJ	Private	M1
Montana State University	Bozeman, MT	Public	R2
Montana State University-Billings	Billings, MT	Public	M2

Institution Name	Location	Control	Carnegie
Montclair State University	Montclair, NJ	Public	R3
Montreat College	Montreat, NC	Private	M3
Moravian College	Bethlehem, PA	Private	BAS
Morehead State University	Morehead, KY	Public	M1
Morehouse College	Atlanta, GA	Private	BAS
Morgan State University	Baltimore, MD	Public	R3
Morningside College	Sioux City, IA	Private	M2
Mount Holyoke College	South Hadley, MA	Private	BAS
Mount Marty College	Yankton, SD	Private	M3
Mount Mary University	Milwaukee, WI	Private	M2
Mount Mercy University	Cedar Rapids, IA	Private	M2
Mount Saint Joseph University	Cincinnati, OH	Private	M2
Mount Saint Mary College	Newburgh, NY	Private	M2
Mount Saint Mary’s University	Los Angeles, CA	Private	M2
Mount St. Mary’s University	Emmitsburg, MD	Private	M2
Mount Vernon Nazarene University	Mount Vernon, OH	Private	M1
Muhlenberg College	Allentown, PA	Private	BAS
Murray State University	Murray, KY	Public	M1
Muskingum University	New Concord, OH	Private	M2
Naropa University	Boulder, CO	Private	M1
National Louis University	Chicago, IL	Private	R3
National University	La Jolla, CA	Private	M1
Nazareth College	Rochester, NY	Private	M1
Nebraska Wesleyan University	Lincoln, NE	Private	M2
Neumann University	Aston, PA	Private	M2
New College of Florida	Sarasota, FL	Public	BAS
New England College	Henniker, NH	Private	M1
New Jersey City University	Jersey City, NJ	Public	M1
New Jersey Institute of Technology	Newark, NJ	Public	R2
New Mexico Highlands University	Las Vegas, NM	Public	M1
New Mexico Institute of Mining and Technology	Socorro, NM	Public	M3
New Mexico State University-Main Campus	Las Cruces, NM	Public	R2
New York Institute of Technology	Old Westbury, NY	Private	M1
New York University	New York, NY	Private	R1
Newman University	Wichita, KS	Private	M2
Niagara University	Niagara University, NY	Private	M1
Nicholls State University	Thibodaux, LA	Public	M2
Norfolk State University	Norfolk, VA	Public	M2

Institution Name	Location	Control	Carnegie
North Carolina A & T State University	Greensboro, NC	Public	R2
North Carolina Central University	Durham, NC	Public	M1
North Carolina State University at Raleigh	Raleigh, NC	Public	R1
North Central College	Naperville, IL	Private	M2
North Dakota State University-Main Campus	Fargo, ND	Public	R2
North Greenville University	Tigerville, SC	Private	M3
North Park University	Chicago, IL	Private	M1
Northeastern Illinois University	Chicago, IL	Public	M1
Northeastern State University	Tahlequah, OK	Public	M1
Northeastern University	Boston, MA	Private	R1
Northern Arizona University	Flagstaff, AZ	Public	R2
Northern Illinois University	Dekalb, IL	Public	R2
Northern Kentucky University	Highland Heights, KY	Public	M1
Northern Michigan University	Marquette, MI	Public	M2
Northern State University	Aberdeen, SD	Public	M3
Northland College	Ashland, WI	Private	BAS
Northwest Christian University	Eugene, OR	Private	M3
Northwest Missouri State University	Maryville, MO	Public	M1
Northwest Nazarene University	Nampa, ID	Private	M1
Northwest University	Kirkland, WA	Private	M2
Northwestern Oklahoma State University	Alva, OK	Public	M3
Northwestern State University of Louisiana	Natchitoches, LA	Public	M1
Northwestern University	Evanston, IL	Private	R1
Norwich University	Northfield, VT	Private	M1
Notre Dame College	Cleveland, OH	Private	M3
Notre Dame de Namur University	Belmont, CA	Private	M1
Notre Dame of Maryland University	Baltimore, MD	Private	M1
Nova Southeastern University	Fort Lauderdale, FL	Private	R2
Nyack College	Nyack, NY	Private	M1
Oakland University	Rochester Hills, MI	Public	R3
Oberlin College	Oberlin, OH	Private	BAS
Occidental College	Los Angeles, CA	Private	BAS
Oglethorpe University	Atlanta, GA	Private	BAS
Ohio Dominican University	Columbus, OH	Private	M2
Ohio State University-Main Campus	Columbus, OH	Public	R1
Ohio University-Main Campus	Athens, OH	Public	R2
Ohio Wesleyan University	Delaware, OH	Private	BAS
Oklahoma Christian University	Edmond, OK	Private	M1

Institution Name	Location	Control	Carnegie
Oklahoma City University	Oklahoma City, OK	Private	M1
Oklahoma State University-Main Campus	Stillwater, OK	Public	R2
Oklahoma Wesleyan University	Bartlesville, OK	Private	M3
Old Dominion University	Norfolk, VA	Public	R2
Olivet Nazarene University	Bourbonnais, IL	Private	M1
Oral Roberts University	Tulsa, OK	Private	M2
Oregon State University	Corvallis, OR	Public	R1
Otterbein University	Westerville, OH	Private	M2
Ouachita Baptist University	Arkadelphia, AR	Private	BAS
Our Lady of the Lake University	San Antonio, TX	Private	M1
Pace University-New York	New York, NY	Private	R3
Pacific Lutheran University	Tacoma, WA	Private	M2
Pacific Union College	Angwin, CA	Private	BAS
Pacific University	Forest Grove, OR	Private	M1
Paine College	Augusta, GA	Private	BAS
Palm Beach Atlantic University	West Palm Beach, FL	Private	M1
Park University	Parkville, MO	Private	M2
Pennsylvania State University-Main Campus	University Park, PA	Public	R1
Pepperdine University	Malibu, CA	Private	R3
Peru State College	Peru, NE	Public	M3
Pfeiffer University	Misenheimer, NC	Private	M1
Philander Smith College	Little Rock, AR	Private	BAS
Piedmont College	Demorest, GA	Private	M1
Pine Manor College	Chestnut Hill, MA	Private	BAS
Pittsburg State University	Pittsburg, KS	Public	M1
Pitzer College	Claremont, CA	Private	BAS
Plymouth State University	Plymouth, NH	Public	M1
Point Loma Nazarene University	San Diego, CA	Private	M1
Point Park University	Pittsburgh, PA	Private	M1
Pomona College	Claremont, CA	Private	BAS
Portland State University	Portland, OR	Public	R2
Prairie View A&M University	Prairie View, TX	Public	R3
Presbyterian College	Clinton, SC	Private	BAS
Prescott College	Prescott, AZ	Private	M3
Princeton University	Princeton, NJ	Private	R1
Providence Christian College	Pasadena, CA	Private	BAS
Providence College	Providence, RI	Private	M1
Purdue University-Main Campus	West Lafayette, IN	Public	R1

Institution Name	Location	Control	Carnegie
Queens University of Charlotte	Charlotte, NC	Private	M2
Quincy University	Quincy, IL	Private	M2
Quinnipiac University	Hamden, CT	Private	M1
Radford University	Radford, VA	Public	M1
Ramapo College of New Jersey	Mahwah, NJ	Public	M2
Randolph College	Lynchburg, VA	Private	BAS
Randolph-Macon College	Ashland, VA	Private	BAS
Reed College	Portland, OR	Private	BAS
Regent University	Virginia Beach, VA	Private	R3
Regis University	Denver, CO	Private	M1
Rensselaer Polytechnic Institute	Troy, NY	Private	R2
Rhode Island College	Providence, RI	Public	M1
Rhodes College	Memphis, TN	Private	BAS
Rice University	Houston, TX	Private	R1
Rider University	Lawrenceville, NJ	Private	M1
Ripon College	Ripon, WI	Private	BAS
Rivier University	Nashua, NH	Private	M1
Roanoke College	Salem, VA	Private	BAS
Robert Morris University	Moon Township, PA	Private	R3
Robert Morris University Illinois	Chicago, IL	Private	M1
Roberts Wesleyan College	Rochester, NY	Private	M1
Rochester Institute of Technology	Rochester, NY	Private	R3
Rockford University	Rockford, IL	Private	M3
Rockhurst University	Kansas City, MO	Private	M1
Roger Williams University	Bristol, RI	Private	M2
Rollins College	Winter Park, FL	Private	M1
Roosevelt University	Chicago, IL	Private	M1
Rosemont College	Rosemont, PA	Private	M2
Rowan University	Glassboro, NJ	Public	R3
Rutgers University-Camden	Camden, NJ	Public	M1
Rutgers University-New Brunswick	New Brunswick, NJ	Public	R1
Rutgers University-Newark	Newark, NJ	Public	R2
Sacred Heart University	Fairfield, CT	Private	M1
Saginaw Valley State University	University Center, MI	Public	M1
Saint Ambrose University	Davenport, IA	Private	M1
Saint Anselm College	Manchester, NH	Private	BAS
Saint Cloud State University	Saint Cloud, MN	Public	M1
Saint Edward's University	Austin, TX	Private	M1

Institution Name	Location	Control	Carnegie
Saint Francis University	Loretto, PA	Private	M1
Saint John Fisher College	Rochester, NY	Private	R3
Saint John's University	Collegeville, MN	Private	BAS
Saint Joseph's College of Maine	Standish, ME	Private	M1
Saint Joseph's University	Philadelphia, PA	Private	M1
Saint Leo University	Saint Leo, FL	Private	M1
Saint Louis University	Saint Louis, MO	Private	R2
Saint Martin's University	Lacey, WA	Private	M2
Saint Mary's College	Notre Dame, IN	Private	BAS
Saint Mary's College of California	Moraga, CA	Private	M1
Saint Mary's University of Minnesota	Winona, MN	Private	M1
Saint Michael's College	Colchester, VT	Private	BAS
Saint Norbert College	De Pere, WI	Private	BAS
Saint Peter's University	Jersey City, NJ	Private	M1
Saint Vincent College	Latrobe, PA	Private	BAS
Saint Xavier University	Chicago, IL	Private	M1
Salem College	Winston-Salem, NC	Private	BAS
Salem State University	Salem, MA	Public	M1
Salisbury University	Salisbury, MD	Public	M1
Salve Regina University	Newport, RI	Private	M2
Sam Houston State University	Huntsville, TX	Public	R3
Samford University	Birmingham, AL	Private	M1
San Diego State University	San Diego, CA	Public	R2
San Francisco State University	San Francisco, CA	Public	R3
San Jose State University	San Jose, CA	Public	M1
Santa Clara University	Santa Clara, CA	Private	M1
Sarah Lawrence College	Bronxville, NY	Private	BAS
Savannah State University	Savannah, GA	Public	M3
Schreiner University	Kerrville, TX	Private	BAS
Scripps College	Claremont, CA	Private	BAS
Seattle Pacific University	Seattle, WA	Private	R3
Seattle University	Seattle, WA	Private	M1
Seton Hall University	South Orange, NJ	Private	R3
Seton Hill University	Greensburg, PA	Private	M2
Sewanee-The University of the South	Sewanee, TN	Private	BAS
Shenandoah University	Winchester, VA	Private	R3
Shepherd University	Shepherdstown, WV	Public	BAS
Shippensburg University of Pennsylvania	Shippensburg, PA	Public	M1

Institution Name	Location	Control	Carnegie
Shorter University-College of Adult & Professional Programs	Marietta, GA	Private	M2
Siena College	Loudonville, NY	Private	BAS
Siena Heights University	Adrian, MI	Private	M2
Sierra Nevada College	Incline Village, NV	Private	M2
Silver Lake College of the Holy Family	Manitowoc, WI	Private	M3
Simmons College	Boston, MA	Private	M1
Simpson College	Indianola, IA	Private	BAS
Simpson University	Redding, CA	Private	M3
Skidmore College	Saratoga Springs, NY	Private	BAS
Slippery Rock University of Pennsylvania	Slippery Rock, PA	Public	M1
Smith College	Northampton, MA	Private	BAS
Soka University of America	Aliso Viejo, CA	Private	BAS
Sonoma State University	Rohnert Park, CA	Public	M1
South Carolina State University	Orangeburg, SC	Public	M2
South Dakota State University	Brookings, SD	Public	R2
Southeast Missouri State University	Cape Girardeau, MO	Public	M1
Southeastern Baptist Theological Seminary	Wake Forest, NC	Private	M1
Southeastern Louisiana University	Hammond, LA	Public	M1
Southeastern Oklahoma State University	Durant, OK	Public	M2
Southeastern University	Lakeland, FL	Private	M2
Southern Adventist University	Collegedale, TN	Private	M2
Southern Arkansas University Main Campus	Magnolia, AR	Public	M2
Southern Connecticut State University	New Haven, CT	Public	M1
Southern Illinois University-Carbondale	Carbondale, IL	Public	R2
Southern Illinois University-Edwardsville	Edwardsville, IL	Public	M1
Southern Methodist University	Dallas, TX	Private	R2
Southern Nazarene University	Bethany, OK	Private	M1
Southern New Hampshire University	Manchester, NH	Private	M1
Southern Oregon University	Ashland, OR	Public	M1
Southern University and A&M College	Baton Rouge, LA	Public	M1
Southern University at New Orleans	New Orleans, LA	Public	M2
Southern Utah University	Cedar City, UT	Public	M1
Southern Virginia University	Buena Vista, VA	Private	BAS
Southern Wesleyan University	Central, SC	Private	M1
Southwest Baptist University	Bolivar, MO	Private	M2
Southwest Minnesota State University	Marshall, MN	Public	M2
Southwestern Assemblies of God University	Waxahachie, TX	Private	M3

Institution Name	Location	Control	Carnegie
Southwestern College	Winfield, KS	Private	M2
Southwestern Oklahoma State University	Weatherford, OK	Public	M1
Southwestern University	Georgetown, TX	Private	BAS
Spalding University	Louisville, KY	Private	R3
Spelman College	Atlanta, GA	Private	BAS
Spring Arbor University	Spring Arbor, MI	Private	M1
Spring Hill College	Mobile, AL	Private	BAS
Springfield College	Springfield, MA	Private	M1
St Bonaventure University	Saint Bonaventure, NY	Private	M2
St Catherine University	Saint Paul, MN	Private	M1
St John's University-New York	Queens, NY	Private	R3
St Lawrence University	Canton, NY	Private	BAS
St Mary's College of Maryland	St. Mary's City, MD	Public	BAS
St Olaf College	Northfield, MN	Private	BAS
St Thomas University	Miami Gardens, FL	Private	M1
St. John's College	Annapolis, MD	Private	BAS
St. John's College	Santa Fe, NM	Private	BAS
St. Joseph's College-New York	Brooklyn, NY	Private	M1
St. Mary's University	San Antonio, TX	Private	M1
St. Thomas Aquinas College	Sparkill, NY	Private	M3
Stanford University	Stanford, CA	Private	R1
State University of New York at New Paltz	New Paltz, NY	Public	M1
Stephen F Austin State University	Nacogdoches, TX	Public	M1
Stephens College	Columbia, MO	Private	M3
Sterling College	Craftsbury Common, VT	Private	BAS
Stetson University	DeLand, FL	Private	M2
Stevens Institute of Technology	Hoboken, NJ	Private	R2
Stevens-Henager College	Murray, UT	Private	M2
Stevenson University	Stevenson, MD	Private	M2
Stillman College	Tuscaloosa, AL	Private	BAS
Stockton University	Galloway, NJ	Public	M1
Stonehill College	Easton, MA	Private	BAS
Stony Brook University	Stony Brook, NY	Public	R1
Suffolk University	Boston, MA	Private	R3
Sul Ross State University	Alpine, TX	Public	M1
SUNY at Albany	Albany, NY	Public	R1
SUNY at Fredonia	Fredonia, NY	Public	M2
SUNY at Purchase College	Purchase, NY	Public	BAS

Institution Name	Location	Control	Carnegie
SUNY Buffalo State	Buffalo, NY	Public	M1
SUNY College at Brockport	Brockport, NY	Public	M1
SUNY College at Geneseo	Geneseo, NY	Public	M3
SUNY College at Old Westbury	Old Westbury, NY	Public	M3
SUNY College at Oswego	Oswego, NY	Public	M1
SUNY College at Plattsburgh	Plattsburgh, NY	Public	M1
SUNY College at Potsdam	Potsdam, NY	Public	M2
SUNY College of Environmental Science and Forestry	Syracuse, NY	Public	R3
SUNY Cortland	Cortland, NY	Public	M1
SUNY Empire State College	Saratoga Springs, NY	Public	M2
SUNY Maritime College	Throggs Neck, NY	Public	M3
SUNY Oneonta	Oneonta, NY	Public	M3
SUNY Polytechnic Institute	Utica, NY	Public	M2
Susquehanna University	Selinsgrove, PA	Private	BAS
Swarthmore College	Swarthmore, PA	Private	BAS
Sweet Briar College	Sweet Briar, VA	Private	BAS
Syracuse University	Syracuse, NY	Private	R1
Tarleton State University	Stephenville, TX	Public	M1
Temple University	Philadelphia, PA	Public	R1
Tennessee State University	Nashville, TN	Public	R3
Tennessee Technological University	Cookeville, TN	Public	R3
Texas A&M International University	Laredo, TX	Public	M1
Texas A&M University-College Station	College Station, TX	Public	R1
Texas A&M University-Commerce	Commerce, TX	Public	R2
Texas A&M University-Corpus Christi	Corpus Christi, TX	Public	R3
Texas A&M University-Kingsville	Kingsville, TX	Public	R3
Texas A&M University-Texarkana	Texarkana, TX	Public	M2
Texas Christian University	Fort Worth, TX	Private	R2
Texas Southern University	Houston, TX	Public	R3
Texas State University	San Marcos, TX	Public	R2
Texas Tech University	Lubbock, TX	Public	R1
Texas Wesleyan University	Fort Worth, TX	Private	M1
Texas Woman's University	Denton, TX	Public	R3
The College of Idaho	Caldwell, ID	Private	BAS
The College of New Jersey	Ewing, NJ	Public	M1
The College of New Rochelle	New Rochelle, NY	Private	M1
The College of Saint Rose	Albany, NY	Private	M1

Institution Name	Location	Control	Carnegie
The College of Saint Scholastica	Duluth, MN	Private	M1
The College of Wooster	Wooster, OH	Private	BAS
The Evergreen State College	Olympia, WA	Public	M2
The King’s College	New York, NY	Private	BAS
The Master’s University and Seminary	Santa Clarita, CA	Private	M3
The New School	New York, NY	Private	R2
The Sage Colleges	Troy, NY	Private	M1
The University of Alabama	Tuscaloosa, AL	Public	R2
The University of Findlay	Findlay, OH	Private	M1
The University of Montana	Missoula, MT	Public	R2
The University of Tampa	Tampa, FL	Private	M1
The University of Tennessee-Chattanooga	Chattanooga, TN	Public	M1
The University of Tennessee-Knoxville	Knoxville, TN	Public	R1
The University of Tennessee-Martin	Martin, TN	Public	M2
The University of Texas at Arlington	Arlington, TX	Public	R1
The University of Texas at Austin	Austin, TX	Public	R1
The University of Texas at Dallas	Richardson, TX	Public	R1
The University of Texas at El Paso	El Paso, TX	Public	R2
The University of Texas at San Antonio	San Antonio, TX	Public	R2
The University of Texas at Tyler	Tyler, TX	Public	M1
The University of Texas of the Permian Basin	Odessa, TX	Public	M2
The University of Texas Rio Grande Valley	Edinburg, TX	Public	R3
The University of Virginia’s College at Wise	Wise, VA	Public	BAS
The University of West Florida	Pensacola, FL	Public	R3
Thiel College	Greenville, PA	Private	BAS
Thomas Aquinas College	Santa Paula, CA	Private	BAS
Thomas College	Waterville, ME	Private	M3
Thomas Edison State University	Trenton, NJ	Public	M2
Thomas More College	Crestview Hills, KY	Private	M3
Thomas More College of Liberal Arts	Merrimack, NH	Private	BAS
Thomas University	Thomasville, GA	Private	M3
Tiffin University	Tiffin, OH	Private	M1
Tougaloo College	Tougaloo, MS	Private	BAS
Touro College	New York, NY	Private	M1
Touro University Worldwide	Los Alamitos, CA	Private	M3
Towson University	Towson, MD	Public	M1
Transylvania University	Lexington, KY	Private	BAS
Trevecca Nazarene University	Nashville, TN	Private	R3

Institution Name	Location	Control	Carnegie
Trinity College	Hartford, CT	Private	BAS
Trinity International University-Illinois	Deerfield, IL	Private	R3
Trinity University	San Antonio, TX	Private	M3
Trinity Washington University	Washington, DC	Private	M1
Troy University	Troy, AL	Public	M1
Truman State University	Kirksville, MO	Public	M2
Tufts University	Medford, MA	Private	R1
Tulane University of Louisiana	New Orleans, LA	Private	R1
Tusculum College	Greeneville, TN	Private	M2
Tuskegee University	Tuskegee, AL	Private	M3
Union College	Barbourville, KY	Private	M2
Union College	Schenectady, NY	Private	BAS
Union Institute & University	Cincinnati, OH	Private	R3
Union University	Jackson, TN	Private	R3
University at Buffalo	Buffalo, NY	Public	R1
University of Akron Main Campus	Akron, OH	Public	R2
University of Alabama at Birmingham	Birmingham, AL	Public	R1
University of Alabama in Huntsville	Huntsville, AL	Public	R2
University of Alaska Anchorage	Anchorage, AK	Public	M1
University of Alaska Fairbanks	Fairbanks, AK	Public	R2
University of Alaska Southeast	Juneau, AK	Public	M2
University of Arizona	Tucson, AZ	Public	R1
University of Arkansas	Fayetteville, AR	Public	R1
University of Arkansas at Little Rock	Little Rock, AR	Public	R3
University of Arkansas at Monticello	Monticello, AR	Public	M3
University of Baltimore	Baltimore, MD	Public	M1
University of Bridgeport	Bridgeport, CT	Private	M1
University of California-Berkeley	Berkeley, CA	Public	R1
University of California-Davis	Davis, CA	Public	R1
University of California-Irvine	Irvine, CA	Public	R1
University of California-Los Angeles	Los Angeles, CA	Public	R1
University of California-Merced	Merced, CA	Public	R2
University of California-Riverside	Riverside, CA	Public	R1
University of California-San Diego	La Jolla, CA	Public	R1
University of California-Santa Barbara	Santa Barbara, CA	Public	R1
University of California-Santa Cruz	Santa Cruz, CA	Public	R1
University of Central Arkansas	Conway, AR	Public	M1
University of Central Florida	Orlando, FL	Public	R1

Institution Name	Location	Control	Carnegie
University of Central Missouri	Warrensburg, MO	Public	M1
University of Central Oklahoma	Edmond, OK	Public	M1
University of Charleston	Charleston, WV	Private	M3
University of Chicago	Chicago, IL	Private	R1
University of Cincinnati-Main Campus	Cincinnati, OH	Public	R1
University of Colorado-Boulder	Boulder, CO	Public	R1
University of Colorado-Colorado Springs	Colorado Springs, CO	Public	M1
University of Colorado-Denver/Anschutz Medical Campus	Denver, CO	Public	R2
University of Connecticut	Storrs, CT	Public	R1
University of Dallas	Irving, TX	Private	M1
University of Dayton	Dayton, OH	Private	R2
University of Delaware	Newark, DE	Public	R1
University of Denver	Denver, CO	Private	R2
University of Detroit Mercy	Detroit, MI	Private	M1
University of Dubuque	Dubuque, IA	Private	M3
University of Evansville	Evansville, IN	Private	M3
University of Florida	Gainesville, FL	Public	R1
University of Georgia	Athens, GA	Public	R1
University of Hartford	West Hartford, CT	Private	R3
University of Hawaii at Hilo	Hilo, HI	Public	M3
University of Hawaii at Manoa	Honolulu, HI	Public	R1
University of Houston	Houston, TX	Public	R1
University of Houston-Clear Lake	Houston, TX	Public	M1
University of Houston-Downtown	Houston, TX	Public	M3
University of Houston-Victoria	Victoria, TX	Public	M1
University of Idaho	Moscow, ID	Public	R2
University of Illinois at Chicago	Chicago, IL	Public	R1
University of Illinois at Springfield	Springfield, IL	Public	M1
University of Illinois at Urbana-Champaign	Champaign, IL	Public	R1
University of Indianapolis	Indianapolis, IN	Private	M1
University of Iowa	Iowa City, IA	Public	R1
University of Kansas	Lawrence, KS	Public	R1
University of Kentucky	Lexington, KY	Public	R1
University of La Verne	La Verne, CA	Private	R3
University of Louisiana at Lafayette	Lafayette, LA	Public	R2
University of Louisiana at Monroe	Monroe, LA	Public	R3
University of Louisville	Louisville, KY	Public	R1

Institution Name	Location	Control	Carnegie
University of Maine	Orono, ME	Public	R2
University of Maine at Machias	Machias, ME	Public	BAS
University of Mary	Bismarck, ND	Private	M1
University of Mary Hardin-Baylor	Belton, TX	Private	M2
University of Mary Washington	Fredericksburg, VA	Public	M1
University of Maryland Eastern Shore	Princess Anne, MD	Public	R3
University of Maryland-Baltimore County	Baltimore, MD	Public	R2
University of Maryland-College Park	College Park, MD	Public	R1
University of Maryland-University College	Adelphi, MD	Public	M1
University of Massachusetts-Amherst	Amherst, MA	Public	R1
University of Massachusetts-Boston	Boston, MA	Public	R2
University of Massachusetts-Dartmouth	North Dartmouth, MA	Public	R2
University of Massachusetts-Lowell	Lowell, MA	Public	R2
University of Memphis	Memphis, TN	Public	R2
University of Miami	Coral Gables, FL	Private	R1
University of Michigan-Ann Arbor	Ann Arbor, MI	Public	R1
University of Michigan-Dearborn	Dearborn, MI	Public	M1
University of Michigan-Flint	Flint, MI	Public	M1
University of Minnesota-Duluth	Duluth, MN	Public	M1
University of Minnesota-Morris	Morris, MN	Public	BAS
University of Minnesota-Twin Cities	Minneapolis, MN	Public	R1
University of Mississippi	University, MS	Public	R1
University of Missouri-Columbia	Columbia, MO	Public	R1
University of Missouri-Kansas City	Kansas City, MO	Public	R2
University of Missouri-St Louis	Saint Louis, MO	Public	R2
University of Montevallo	Montevallo, AL	Public	M2
University of Nebraska at Kearney	Kearney, NE	Public	M1
University of Nebraska at Omaha	Omaha, NE	Public	R3
University of Nebraska-Lincoln	Lincoln, NE	Public	R1
University of Nevada-Las Vegas	Las Vegas, NV	Public	R2
University of Nevada-Reno	Reno, NV	Public	R2
University of New England	Biddeford, ME	Private	M1
University of New Hampshire at Manchester	Manchester, NH	Public	BAS
University of New Hampshire-Main Campus	Durham, NH	Public	R2
University of New Haven	West Haven, CT	Private	M1
University of New Mexico-Main Campus	Albuquerque, NM	Public	R1
University of New Orleans	New Orleans, LA	Public	R2
University of North Alabama	Florence, AL	Public	M1

Institution Name	Location	Control	Carnegie
University of North Carolina at Asheville	Asheville, NC	Public	BAS
University of North Carolina at Chapel Hill	Chapel Hill, NC	Public	R1
University of North Carolina at Charlotte	Charlotte, NC	Public	R2
University of North Carolina at Greensboro	Greensboro, NC	Public	R2
University of North Carolina at Pembroke	Pembroke, NC	Public	M1
University of North Carolina Wilmington	Wilmington, NC	Public	M1
University of North Dakota	Grand Forks, ND	Public	R2
University of North Florida	Jacksonville, FL	Public	M1
University of North Georgia	Dahlonega, GA	Public	M2
University of North Texas	Denton, TX	Public	R1
University of North Texas at Dallas	Dallas, TX	Public	M3
University of Northern Colorado	Greeley, CO	Public	R2
University of Northern Iowa	Cedar Falls, IA	Public	M1
University of Northwestern-St Paul	Saint Paul, MN	Private	M3
University of Notre Dame	Notre Dame, IN	Private	R1
University of Oklahoma-Norman Campus	Norman, OK	Public	R1
University of Oregon	Eugene, OR	Public	R1
University of Pennsylvania	Philadelphia, PA	Private	R1
University of Pikeville	Pikeville, KY	Private	BAS
University of Pittsburgh-Greensburg	Greensburg, PA	Public	BAS
University of Pittsburgh-Johnstown	Johnstown, PA	Public	BAS
University of Pittsburgh-Pittsburgh Campus	Pittsburgh, PA	Public	R1
University of Portland	Portland, OR	Private	M2
University of Puget Sound	Tacoma, WA	Private	BAS
University of Redlands	Redlands, CA	Private	M1
University of Rhode Island	Kingston, RI	Public	R2
University of Richmond	Richmond, VA	Private	BAS
University of Rochester	Rochester, NY	Private	R1
University of Saint Francis-Fort Wayne	Fort Wayne, IN	Private	M2
University of Saint Joseph	West Hartford, CT	Private	M1
University of Saint Mary	Leavenworth, KS	Private	M2
University of San Diego	San Diego, CA	Private	R3
University of San Francisco	San Francisco, CA	Private	R3
University of Science and Arts of Oklahoma	Chickasha, OK	Public	BAS
University of Scranton	Scranton, PA	Private	M1
University of Sioux Falls	Sioux Falls, SD	Private	M2
University of South Alabama	Mobile, AL	Public	R2
University of South Carolina-Columbia	Columbia, SC	Public	R1

Institution Name	Location	Control	Carnegie
University of South Dakota	Vermillion, SD	Public	R2
University of South Florida-Main Campus	Tampa, FL	Public	R1
University of South Florida-Sarasota-Manatee	Sarasota, FL	Public	M3
University of South Florida-St Petersburg	St. Petersburg, FL	Public	M2
University of Southern California	Los Angeles, CA	Private	R1
University of Southern Indiana	Evansville, IN	Public	M1
University of Southern Maine	Portland, ME	Public	M1
University of Southern Mississippi	Hattiesburg, MS	Public	R2
University of St Francis	Joliet, IL	Private	M1
University of St Thomas	Houston, TX	Private	M1
University of St Thomas	Saint Paul, MN	Private	R3
University of the Cumberlands	Williamsburg, KY	Private	R3
University of the District of Columbia	Washington, DC	Public	M3
University of the Incarnate Word	San Antonio, TX	Private	M1
University of the Pacific	Stockton, CA	Private	R3
University of the Southwest	Hobbs, NM	Private	M2
University of Toledo	Toledo, OH	Public	R2
University of Tulsa	Tulsa, OK	Private	R2
University of Utah	Salt Lake City, UT	Public	R1
University of Vermont	Burlington, VT	Public	R2
University of Virginia-Main Campus	Charlottesville, VA	Public	R1
University of Washington-Seattle Campus	Seattle, WA	Public	R1
University of West Alabama	Livingston, AL	Public	M1
University of West Georgia	Carrollton, GA	Public	R3
University of Wisconsin-Eau Claire	Eau Claire, WI	Public	M2
University of Wisconsin-Green Bay	Green Bay, WI	Public	M3
University of Wisconsin-La Crosse	La Crosse, WI	Public	M1
University of Wisconsin-Madison	Madison, WI	Public	R1
University of Wisconsin-Milwaukee	Milwaukee, WI	Public	R1
University of Wisconsin-Oshkosh	Oshkosh, WI	Public	M1
University of Wisconsin-Parkside	Kenosha, WI	Public	BAS
University of Wisconsin-Platteville	Platteville, WI	Public	M1
University of Wisconsin-River Falls	River Falls, WI	Public	M2
University of Wisconsin-Stevens Point	Stevens Point, WI	Public	M3
University of Wisconsin-Stout	Menomonie, WI	Public	M1
University of Wisconsin-Whitewater	Whitewater, WI	Public	M1
University of Wyoming	Laramie, WY	Public	R2
Upper Iowa University	Fayette, IA	Private	M2

Institution Name	Location	Control	Carnegie
Ursinus College	Collegeville, PA	Private	BAS
Ursuline College	Pepper Pike, OH	Private	M1
Utah State University	Logan, UT	Public	R2
Utah Valley University	Orem, UT	Public	M3
Utica College	Utica, NY	Private	M1
Valdosta State University	Valdosta, GA	Public	R3
Valparaiso University	Valparaiso, IN	Private	M1
Vanderbilt University	Nashville, TN	Private	R1
Vanguard University of Southern California	Costa Mesa, CA	Private	M3
Vassar College	Poughkeepsie, NY	Private	BAS
Villanova University	Villanova, PA	Private	R3
Virginia Commonwealth University	Richmond, VA	Public	R1
Virginia Military Institute	Lexington, VA	Public	BAS
Virginia Polytechnic Institute and State University	Blacksburg, VA	Public	R1
Virginia State University	Petersburg, VA	Public	M2
Virginia Union University	Richmond, VA	Private	BAS
Virginia Wesleyan University	Norfolk, VA	Private	BAS
Viterbo University	La Crosse, WI	Private	M1
Wabash College	Crawfordsville, IN	Private	BAS
Wagner College	Staten Island, NY	Private	M2
Wake Forest University	Winston-Salem, NC	Private	R2
Walla Walla University	College Place, WA	Private	M2
Walsh University	North Canton, OH	Private	M3
Warren Wilson College	Swannanoa, NC	Private	BAS
Wartburg College	Waverly, IA	Private	BAS
Washburn University	Topeka, KS	Public	M2
Washington & Jefferson College	Washington, PA	Private	BAS
Washington Adventist University	Takoma Park, MD	Private	M2
Washington and Lee University	Lexington, VA	Private	BAS
Washington College	Chestertown, MD	Private	BAS
Washington State University	Pullman, WA	Public	R1
Washington University in St Louis	Saint Louis, MO	Private	R1
Wayland Baptist University	Plainview, TX	Private	M1
Wayne State College	Wayne, NE	Public	M2
Wayne State University	Detroit, MI	Public	R1
Waynesburg University	Waynesburg, PA	Private	M1
Weber State University	Ogden, UT	Public	M1
Webster University	Saint Louis, MO	Private	M1

Institution Name	Location	Control	Carnegie
Wellesley College	Wellesley, MA	Private	BAS
Wells College	Aurora, NY	Private	BAS
Wentworth Institute of Technology	Boston, MA	Private	M2
Wesleyan College	Macon, GA	Private	BAS
Wesleyan University	Middletown, CT	Private	BAS
West Chester University of Pennsylvania	West Chester, PA	Public	M1
West Texas A&M University	Canyon, TX	Public	M1
West Virginia State University	Institute, WV	Public	BAS
West Virginia University	Morgantown, WV	Public	R1
West Virginia Wesleyan College	Buckhannon, WV	Private	M3
Western Carolina University	Cullowhee, NC	Public	M1
Western Connecticut State University	Danbury, CT	Public	M2
Western Governors University	Salt Lake City, UT	Private	M1
Western Illinois University	Macomb, IL	Public	M1
Western Kentucky University	Bowling Green, KY	Public	M1
Western Michigan University	Kalamazoo, MI	Public	R2
Western New England University	Springfield, MA	Private	M2
Western New Mexico University	Silver City, NM	Public	M2
Western Oregon University	Monmouth, OR	Public	M2
Western State Colorado University	Gunnison, CO	Public	M3
Western Washington University	Bellingham, WA	Public	M1
Westfield State University	Westfield, MA	Public	M2
Westminster College	Salt Lake City, UT	Private	M1
Westminster College	Fulton, MO	Private	BAS
Westminster College	New Wilmington, PA	Private	BAS
Westmont College	Santa Barbara, CA	Private	BAS
Wheaton College	Norton, MA	Private	BAS
Wheaton College	Wheaton, IL	Private	BAS
Wheeling Jesuit University	Wheeling, WV	Private	M2
Wheelock College	Boston, MA	Private	M2
Whitman College	Walla Walla, WA	Private	BAS
Whittier College	Whittier, CA	Private	BAS
Whitworth University	Spokane, WA	Private	M3
Wichita State University	Wichita, KS	Public	R2
Widener University	Chester, PA	Private	R3
Wilkes University	Wilkes-Barre, PA	Private	M1
Willamette University	Salem, OR	Private	BAS
William Carey University	Hattiesburg, MS	Private	M1

Institution Name	Location	Control	Carnegie
William Jewell College	Liberty, MO	Private	BAS
William Paterson University of New Jersey	Wayne, NJ	Public	M1
William Peace University	Raleigh, NC	Private	BAS
William Penn University	Oskaloosa, IA	Private	M3
William Woods University	Fulton, MO	Private	M1
Williams College	Williamstown, MA	Private	BAS
Wilmington University	New Castle, DE	Private	R3
Wingate University	Wingate, NC	Private	M2
Winona State University	Winona, MN	Public	M2
Winston-Salem State University	Winston-Salem, NC	Public	M2
Winthrop University	Rock Hill, SC	Public	M1
Wittenberg University	Springfield, OH	Private	BAS
Wofford College	Spartanburg, SC	Private	BAS
Woodbury University	Burbank, CA	Private	M2
Worcester Polytechnic Institute	Worcester, MA	Private	R2
Worcester State University	Worcester, MA	Public	M1
Wright State University-Main Campus	Dayton, OH	Public	R3
Xavier University	Cincinnati, OH	Private	M1
Xavier University of Louisiana	New Orleans, LA	Private	M3
Yale University	New Haven, CT	Private	R1
Yeshiva University	New York, NY	Private	R2
York College of Pennsylvania	York, PA	Private	M3
Young Harris College	Young Harris, GA	Private	BAS
Youngstown State University	Youngstown, OH	Public	M1

Appendix B: Land Grant Institutions

Land-grant universities and colleges listed alphabetically for the three assigned legislative-year funding groups, state or territory, and institution (National Institute of Food and Agriculture 2019c; IPEDS 2020). There is currently a total of 113 institutions. Note that the year-groups do not necessarily correspond to year of establishment or authorization of land-grant status; for each group, some institutions were in the initial authorized set at the time of the legislation and others were added later. See Figure B9 for a map.

Number	Year	State or Territory	Institution Name
1	1862	Alabama	Auburn University
2	1862	Alaska	University of Alaska Fairbanks
3	1862	American Samoa (AS)	American Samoa Community College
4	1862	Arizona	University of Arizona
5	1862	Arkansas	University of Arkansas
6a	1862	California*	University of California-Berkeley*
6b	1862	California*	University of California-Davis*
6c	1862	California*	University of California-Riverside*
7	1862	Colorado	Colorado State University-Fort Collins
8	1862	Connecticut	University of Connecticut
9	1862	Delaware	University of Delaware
10	1862	District of Columbia (DC)	University of the District of Columbia
11	1862	Federated States of Micronesia (FM)	College of Micronesia-FSM
12	1862	Florida	University of Florida
13	1862	Georgia	University of Georgia
14	1862	Guam (GU)	University of Guam
15	1862	Hawaii	University of Hawaii at Manoa
16	1862	Idaho	University of Idaho
17	1862	Illinois	University of Illinois at Urbana-Champaign
18	1862	Indiana	Purdue University-Main Campus
19	1862	Iowa	Iowa State University
20	1862	Kansas	Kansas State University
21	1862	Kentucky	University of Kentucky
22	1862	Louisiana	Louisiana State University and A&M College
23	1862	Maine	University of Maine
24	1862	Maryland	University of Maryland-College Park
25	1862	Massachusetts	University of Massachusetts-Amherst
26	1862	Michigan	Michigan State University
27	1862	Minnesota	University of Minnesota-Twin Cities
28	1862	Mississippi	Mississippi State University
29	1862	Missouri	University of Missouri-Columbia
30	1862	Montana	Montana State University
31	1862	Nebraska	University of Nebraska-Lincoln
32	1862	Nevada	University of Nevada-Reno
33	1862	New Hampshire	University of New Hampshire-Main Campus
34	1862	New Jersey	Rutgers University-New Brunswick
35	1862	New Mexico	New Mexico State University-Main Campus
36	1862	New York	Cornell University

Number	Year	State or Territory	Institution Name
37	1862	North Carolina	North Carolina State University at Raleigh
38	1862	North Dakota	North Dakota State University-Main Campus
39	1862	Northern Mariana Islands (NP)	Northern Marianas College
40	1862	Ohio	The Ohio State University-Main Campus
41	1862	Oklahoma	Oklahoma State University-Main Campus
42	1862	Oregon	Oregon State University
43	1862	Pennsylvania	Pennsylvania State University-Main Campus
44	1862	Puerto Rico (PR)	University of Puerto Rico-Mayaguez
45	1862	Rhode Island	University of Rhode Island
46	1862	South Carolina	Clemson University
47	1862	South Dakota	South Dakota State University
48	1862	Tennessee	The University of Tennessee-Knoxville
49	1862	Texas	Texas A&M University-College Station
50	1862	Utah	Utah State University
51	1862	Vermont	University of Vermont
52	1862	Virgin Islands (VI)	University of the Virgin Islands
53	1862	Virginia	Virginia Polytechnic Institute and State University
54	1862	Washington	Washington State University
55	1862	West Virginia	West Virginia University
56	1862	Wisconsin	University of Wisconsin-Madison
57	1862	Wyoming	University of Wyoming
1	1890	Alabama	Alabama A&M University
2	1890	Alabama	Tuskegee University
3	1890	Arkansas	University of Arkansas at Pine Bluff
4	1890	Delaware	Delaware State University
5	1890	Florida	Florida Agricultural and Mechanical University
6	1890	Georgia	Fort Valley State University
7	1890	Kentucky	Kentucky State University
8	1890	Louisiana	Southern University and A&M College
9	1890	Maryland	University of Maryland-Eastern Shore
10	1890	Mississippi	Alcorn State University
11	1890	Missouri	Lincoln University
12	1890	North Carolina	North Carolina A & T State University
13	1890	Ohio	Central State University
14	1890	Oklahoma	Langston University

Number	Year	State or Territory	Institution Name
15	1890	South Carolina	South Carolina State University
16	1890	Tennessee	Tennessee State University
17	1890	Texas	Prairie View A&M University
18	1890	Virginia	Virginia State University
19	1890	West Virginia	West Virginia State University
1	1994	Alaska	Ilisagvik College
2	1994	Arizona	Diné College
3	1994	Arizona	Tohono O'odham Community College
4	1994	Kansas	Haskell Indian Nations University
5	1994	Michigan	Bay Mills Community College
6	1994	Michigan	Keweenaw Bay Ojibwa Community College
7	1994	Michigan	Saginaw Chippewa Tribal College
8	1994	Minnesota	Fond du Lac Tribal and Community College
9	1994	Minnesota	Leech Lake Tribal College
10	1994	Minnesota	Red Lake Nation College
11	1994	Minnesota	White Earth Tribal and Community College
12	1994	Montana	Aaniiih Nakoda College
13	1994	Montana	Blackfeet Community College
14	1994	Montana	Chief Dull Knife College
15	1994	Montana	Fort Peck Community College
16	1994	Montana	Little Big Horn College
17	1994	Montana	Salish Kootenai College
18	1994	Montana	Stone Child College
19	1994	Nebraska	Little Priest Tribal College
20	1994	Nebraska	Nebraska Indian Community College
21	1994	New Mexico	Institute of American Indian Arts
22	1994	New Mexico	Navajo Technical University
23	1994	New Mexico	Southwestern Indian Polytechnic Institute
24	1994	North Dakota	Cankdeska Cikana Community College
25	1994	North Dakota	Nueta Hidatsa Sahnish College
26	1994	North Dakota	Sitting Bull College
27	1994	North Dakota	Turtle Mountain Community College
28	1994	North Dakota	United Tribes Technical College
29	1994	Oklahoma	College of the Muscogee Nation
30	1994	South Dakota	Oglala Lakota College
31	1994	South Dakota	Sinte Gleska University
32	1994	South Dakota	Sisseton Wahpeton College

Number	Year	State or Territory	Institution Name
33	1994	Washington	Northwest Indian College
34	1994	Wisconsin	College of the Menominee Nation
35	1994	Wisconsin	Lac Courte Oreilles Ojibwa Community College

**The University of California System is the designated land-grant institution for California; in practice, land-grant activities are associated with UC-Berkeley, UC-Davis and UC-Riverside.*

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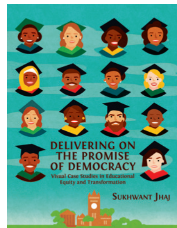

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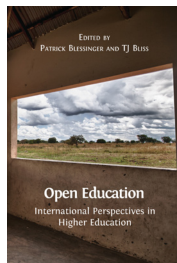

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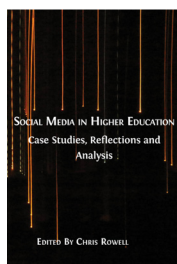

Like Nobody's Business

An Insider's Guide to How US University Finances Really Work

Andrew C. Comrie

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