

Technology  
and the  
Broken  
Higher Education

# Cost

# Model

## Insights from the Delta Cost Project

By Rita Kirshstein and Jane Wellman

**A**lthough U.S. higher education has faced numerous crises and dilemmas in its history, the situation in which colleges and universities find themselves at the moment is indeed different. Shrinking public subsidies coupled with historic rises in tuitions come at the same time that colleges and universities have been tasked to dramatically increase the number of individuals with post-secondary degrees. Additionally, many of these students need financial aid, putting further strains on the higher education system. The stratification between rich and poor institutions in their access to resources is also growing. These conditions make the current “cost model” under which higher education has typically operated no longer sustainable and have led to college and university leaders examining alternative ways to deliver both high-quality and affordable higher education. These alternatives incorporate technology and include access to distance-delivered education and services, a focus on learners’ outcomes rather than inputs, and technologically sophisticated buildings and classrooms.



The changes are welcome and largely overdue in much of higher education, but unless the use of technology, whether in instruction or in the operation of the institution, is guided by an understanding of higher education costs and cost structures, its use will not fix the problem of a broken higher education cost model. This problem is not confined to the way that instruction is funded and delivered; rather, it is much broader, including the costs of academic and administrative overhead and the largely unexamined “fixed costs” that drive

to peers. Doing so, however, is easier said than done. The higher education “industry” has long overlooked the spending side of the college cost equation. Analyses of institutional finances have historically been dominated by a focus on revenues and institutional financial conditions (such as year-end financial statements or audits), on student tuition and financial aid, and on the broader concerns around college affordability. Such an emphasis conflates spending with revenues, which is a mistake, since many sources of revenue are not available for general

(IPEDS) survey—the project has harmonized and standardized the data as much as possible in order to account for revisions in accounting standards and IPEDS reporting formats. These adjustments allow the analysis of changes over time and the benchmarking of costs among different types of institutions. The project also has developed a number of metrics to focus on different types of spending—for example, not only the spending associated with the direct educational mission of colleges and universities but also the spending on research, public service,



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so much of institutional spending. To implement technological innovations that can improve both efficiency and effectiveness, leaders must be guided in their efforts by a strong understanding of the impact of the innovations on both costs and revenues, as well as on learning outcomes. Without this understanding, leaders are likely to follow the usual model of innovation in higher education: implementing program add-ons, which are sometimes successful and sometimes not but which inevitably increase costs rather than replacing or reducing them and ultimately fail to take hold in ways that will leverage systemic improvements.

### **A New Focus on Spending**

Getting a better handle on college costs requires a new focus on institutional spending, buttressed by analytics that allow institutions to look at spending in relation to outcomes (not just inputs) and that permit them to benchmark costs by examining spending patterns over time and in comparison

to fund purposes. Moreover, the focus on revenues also means that relatively little attention has been paid to what institutions do with the revenue and what proportions they spend on faculty salaries or employee benefits or student services or admissions or anything else. It is important not only to refocus attention on college spending but also to understand the constituent elements of costs on both a per-student and a per-degree basis, since that is the only way to determine whether alternative investments are cost-effective.

### **Insights from the Delta Cost Project**

To help shift the higher education finance discussion to college spending, since 2007 the Delta Cost Project (<http://www.deltacostproject.org>) has developed data and metrics focused on spending in public and non-profit higher education institutions. Working with existing data reported by institutions to the federal government—primarily data from the annual Integrated Postsecondary Education Data System

and auxiliaries. Even at the aggregate national level, the Delta Cost Project measures rebut some commonly held assumptions about college finances, in ways that should be instructive for efforts to improve efficiencies through technology. The project findings yield insights into spending rates, cost areas, cost per student, and cost per degree.

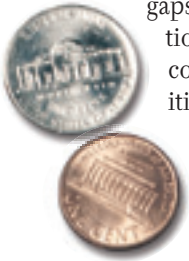
1. *Prices are going up faster than spending.* The rise in college tuitions is one of the most obvious manifestations of the broken higher education cost model. Over the last twenty years, sticker prices have consistently increased at a far faster pace than general inflation.<sup>1</sup> This is particularly the case among public four-year institutions (see Figure 1), which enroll more than 40 percent of all full-time undergraduates.<sup>2</sup> Increases in public institution tuitions have been driven by a number of factors, including (1) state appropriation declines, which have been fairly dramatic in recent years, and (2) the increased practice of tuition discounting, whereby institutions provide aid

to students in order to lower the posted sticker price. Concerns about these rising tuitions are the trigger point for public and political critiques of higher education: opinion polls show that the public believes tuitions are increasing because institutions are spending more.<sup>3</sup> Yet college costs—spending per student—have actually been flat in many institutions and have declined in others.<sup>4</sup> Although there are price/cost gaps in almost all types of institutions, the gap is largest in public community colleges, where tuitions have increased on average by nearly 40 percent in the last ten years, against spending per student, which has decreased over this same period.<sup>5</sup> The simple reason is that state subsidies have declined, forcing institutions to increase tuition in order to offset the losses. Confusion about prices and costs is not confined to the general public or even to policy-makers, however; many administrators and faculty within colleges and universities also are unaware of their real spending patterns.

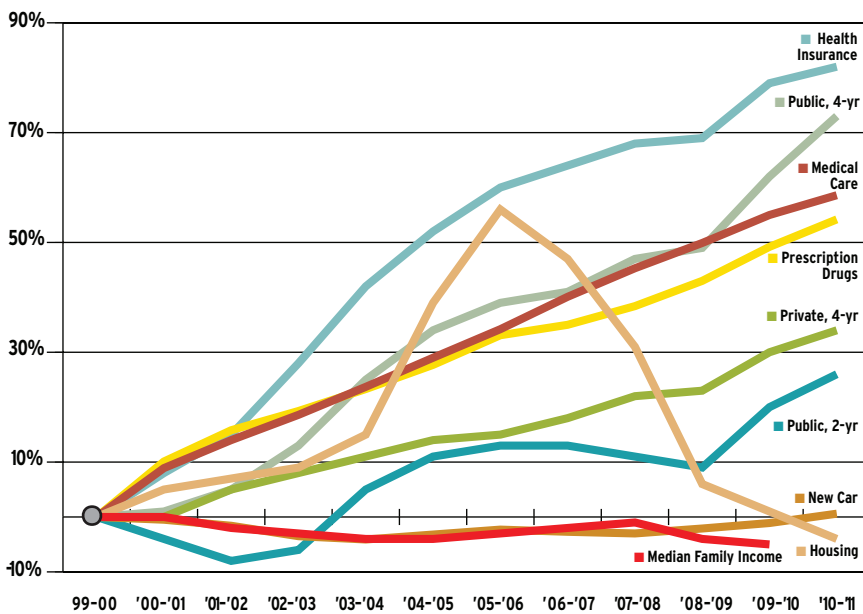
2. *Nearly half of spending goes for overhead.* A common belief is that the biggest driver of college spending is faculty salaries and that changing from classroom to distance-mediated instruction will therefore save money because it will allow for savings in labor costs. Yet even though spending on instruction—for faculty salaries and departmental support—may be the single largest area of spending in higher education, somewhere between 40 and 50 percent of general spending (exclusive of sponsored research and auxiliaries) goes for some form of what can be called *overhead* or *indirect costs*.<sup>6</sup> These cost areas range from academic and student support (for counseling, computing centers, and libraries) to operation and maintenance of grounds and buildings, maintenance, and utilities. Delta Cost Project trend analyses show that the proportion of spending going to pay for the direct cost of instruction has been largely stable or even declining in most institutions over the last few years, largely because institutions have been saving on faculty costs by hiring

more part-time and adjunct instructors to accommodate the growing enrollment demand. The marginal cost to add new students in courses taught by part-time faculty is considerably lower than average costs, potentially making this an even more cost-effective way to deliver instruction than online delivery. Of course, the quality of the online course might be superior to that obtained in a large lecture hall, staffed with low-cost teaching assistants. But again, distance-mediated instruction may not be less expensive, and might well be more expensive, than the lowest-cost entry-level courses.

3. *Lower costs per student do not translate into lower costs per degree or outcome.* Higher education costs—that is, the amount of money spent per student—are considerably higher in research universities than in comprehensive colleges, which are more costly than community colleges.<sup>7</sup> This is because lower-division education has historically been less expensive than upper-division or graduate education due to the smaller class sizes and greater specialization of curriculum at the more senior levels. Many states have chosen to limit access to higher-cost institutions, opting instead to enroll the majority of students in less-expensive community colleges as a way to more efficiently get students to their educational goals. But lower-cost community colleges often turn out to have the highest cost when measured against degree performance, simply because of the high rates of attrition in community colleges. Nearly half of instructional spending in community colleges goes to students (and credits) that do not attach to a degree or certificate. Unless an institution is effective in transitioning students to a degree, lower costs per student may not



**FIGURE 1: Changes in College Sticker Price against Other Consumer Areas, 1999–2011**



translate into lower costs per degree.

4. If higher education is to be more cost-effective and efficient, the unit of analysis needs to shift from cost per student to cost per degree. To know what types of instructional delivery are most cost-effective, we should be looking at the trade-offs between different types of investments and at the translation of credits to degrees. For some types of instruction, including distance learning, spending per student may go up, but if better retention and graduation rates result, cost per outcome will be lower. And some of the biggest savings may well be to students and families, in the form of shorter time to degree and better course scheduling and sequencing.

### Critical Cost Drivers

The Delta Cost Project data and analytics are only scratching the surface of

the types of information needed so that higher education can reduce unnecessary spending and put increasingly limited resources into areas that pay off in quality. More granular data about costs will help educators and policy-makers learn more about efficiencies and determine how technology might best be leveraged to increase both opportunities and effectiveness. No one has the time or the need to immerse themselves in elegant analytics that ultimately do not produce actionable data. Future efforts to refine cost analysis in higher education need to be guided by a highly focused agenda that will get at the most critical cost drivers to help both institutional and policy leaders make better decisions about spending and ultimately to connect spending to performance, including quality.

### Metrics on Costs by Discipline, Level of Instruction, and Enrollment Status

Although the IPEDS data from which the Delta Cost Project database is built does not provide information on spending by individual discipline, level of instruction, or enrollment status (full-time or part-time), individual institutions and state policy-makers need cost information at these levels to determine both where their money is coming from and where it is being spent. Educating students in certain fields (e.g., some of the sciences, which require extensive lab work and equipment) costs more than educating students in other fields (e.g., the humanities). In addition, graduate and professional courses are typically smaller in size than many undergraduate courses and generally require more senior faculty to teach, thus making them more expensive to offer. And although



assumptions are usually made about the costs of educating part-time students, who now account for 38 percent of all enrollments in higher education,<sup>8</sup> these students are most likely to enroll in community colleges and typically arrive with a number of educational and social needs that must be addressed if they are to succeed.

Understanding all of these costs at a more granular level is necessary for leaders to make decisions that can both cut costs and help students obtain degrees.

#### *Metrics on Costs per Unit of Student Service*

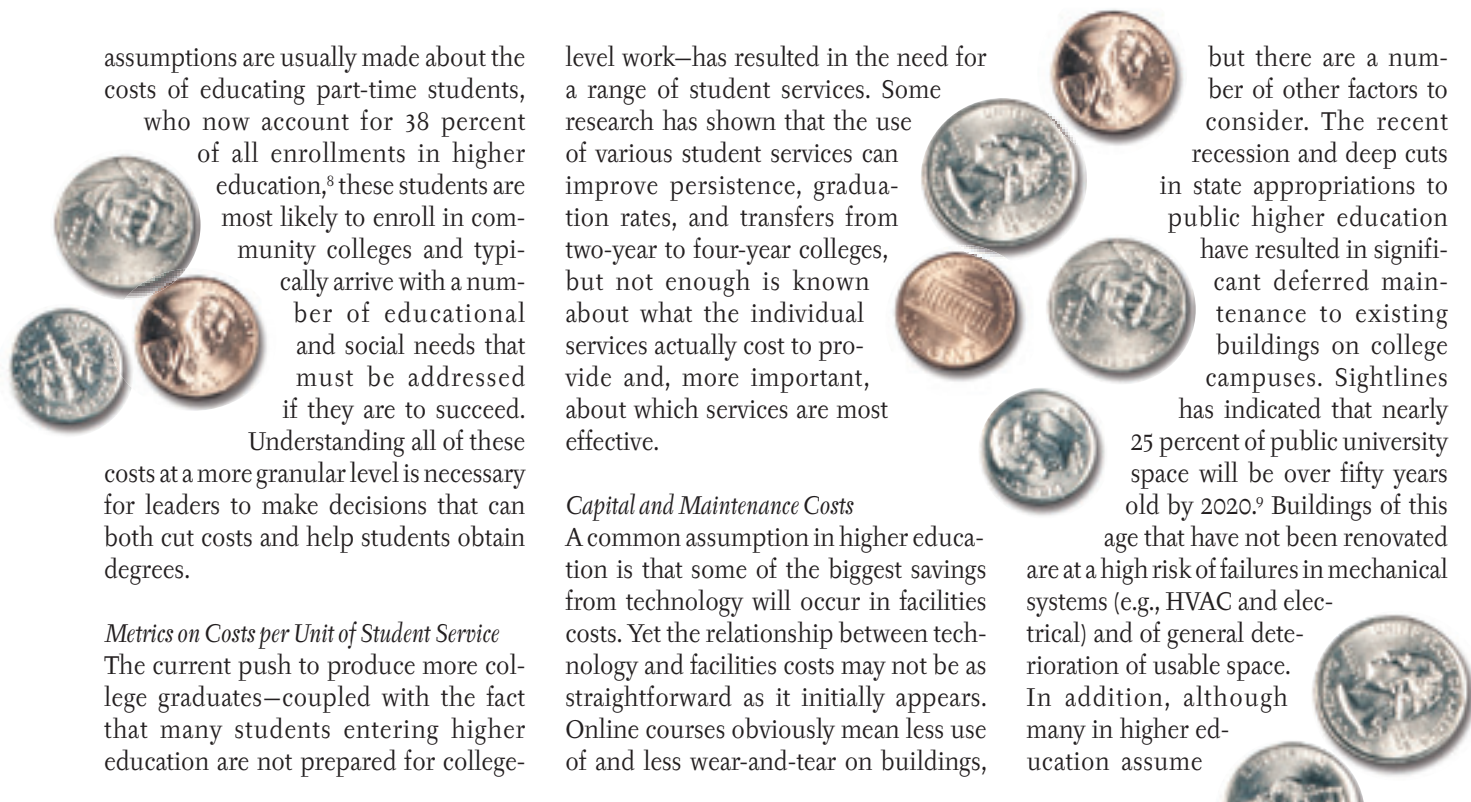
The current push to produce more college graduates—coupled with the fact that many students entering higher education are not prepared for college-

level work—has resulted in the need for a range of student services. Some research has shown that the use of various student services can improve persistence, graduation rates, and transfers from two-year to four-year colleges, but not enough is known about what the individual services actually cost to provide and, more important, about which services are most effective.

#### *Capital and Maintenance Costs*

A common assumption in higher education is that some of the biggest savings from technology will occur in facilities costs. Yet the relationship between technology and facilities costs may not be as straightforward as it initially appears. Online courses obviously mean less use of and less wear-and-tear on buildings,

but there are a number of other factors to consider. The recent recession and deep cuts in state appropriations to public higher education have resulted in significant deferred maintenance to existing buildings on college campuses. Sightlines has indicated that nearly 25 percent of public university space will be over fifty years old by 2020.<sup>9</sup> Buildings of this age that have not been renovated are at a high risk of failures in mechanical systems (e.g., HVAC and electrical) and of general deterioration of usable space. In addition, although many in higher education assume





student services, but we know very little about their effectiveness and if they indeed save money. As institutional leaders think about refining metrics on costs by discipline, level of instruction, enrollment status, and student services, they need to understand where technology fits in, where technology works and does not work, and where technology can save money.

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that the newer, high-tech buildings and classrooms need less attention than older buildings, the opposite is more often the case. The technical complexity of these newer buildings necessitates regular maintenance and upkeep by skilled technicians; if this upkeep is ignored, costly repairs can be required.

#### Technology Costs

Another common assumption is that the wise use of technology will save money in higher education by providing a range of services, including instruction, more efficiently. Almost one-third of all students in higher education have taken at least one online course, and about two-thirds of academic leaders believe that students' learning in online courses is similar to or even better than their learning in face-to-face classes.<sup>10</sup> We know less, however, about what types of students are most likely to benefit and what types of courses are most successfully offered as online courses. And with the widespread use of adjunct faculty and graduate assistants to teach lower-level courses, per-student instructional costs for online courses will likely not be that much lower than the already low unit costs for these entry-level general-education courses. Technology is also being used to provide some

#### Summary

The Delta Cost Project has drawn attention to the need for a new focus on institutional *spending* and has provided a number of useful metrics for thinking about how different types of institutions spend money, about the relationships between costs and revenues, and about the declining public subsidies in public higher education. However, the Delta Cost Project data is just a starting point for policy-makers and decision-makers. We have suggested areas in which additional data is needed, particularly at the institutional and state levels, but the most important point is that *budget and spending decisions need to be based on data, not on rumor or public opinion or perceived impact*. In an *Inside Higher Ed* survey of college and university business officers in 2011, only 39 percent of the respondents indicated that their institution was effective in "using financial data to aid and inform campus decision-making."<sup>11</sup> Better data is clearly needed. But even more important, better use of data is mandatory if higher education is going to fix its current, broken cost model. ■

#### Notes

1. The College Board, "Trends in College Pricing 2011," <http://trends.collegeboard.org/college-pricing/indicator/index>.
2. Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2011* (Washington, D.C.:

National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 2012), <http://nces.ed.gov/programs/digest/d11/>.

3. John Immerwahr and Jean Johnson, *Squeeze Play 2010: Continued Public Anxiety on Costs, Harsher Judgments on How Colleges Are Run*, a report prepared by Public Agenda for the National Center for Public Policy and Higher Education, 2010, [http://www.highereducation.org/reports/squeeze\\_play\\_10/index.shtml](http://www.highereducation.org/reports/squeeze_play_10/index.shtml).
4. Donna M. Desrochers and Jane V. Wellman, *Trends in College Spending, 1999–2009: Where Does the Money Come From? Where Does It Go? What Does It Buy?* (Washington, D.C.: Delta Cost Project,

2011), Figure 7, [http://www.deltacostproject.org/resources/pdf/Trends2011\\_Final\\_090711.pdf](http://www.deltacostproject.org/resources/pdf/Trends2011_Final_090711.pdf).

5. *Ibid.*, Figure 16.
6. *Ibid.*, Figure 7.
7. *Ibid.*
8. Calculated from Snyder and Dillow, *Digest of Education Statistics 2011*, table 202, [http://nces.ed.gov/programs/digest/d11/tables/dt11\\_202.asp](http://nces.ed.gov/programs/digest/d11/tables/dt11_202.asp).
9. Author communication with Jim Kadamus, vice president of Sightlines.
10. I. Elaine Allen and Jeff Seaman, *Going the Distance: Online Education in the United States, 2011* (Babson Park, Mass.: Babson Survey Research Group and Quahog Research Group, 2011), <http://www.onlinelearningurvey.com/reports/goingthedistance.pdf>.
11. Kenneth C. Green, with Scott Jaschik and Doug Lederman, *The 2011 Inside Higher Ed Survey of College and University Business Officers* (Washington, D.C.: Inside Higher Ed, 2011), table 19.

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