The Growing Imbalance

Recent trends in U.S. postsecondary education finance

A report of the Delta Cost Project

Supported by Making Opportunity Affordable, an initiative of Lumina Foundation for Education

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Foreword

The mission of the **Delta Project on Postsecondary Education Costs, Productivity and Accountability** is to help improve college affordability by improving the management of costs within higher education. This work is driven by the belief that college costs can be contained—*without sacrificing either access or educational quality*—through better use of data to inform strategic decision making.

In particular—and unlike other organizations in higher education—we seek to move beyond the traditional emphasis on tuition, student aid, and revenues per student to focus additionally on how revenues are allocated in the *spending* part of the college cost problem. We believe that this expanded focus will generate both a more integrated view of productivity and better use of data, facilitating spending decisions that can help to ensure access, equity and successful learning results.

An independent nonprofit organization, the Delta Cost Project's work is aimed at both institutional and public policy audiences. Current work is designed to: 1) document trends in college spending; 2) clarify where and why college costs are increasing; 3) work with institutions and governing boards to improve the measurement and management of costs, particularly in relation to measures of student access, equity and learning quality; and 4) promote institutional and policy strategies for improved productivity.

Unlike other organizations in higher education—we seek to move beyond the traditional emphasis on tuition, student aid, and revenues per student to focus additionally on how revenues are allocated in the *spending* part of the college cost problem.

The work described in this report is part of the national Making Opportunity Affordable (MOA) initiative, funded by the Lumina Foundation. Other work in that initiative will seek ways to improve state-level policy engagement with costs, strengthen governing board capacity for cost management, increase institutional access to cost benchmarks, and identify and replicate successful strategies for making cost-effective investments in areas that improve student success.

In this report, we focus on the presentation of aggregate measures of sector-level trends in revenues and expenditures. We will repeat this work on an annual basis to promote regular use of aggregate measures of spending as part of postsecondary performance accountability. We recognize that sector-level measures mask considerable variation within sectors between big and small institutions, and by regions and states. More detailed presentation of data, including information about the database used in this analysis, is presented in the appendix to this report, and on the Delta Cost Project's website (www.deltacostproject.org).

The authors wish to acknowledge the support of the many colleagues who contributed to this work: Brian Zucker, Brian Hummer and Bryan Won of Human Capital Research Corporation in Evanston, Illinois, who did the laborious work to prepare the Delta database; Rita Kirshstein, Steve Honegger, Steve Hurlburt, Christine Leow and Daniel Sherman of the American Institutes for Research in Washington, D.C., who helped with the analysis of the data; Travis

Reindl at Jobs for the Future, and the MOA team at the Lumina Foundation, whose support and commitment to the work has been invaluable every step of the way. Thanks go also to the Delta Project's Cost Advisory Group for advice on data, metrics and presentation: Alisa Cunningham, Vice President of The Institute for Higher Education Policy; Sandra Baum, Consultant to the College Board; Patrick Kelly, Senior Associate with the National Center for Higher Education Management Systems; Jessica Shedd, Director of Research for the National Association of College and University Business Officers; Patricia Steele, Consultant to the College Board and to the Delta Cost Project; and David Wright, Associate Executive Director of Policy, Planning and Research with the Tennessee Higher Education Commission. Betsy Rubinstein of InForm Communications provided editorial and design support. Errors, omissions or misinterpretations are the responsibility of the authors only.

Why focus on college spending?

The U.S. higher education system has long been held in high regard, both at home and abroad. In this country, a college degree is seen as a golden ticket to the American middle class. In other countries, education at a U.S. institution is often viewed as a means of both individual and national advancement, and many nations therefore send their best and brightest to study on our campuses.

For many, higher education has fulfilled its promises. Individual students have received a quality education that has provided access to a variety of well-paid employment opportunities. Collectively, states and nations have reaped the benefits of a well-educated citizenry, essential to democracy, and an educated workforce that drives economic growth.

But in recent years, the shine on higher education has begun to tarnish, beginning with a system of financing widely believed to be stretched to a breaking point. Tuitions have rapidly increased, at almost double the rate of inflation, outpacing many families' ability to pay. Despite the significant dividend that a college degree brings—roughly $1 million over a lifetime of earnings[1]—too many students fail to complete their degrees. Those who do graduate leave school with increasing amounts of debt, impacting their career, family and lifestyle choices for years to come. And although the United States ranks first in international comparisons in per-student funding for higher education, it ranks fourteenth in college degree completions and eighth in postsecondary education attainment among young adults. This disparity seems to suggest that the problem of degree attainment is one of focus and priority, more than money alone.[2]

Meanwhile, the budgetary pinch is being felt not just by families but by government as well. State budgets are being squeezed, and higher education funds are losing out to mandated spending increases in other areas, most notably Medicaid, which more than doubled the share of state budget expenditures it claimed between 1987 and 2006.[3] And it's a similar story at the federal level, where limits on domestic discretionary spending inevitably trump plans to increase grant funding for student financial aid. Without a change in tax policy, or controls in cost increases for health care, the trend forward is more of the same: all 50 states face long-term structural budget deficits for higher education, amidst continuing budget cuts at the federal level.[4]

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[1] Cheesman Day, Jennifer, and Eric C. Newburger. 2002. "The Big Payoff: Educational Attainment and Synthetic Estimates of Worklife Earnings." *Current Population Reports* P23-210. Washington, DC: U.S. Department of Commerce, Bureau of Census.

[2] Organisation for Economic Development and Cooperation (OECD). 2007. *Education at a Glance 2007.* Paris, France: OECD.

[3] National Association of State Budget Officers (NASBO). 2007. *State Expenditure Report: 2006.* Washington, DC: NASBO. Available at www.nasbo.org/Publications/PDFs/fy2006er.pdf; National Association of State Budget Officers. 1991. *State Expenditure Report: 1991.* Washington, DC: NASBO. Available at www.nasbo.org/publications/pdfs/1991exprpt.pdf

[4] Boyd, Donald J. 2005. "State Fiscal Outlooks for Higher Education, 2005–2013." National Center for Higher Education Management Systems News, Vol. 22 (June). Available at www.higheredinfo.org/analyses/Boyd%20Article%20June2005.pdf.

The spiraling cost of a college education is also hurting both public and policy-maker confidence in higher education. While the public recognizes the importance of higher education to the country's future, worry about declining affordability and the widespread perception that college spending is not well managed are eroding public trust in college and university management. The public assumes that increased tuitions are paying for more spending within the institutions—spending they don't see justified either by quality or results. Opinion research shows that 62 percent of the public believe that qualified students are being denied college opportunity, and 56 percent believe that colleges could find ways to spend less without compromising quality.[5]

The spiraling cost of a college education is also hurting both public and policy-maker confidence in higher education.

Skepticism about leadership and priorities in higher education is even higher among elected officials and other policy opinion leaders. Criticisms about spending and lack of fiscal transparency were a major theme in the 2006 report of the U.S. Secretary of Education's Commission on the Future of Higher Education, whose chairman Charles Miller characterized the system of finance of higher education as a "dysfunctional…top-line system, with no bottom line."[6] Congress is considering amendments to the Higher Education Act that would put institutions with excessive tuition increases on a federal "watch" list, subject them to new reporting requirements, and mandate the establishment of new committees to review spending within the institutions. Congressional tax committees are also getting into the act, threatening legislation that would require higher spending from endowments to mitigate tuition increases.

The response from the higher education community has been to argue that spending increases are necessary to maintain quality, and to decry what they see as inappropriate government intrusion into the internal business of higher education. They cite Baumol's theory of the nonprofit sector "cost disease"[7] as evidence that rising costs in higher education are inevitable, and that increasing productivity means reducing quality. They also point out that students have choices about where to go to college, including many low-cost alternatives for those who do not want to pay high tuitions.

There is more heat than light to the discussion. Despite clear evidence that college tuitions are rising (the only incontrovertible fact in this conversation), the policy debate about college costs is remarkably poorly informed by data about college spending patterns, revenue availability, and the relation between spending and tuition increases. The last national study of trends in college finance used data from 1995-1996 for private institutions, and from 1998-1999 for the public sector. A good deal has changed since then in enrollment patterns, demographics and

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[5] Immewahr, John, and Jean Johnson. 2007. *Squeeze Play: How Parents and the Public Look at Higher Education Today.* New York: Public Agenda. Available at www.highereducation.org/reports/squeeze_play/index.shtml.

[6] U.S. Department of Education. 2006. *A Test of Leadership: Charting the Future of U.S. Higher Education, Report of the Commission on the Future of Higher Education.* Washington, DC: U.S. Department of Education. Available at www.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf.

[7] Baumol, William J., and William G. Bowen. 1966. *Performing Arts: The Economic Dilemma.* New York: The Twentieth Century Fund.

sources of revenue for higher education. To be sure, better data alone will not resolve policy tensions about higher education finance, but improved data can at least focus the debate by seeking answers to basic empirical questions, such as:

Better data alone will not resolve policy tensions about higher education finance, but improved data can at least focus the debate by seeking answers to basic empirical questions.

- Are college tuitions rising because spending is growing? If so, where is the money going?
- Is there any evidence of cost cutting? If so, are tuitions being held down as a result?
- What is the relation between revenue source and spending? Have increased private revenues reduced pressure on growing college tuitions? Will increased spending from endowments mitigate future tuition increases?
- Are low-income students losing access to higher education as a result of tuition increases?
- Can institutions increase productivity as a way to lower costs and, ultimately, tuitions?
- What should public policy makers do to address the college cost problem?

The Growing Imbalance has been prepared to help address these key issues, through a presentation of new data about trends in college and university spending and revenues, and a discussion of how spending and revenues interact with enrollments and degree completions. Designed to be as nontechnical as possible, this report presents aggregate data about trends in higher education finance for public and private nonprofit institutions between 1987 and 2005, with a particular focus on patterns since 1998 when the last reports about college spending were produced.

About the Carnegie Classifications

Information about colleges and universities is organized into sector categories, known as the "Carnegie Classifications," a scheme for organizing data into comparable groups based on mission, funding and governance. Sector-level data are useful for broad comparisons across categories of roughly similar institutions, but there is still a good deal of variation among institutions within categories, in size, funding and program mix. For this paper, we have relied on a standard sector classification that uses six categories:

1) public research institutions;
2) public master's institutions;
3) public associate's institutions (two-year community colleges);
4) private nonprofit research institutions;
5) private nonprofit master's institutions; and
6) private nonprofit bachelor's institutions.

The six categories collectively comprise the vast majority of institutions of higher education in the United States. We exclude private for-profit institutions, an important and growing sector in American higher education, because of the poor quality of trend data for these institutions. We also exclude private nonprofit two-year colleges and public baccalaureate institutions, as well as tribal and specialty schools. For more information about the Carnegie Classifications, please see www.carnegiefoundation.org/classifications/.

To understand cost patterns in higher education, we need to put spending information into context by looking at the relation among enrollments, revenues and spending. Over the last two decades, we have witnessed a sea change in the public policy climate affecting higher education, brought about by an explosion in enrollment demand, dramatic changes in student demographics, and a significant shift in the distribution of students across types of institutions. Those changes are essential to understanding the implications of trends in higher education spending, so that's where we'll begin our review.

Reviewing the trends

Enrollment, revenue and spending are all up, but the big picture is in the interactions among them

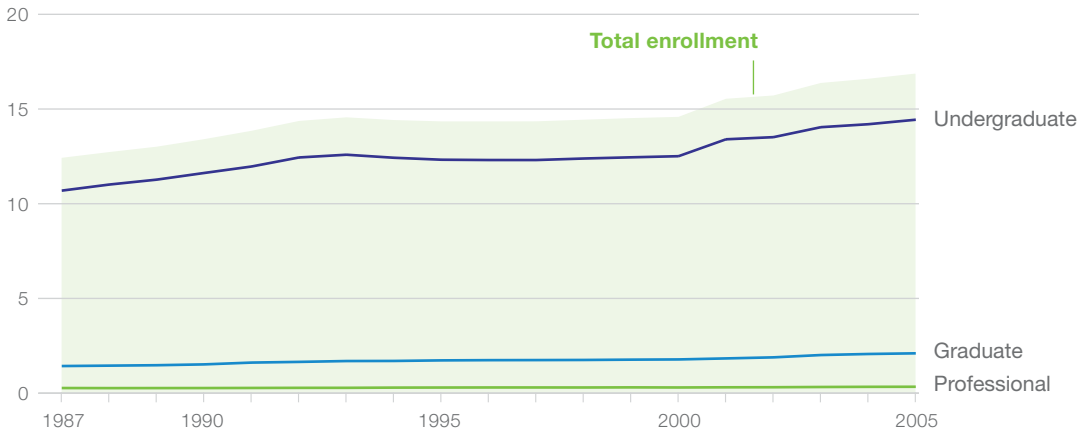
Enrollment trends

Enrollment growth has accelerated sharply in the last decade, particularly among full-time traditional-age students. Total postsecondary enrollments have grown by almost 30 percent over the last two decades, from 12.4 million students in 1987 to nearly 17 million in 2005 *(see Figure 1).* Over one-half of that growth has occurred just since 1998.[8]

Figure 1

Enrollment growth has accelerated

Millions of enrollees, 1987-2005



Source: Delta Cost Project IPEDS database, unmatched set.

[8] The Delta database is drawn from IPEDS (federal Integrated Postsecondary Education Data surveys). Throughout this report, enrollment data are based on IPEDS enrollment surveys of over 6,500 institutions. However, to maintain consistency across reporting years, data for funding trends are from a panel, or matched sample, of 2,209 institutions, and exclude for-profit, nondegree and specialty institutions. More information about the database and the matched set of institutions is provided in the Technical Appendix.

Figure 2

Enrollment grew fastest among full-time and traditional-age students

Thousands of enrollees, 1987-2005

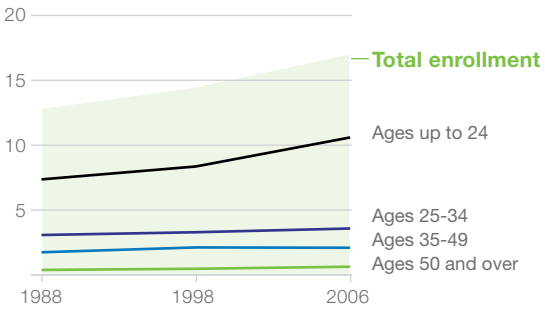
Student type	Enrollment & share of total enrollment			Average annual % increase in enrollment	
	1987	1998	2005	1987-1998	1998-2005
Total undergraduates	10,691 (86.1%)	12,387 (85.8%)	14,435 (85.6%)	1.3%	2.2%
Full-time undergrad	6,351 (51.1%)	7,436 (51.5%)	9,051 (53.6%)	1.4%	2.8%
Part-time undergrad	4,340 (34.9%)	4,950 (34.3%)	5,384 (31.9%)	1.2%	1.2%
Total graduates	1,430 (11.5%)	1,751 (12.1%)	2,101 (12.5%)	1.9%	2.6%
Full-time graduate	517 (4.2%)	745 (5.2%)	962 (5.7%)	3.4%	3.7%
Part-time graduate	912 (7.3%)	1,006 (7.0%)	1,140 (6.8%)	0.9%	1.8%
Total first professional	269 (2.2%)	298 (2.1%)	337 (2.0%)	0.9%	1.8%
Full-time first prof.	244 (2.0%)	267 (1.8%)	302 (1.8%)	0.8%	1.8%
Part-time first prof.	24 (0.2%)	31 (0.2%)	34 (0.2%)	2.1%	1.4%
Total enrollment	12,423 (100%)	14,435 (100%)	16,873 (100%)	1.4%	2.3%

Source: Delta Cost Project IPEDS database, unmatched set.

Figure 3

Enrollment grew faster among traditional-age students than among other age groups

Millions of enrollees, 1988-2006



Source: Delta Cost Project IPEDS database, unmatched set.

Throughout this time, the undergraduate share of total enrollments has stayed steady, at about 86 percent of the total *(see Figure 2)*. Two shifts in enrollment patterns are evident, however. Since 1998, full-time attendance has increased more rapidly than part-time attendance, at both the undergraduate and graduate levels. In addition, enrollment among traditional-age students—below 25 years old—has begun to grow more quickly than enrollment among older students *(see Figure 3)*.

Enrollment growth differed by type of institution, and was highest at the less selective institutions. Although enrollment grew in all sectors, it grew fastest at public community colleges, proprietary institutions and private non-research institutions. Enrollment growth at proprietary institutions—primarily occupational training programs—was particularly dramatic, averaging five percent annually between 1987 and 2005. By contrast, the share of enrollments in public four-year colleges and universities (both research and master's level institutions) declined by roughly three percentage points overall between 1987 and 2005, and enrollments at private research universities grew by less than one percent per year *(see Figure 4)*.

Figure 4

Enrollment grew fastest at less selective institutions

Thousands of enrollees, 1987-2005

Institution type	Enrollment & share of total enrollment			Average annual % increase in enrollment	
	1987	1998	2005	1987-1998	1998-2005
Public research	3,184 (25.6%)	3,469 (24.0%)	3,887 (23.0%)	0.8%	1.6%
Public master's	1,932 (15.5%)	2,159 (15.0%)	2,444 (14.5%)	1.0%	1.8%
Public associate's	4,116 (33.1%)	5,076 (35.2%)	6,036 (35.8%)	1.9%	2.5%
Private research	884 (7.1%)	926 (6.4%)	1,018 (6.0%)	0.4%	1.4%
Private master's	842 (6.8%)	1,031 (7.1%)	1,241 (7,4%)	1.9%	2.7%
Private bachelor's	594 (4.8%)	699 (4.8%)	812 (4.8%)	1.5%	2.2%
Proprietary	219 (1.8%)	296 (2.1%)	530 (3.1%)	2.8%	8.7%
Other institutions	654 (5.3%)	780 (5.4%)	905 (5.4%)	1.6%	2.1%
Total enrollment	12,423 (100%)	14,435 (100%)	16,873 (100%)	1.4%	2.3%

Source: Delta Cost Project IPEDS database, unmatched set.

Note: Other institutions include specialty and non-degree institutions, private two-year, and public baccalaureate institutions.

Enrollments have become substantially more racially and ethnically diverse. From 1991 to 1998,[9] Asian and Hispanic student enrollments each grew by an average of five percent per year. African-American student enrollments grew more slowly, by about 2.8 percent per year. White student enrollments actually declined during that period, dropping by an average of 1.3 percent per year *(see Figure 5)*. Since 1998, Hispanic student enrollments have continued to grow

Figure 5

Enrollments have become more diverse

Thousands of enrollees, 1991-2005

Race/ethnicity	Enrollment & share of total enrollment			Average annual % change in enrollment	
	1991	1998	2005	1991-1998	1998-2005
White	10,669 (77.0%)	9,721 (67.3%)	10,383 (61.5%)	-1.3%	0.9%
Black	1,194 (8.6%)	1,449 (10.0%)	1,906 (11.3%)	2.8%	4.0%
Hispanic	916 (6.6%)	1,287 (8.9%)	1,798 (10.7%)	5.0%	4.9%
Asian	574 (4.1%)	806 (5.6%)	1,003 (5.9%)	5.0%	3.2%
Native American	104 (0.7%)	136 (0.9%)	162 (1.0%)	4.0%	2.5%
Non-resident	393 (2.8%)	464 (3.2%)	554 (3.3%)	2.4%	2.6%
Unknown	n/a	572 (4.0%)	1,068 (6.3%)	n/a	9.3%
Total enrollment	13,850 (100%)	14,435 (100%)	16,873 (100%)	0.6%	2.3%

Source: Delta Cost Project IPEDS database, unmatched set.

[9] IPEDS data on enrollments by race are not consistently reported prior to 1991.

by nearly five percent per year, and Black student enrollment growth has increased to four percent per year. Asian student enrollment growth, however, has slowed significantly to just over three percent per year. And White student enrollments, while beginning to increase again, have grown at a slower rate than all other groups—although White students still account for the largest number of new students.

Fewer undergraduate students are from low-income families. Despite increasing racial and ethnic diversity in enrollments, most of the growth in dependent undergraduate enrollments is from students in high-income families (with parental income of $80,000 and above). These students accounted for more than one-half of enrollment increases among dependent undergraduates between 1996 and 2004. In comparison, low-income students (with parental income below $20,000) accounted for less than five percent of the growth in dependent undergraduate enrollment *(see Figure 6)*.[10] As a result, one-third of all dependent undergraduate students are now from high-income families while just 13 percent are from low-income families.

Figure 6

Most undergraduate enrollment growth is from high-income families

Thousands of dependent undergraduate enrollees, 1996-2004

Family income	Enrollment & share of total enrollment 1996		Enrollment & share of total enrollment 2004		Enrollment change 1996-2004	Distribution of change 1996-2004	Percentage point change in share 1996-2004
Below $20,000	1,011	(14.5%)	1,069	(12.8%)	58	4.3%	-1.7% *
$20,000-$39,999	1,326	(19.1%)	1,591	(19.1%)	265	19.4%	0.1%
$40,000-$59,999	1,276	(18.3%)	1,490	(17.9%)	214	15.7%	-0.4%
$60,000-$79,999	1,293	(18.6%)	1,413	(17.0%)	120	8.8%	-1.6% *
$80,000 and above	2,053	(29.5%)	2,763	(33.2%)	710	51.9%	3.7% *
Total enrollment	6,959	(100%)	8,325	(100%)	1,366	100%	

Source: NPSAS 1996 and 2004.

Note: Enrollment count is for dependent undergraduate students enrolled only at Title IV eligible institutions and branch campuses in the fall of the survey year. Income categories are in 2002 dollars.

* Values are statistically significant at the p<= .05 level. See appendix for standard errors of each income group.

Low-income, Black and Hispanic students are increasingly concentrated in public two-year and proprietary institutions. Since the mid-1990s, undergraduate enrollments of low-income, Black and Hispanic students have increasingly been concentrated in public two-year institutions and proprietary institutions *(see Figure 7)*. By comparison, the proportion of higher-income students at public two-year institutions has declined while their concentration at doctorate-granting public and private nonprofit institutions has grown. The enrollment of undergraduate White students has remained relatively stable across sectors, with a slight shift into proprietary institutions.

[10] National Postsecondary Student Aid Study (NPSAS), 1996 and 2004.

Figure 7

Black and Hispanic students are increasingly concentrated in less selective institutions...

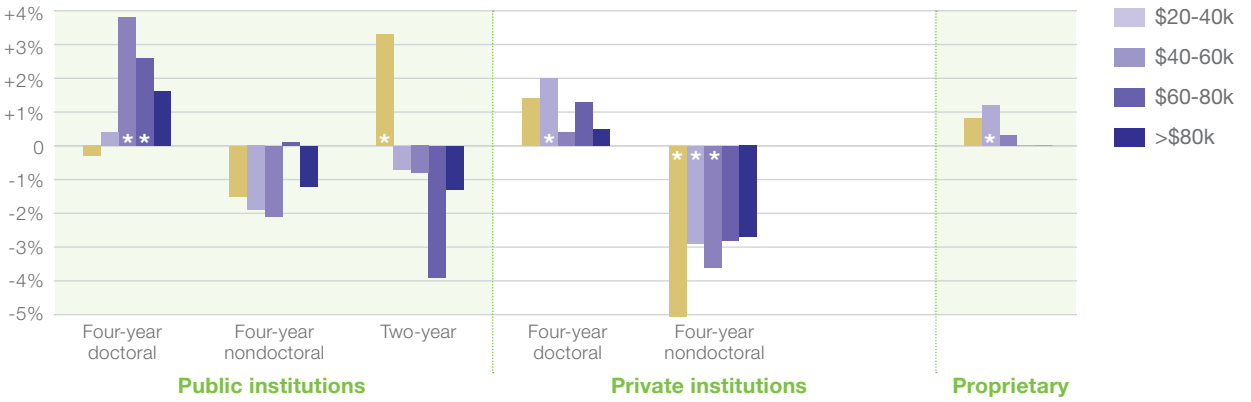
Percentage point change in undergraduate enrollment share per sector, 1998-2005

Source: Delta Cost Project IPEDS database, unmatched set.

Note: Enrollment is on a headcount basis rather than full-time equivalent basis.

...as are low-income students

Percentage point change in dependent undergraduate enrollment share per sector, 1996-2004



Source: NPSAS, 1996 and 2004.

Note: Enrollment count is for dependent undergraduate students enrolled only at Title IV eligible institutions and branch campuses in the fall of the survey year. Income categories are in 2002 dollars.

*Values are statistically significant at the p<= .05 level. See appendix for standard errors of each income group.

Degree and certificate completion rates are increasing slightly. The data presented so far focus on trends in student enrollment, but it is equally important to see how enrollments translate into students' completion of their degrees or certificates. Trends in degree and certificate attainment have become major issues in public policy over the last decade, borne of concern that the United States does a better job of getting students enrolled in higher education than of

translating enrollments to degree completions. The data on completions and degrees[11] awarded in relation to FTE student enrollments show modest increases since 1987 in the number of completions relative to enrollments in all sectors but private baccalaureate institutions *(see Figure 8)*.

Figure 8

Completions and degrees have grown modestly

Median completions and degrees as a share of FTE enrollment, 1987-2005

Institution type	Degrees		Completions	
	1987	2005	1987	2005
Public research	21.0%	24.0%	22.0%	25.0%
Public master's	20.0%	22.0%	20.0%	23.0%
Public associate's	14.0%	15.0%	20.0%	24.0%
Private research	29.0%	30.0%	29.0%	31.0%
Private master's	30.0%	31.0%	30.0%	32.0%
Private bachelor's	28.0%	24.0%	28.0%	24.0%

Source: Delta Cost Project IPEDS database, 19-year matched set.

Revenue trends

College and university spending patterns have to be understood in relation to revenues, since colleges and universities operate on what economists call the revenue theory of costs, meaning that they raise all the money they can and spend all the money they raise.[12] In our focus on revenues, we concentrate on operating revenues only.

There are major differences between types of institutions in the level and sources of revenues that are available to them. Clearly, research universities, whether public or private, have access to substantially more revenue per student than do other sectors, both because of the research function and because they enjoy higher funding levels for graduate education. And tuition is

[11] Completions measures include degrees as well as certificates and credentials awarded, whereas the degree measure is confined to degrees alone. Both measures are aggregates for all levels, from technical certificates to Ph.D. degrees. Aggregate measures of completions should not be read as synonymous with institutional "graduation rates," since they capture degrees awarded each year without regard to where students may have enrolled, or the length of the degree programs. They also include all students enrolled, not just first-time, full-time students as is typical in institutional cohort graduation rates. The distinction between completions and degrees is most salient for the public two-year sector; as Figure 8 shows, when all completions are measured, completions for this sector reach levels similar to those of the four-year college sector. This measure will be particularly important in looking at the relation between spending and completion, and to understanding productivity.

[12] Bowen, Howard R. 1980. *The Costs of Higher Education*. San Francisco, CA: Jossey-Bass.

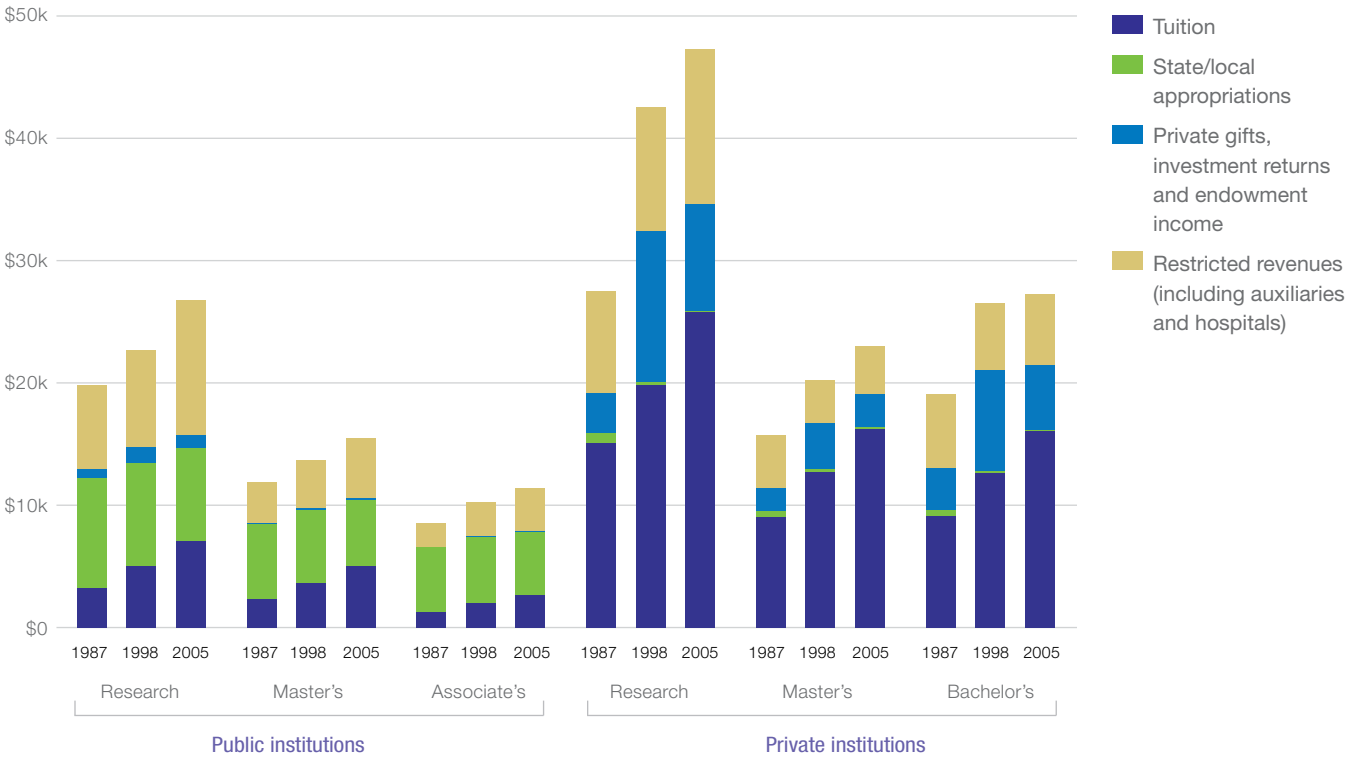
the single largest source of revenue for private institutions, while state and local appropriations remain the largest revenue category for public institutions.

Revenues increased everywhere, but per capita increases were most dramatic among private institutions. The money going into higher education has steadily increased over the past two decades. Revenues per student are up among all institutions, though private institutions have had greater increases than public institutions *(see Figure 9)*. In private institutions per student revenues increased an average of two to three percent per year between 1987 and 2005, while public institution increases averaged less than two percent per year.

Figure 9

Revenues are up, especially among private institutions

Revenue per student by source, 1987, 1998 and 2005 (in 2005 dollars)



Source: Delta Cost Project IPEDS database, 19-year matched set.

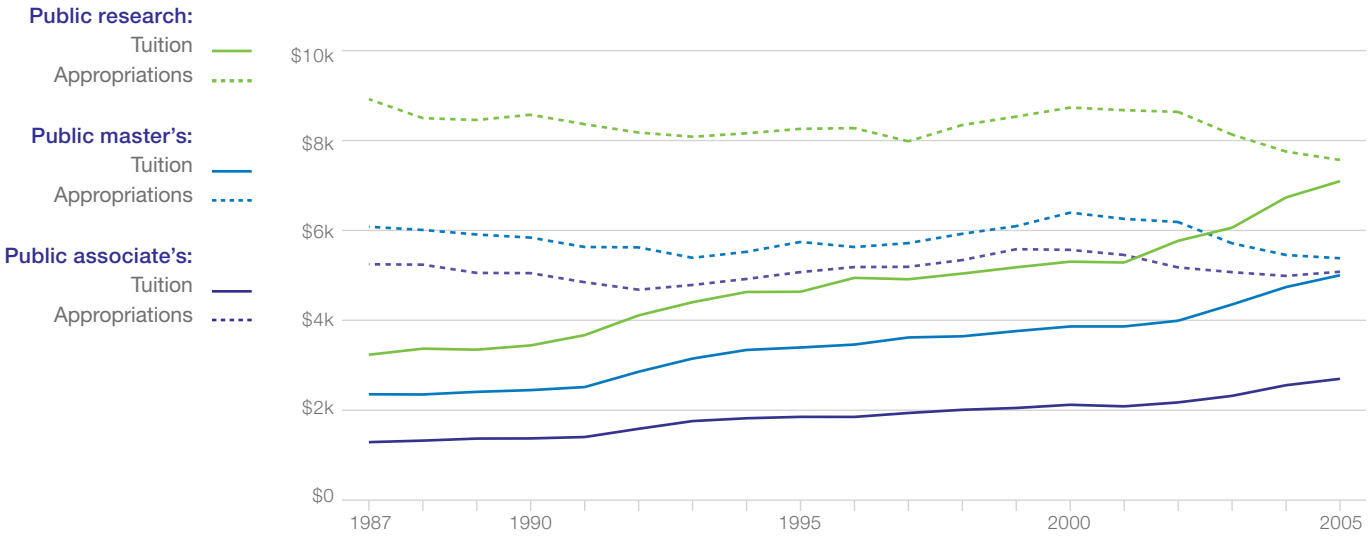
Tuition increases are the primary source of new revenue. Much has been made of the privatization of revenue in higher education, but the major source of "private" capital is tuition revenue. In the last decade, revenues from tuition have increased faster than other sources of revenue everywhere but private research universities. In public institutions, tuition revenues have grown faster than state and local appropriations, which have not kept pace with enrollment

growth and inflation. *(See Figure 10)*. Tuition remains a significantly larger source of revenue for private institutions than for public institutions, in 2005, comprising between 54 and 71 percent of total revenue at private institutions, but only 24 to 32 percent at public colleges and universities *(see Figure 11)*.

Figure 10

Tuition increases are the primary source of new revenue at public institutions

Median tuition and state and local appropriations revenue per FTE student, 1987-2005 (in 2005 dollars)

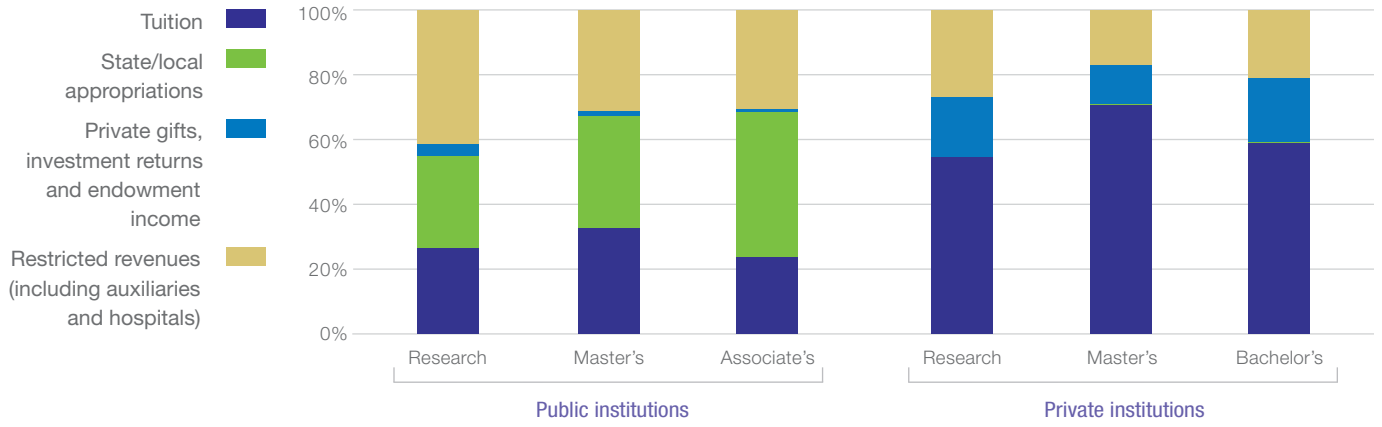


Source: Delta Cost Project IPEDS database, 19-year matched set.

Figure 11

Tuition remains a larger revenue source for private institutions than for public institutions

Distribution of median revenue per FTE student, 2005



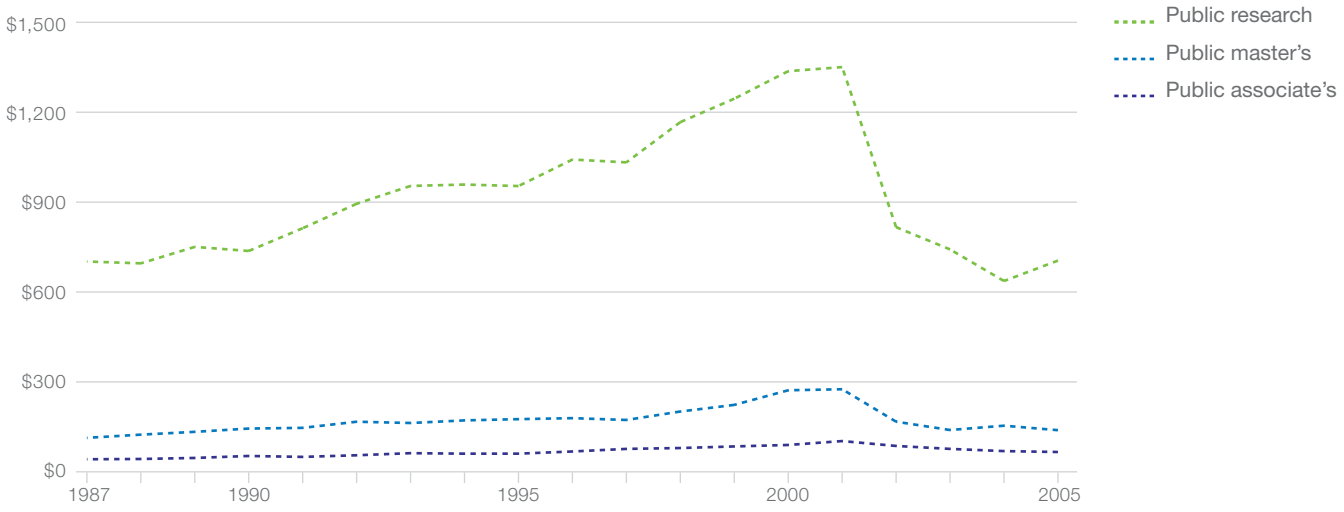
Source: Delta Cost Project IPEDS database, 19-year matched set.

Private gift revenues have not changed over time as a proportion of public operating funds. In the public sector, operating revenues from private gifts have not increased as a proportion of revenues since 1987. These revenue sources are more volatile than others, experiencing some years of increases and others of declines *(see Figure 12)*. But over time, private funds have not materially contributed to the bottom line for institutional budgets. Of course, this analysis excludes capital spending, which may well have been where substantial proportions of private funding have gone.

Figure 12

Private funds have not materially contributed to the bottom line in public institutions

Median revenue per FTE student from private gifts, 1987-2005 (in 2005 dollars)



Source: Delta Cost Project IPEDS database, 19-year matched set.

Sticker prices have increased more rapidly than net tuition revenue. "Sticker" prices are the full posted tuition and fees before financial aid or discounts.[13] Though sticker prices have risen in all sectors, these increases do not translate to comparable increases in net revenue from tuition, because many students receive tuition discounts *(see Figure 13, next page)*. The smallest dollar increase in sticker prices occurred in public institutions, but these translated to higher percentage increases than in private institutions because public institutions started from a lower base tuition level. Evidence of tuition discounting is particularly evident among private institutions where increases in net tuition revenues per student range from about $1,500 to $2,500—about one-half of the increase in sticker prices over the same period.

[13] The sticker prices used in this report are the in-state undergraduate tuition and fees for full-time students as reported in IPEDS.

Figure 13

Sticker prices don't translate directly to net tuition revenues

Changes in median tuition prices and tuition revenue, 1998 to 2005 (in 2005 dollars)

Institution type	Sticker price 1998-2005		Net tuition revenue/FTE student 1998-2005	
	% change	$ change	% change	$ change
Public research	45.6%	$1,609	34.6%	$1,504
Public master's	42.3%	$1,277	36.6%	$1,202
Public associate's	28.5%	$491	34.1%	$625
Private research	24.0%	$5,169	16.7%	$2,514
Private master's	23.5%	$3,366	19.0%	$1,914
Private bachelor's	22.6%	$3,208	16.5%	$1,491

Source: Delta Cost Project IPEDS database, 19-year matched set.

The proportion of funds that are restricted has grown at public institutions. By our estimates,[14] unrestricted revenue has become a smaller piece of the revenue pie at public institutions over the last two decades, even as it has grown proportionately at private institutions *(see Figure 14)*. Estimating unrestricted revenue is pertinent, because not all funds are available for core purposes. In the public sector, the proportion of revenues that were unrestricted dropped by as

Figure 14

The unrestricted share of revenues fell at public institutions but rose at private institutions

Estimated unrestricted share of total revenues, 1987 to 2005

Institution type	Unrestricted share			Percentage point change 1998-2005
	1987	1998	2005	% change
Public research	65.9%	65.1%	58.5%	-7.4%
Public master's	73.2%	72.6%	69.3%	-3.9%
Public associate's	77.7%	73.5%	69.8%	-7.9%
Private research	69.6%	75.7%	73.6%	4.0%
Private master's	71.9%	82.8%	83.0%	11.0%
Private bachelor's	67.3%	79.1%	79.1%	11.8%

Source: Delta Cost Project IPEDS database, 19-year matched set.

[14] Prior to reporting changes in the early 2000s, the federal government collected data that readily identified the volume of restricted versus unrestricted revenues. That is no longer the case. To get a rough estimate of the proportion of revenues that are unrestricted, we have added together the principal sources of revenue that are most likely to be unrestricted: 1) tuition revenues, 2) state and local appropriations, and 3) revenues from private gifts, unrestricted endowment earnings, and investment income. This estimate overstates the proportion of funds that are discretionary, since some private gifts are restricted by donors.

much as seven percentage points. This means that although public research institutions have more revenue overall than other public institutions, they have less control over spending decisions than do master's degree institutions and community colleges. The shift in revenues also suggests a shift in activity, away from student teaching and more toward research and public service. And it suggests that funders are moving away from general institutional support, to funding on a fee-for-service basis.

The enrollment and revenue trends that we've just outlined have served both to drive and to constrain institutional spending. So we shift our focus to spending.

Spending trends

To get a handle on spending patterns over time, we have removed spending for self-supporting activities, and aggregated the remaining IPEDS spending categories into three broad groups: the direct cost of instruction, other educational expenditures, and non-educational spending (primarily research and public service). These three together add up to total education and general spending, a category that existed in IPEDS prior to accounting changes introduced in the late 1990s, which we still find useful for comparative analysis *(see "Defining our terms")*.

(continued on page 26)

Defining our terms

Institutional spending, not student tuitions. Most public policy attention to higher education costs looks at what students and their families have to pay for higher education. Such *student* costs include tuition and fees, books and materials, transportation, and room and board. *Institutional* costs are something different, and it is these costs that we're concentrating on here. Institutional costs are expenditures by the institution itself, including faculty salaries, college and university administration, student services, and other provisions of higher education.

Spending measured per FTE enrolled. Institutional spending is typically measured in costs per full-time equivalent (FTE) student enrolled, and is sorted into categories of spending that distinguish between types of activities *(see "Spending categories," page 25)*. These categories are based on aggregate spending and revenue measures collected from institutions through IPEDS. Revenues and expenditures are reported separately in IPEDS, which makes it impossible to state precisely what sources of revenue go to pay for different activities. Cost measures include all the sources of revenue that are spent within each category.

(continued on next page)

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To simplify the analysis, we have further organized spending information into three groupings: direct instructional costs; full educational costs; and total education and general costs. **Direct instructional costs** are those going directly to faculty and departmental administration. **Full educational costs** include direct instructional costs, plus spending for student services and the instructional share of central academic and administrative support. **Total education and general costs** includes all spending for core operating support, including sponsored research but *excluding* auxiliary enterprises (self-supporting activities such as bookstores and dormitories.) More details about the formulae for this are included in the Technical Appendix.

Costs per FTE enrolled are not perfect measures of spending, because they do not account for workload associated with headcount enrollments such as student support and administrative services. They also measure inputs (spending per full-time enrollments) rather than how funds are used to generate outcomes (degrees and certificates, learning, research results). Nonetheless, they are the traditional way of comparing spending among different institutions, and are a useful point of departure for deeper work into spending and productivity.

Operating costs, not capital. To get a true sense of the real economic activity or total costs in any university, one ideally would like to include capital costs. However, IPEDS trend data provide information only on spending for current operations, including amortization and depreciation of equipment and payments for debt service on bonds. Most spending on capital outlays is excluded. So we have focused on operating costs only, excluding capital.

Inconsistencies in reporting. Changes in IPEDS reporting categories for expenditures make consistent evaluation of spending trends, and comparisons between public and nonprofit private institutions, somewhat problematic. (Student enrollments and measures of completions have all remained quite stable, so the data changes affect only spending categories.) The Delta database has adjusted for these changes as much as possible. However, for private institutions, changes in the expenditure reports for maintenance and utilities make consistency across years impossible. As a result, the data in this report show a break in reporting for the private nonprofit institutions after 1996.

Spending categories

Instruction: Activities directly related to instruction, including faculty salaries and benefits, office supplies, administration of academic departments, and the proportion of faculty salaries going to departmental research and public service.

Research: Sponsored or organized research, including research centers and project research. These costs are typically budgeted separately from other institutional spending, through special revenues restricted to these purposes.

Public service: Activities established to provide noninstructional services to external groups. These costs are also budgeted separately, and include conferences, reference bureaus, cooperative extension services and public broadcasting.

Student services: Noninstructional, student-related activities such as admissions, registrar services, career counseling, financial aid administration, student organizations and intramural athletics. Costs of recruitment, for instance, are typically embedded within student services.

Academic support: Activities that support instruction, research, and public service. These include libraries, academic computing, museums, central academic administration (deans' offices), and central personnel for curriculum and course development.

Institutional support: General administrative services, executive management, legal and fiscal operations, public relations and central operations for physical plant operation.

Scholarships and fellowships: Institutional spending on scholarships and fellowships. This does not include federal aid, tuition waivers or tuition discounts (which since 1998 have been reported as waivers).

Plant operation and maintenance: Service and maintenance of the physical plant, grounds and buildings maintenance, utilities, property insurance and similar items. For private institutions only, capital depreciation costs were excluded prior to 1998, making trend data not strictly comparable.

Auxiliary enterprises, and hospitals and clinics: User-fee activities that do not receive general support. Auxiliary enterprises include dormitories, bookstores and meal services.

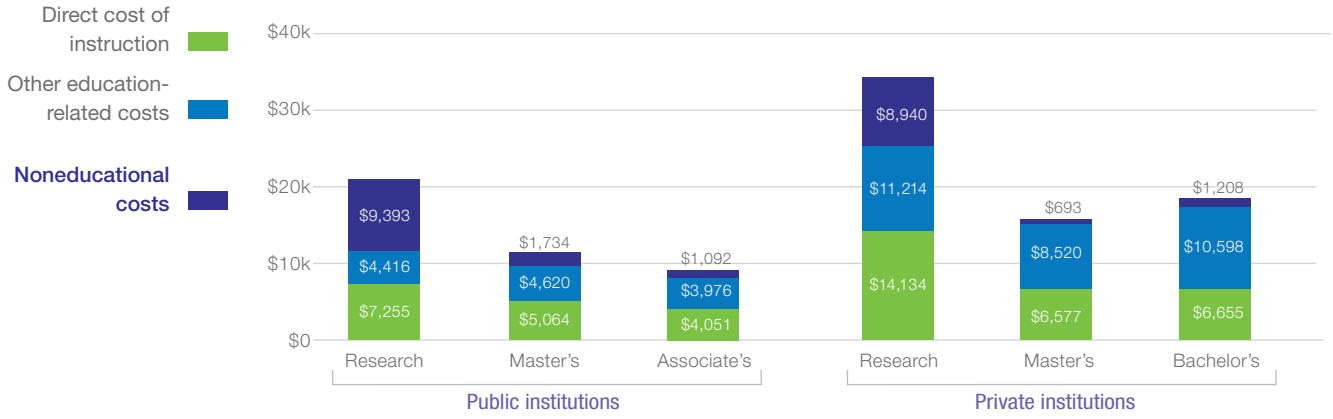
This method of organizing information is quite similar to categories used in previous studies of spending trends, and allows cross-sector comparisons to be made that separate spending for instructional functions from other types of activities.[15] When organized this way, several distinct patterns emerge:

Spending disparities across sectors are significant and increasing. Private institutions spend more per student than their public counterparts, and research institutions—whether public *or* private—spend more than nonresearch institutions. At the highest end of the scale, full educational costs (direct costs of instruction and other education-related costs) among private research universities in 2005 averaged about $13,500 more per FTE student than public research universities, which in turn spent about $2,000 more than public master's institutions, and $3,600 more than public two-year institutions *(see Figure 15)*.

Figure 15

Spending disparities across sectors are significant

Distribution of median education and general spending per FTE student, 2005



Source: Delta Cost Project IPEDS database, 19-year matched set.

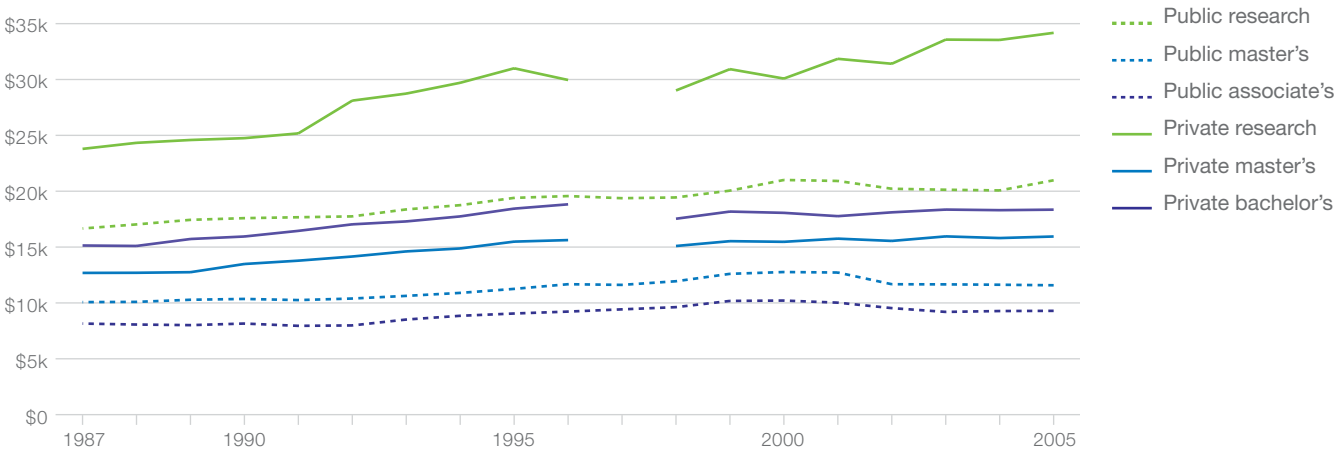
In recent years, the spending disparities between public and private institutions have increased. From 1987 through the mid-1990s, total spending grew at all types of institutions, though spending increases at private four-year institutions were nearly twice as large as at their public counterparts *(see Figure 16)*. Since 2000, however, public associate's and master's institutions have reduced expenditures per FTE student, and spending has remained relatively flat among public research universities. In contrast, spending at private master's and bachelor's institutions has continued to grow since 2000, though at sharply lower rates than during the late 1980s and early 1990s. Spending at private research institutions also continued to increase but at average annual rates similar to the 1987 to 1996 period.

[15] National Commission on the Cost of Higher Education. 1998. *Straight Talk About College Costs and Prices.* Washington, DC: American Council on Education; Winston, Gordon C. and Ivan C. Yen. 1985. "Costs, Prices, Subsidies and Aid in U.S. Higher Education." Discussion Paper No. 32. Williamstown, MA: Williams Project on the Economics of Higher Education.

Figure 16

Spending disparities between public and private institutions have increased

Median full education and general spending per FTE, 1987-2005 (in 2005 dollars)



Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Education and general expenditure data for private institutions from 1997-2005 are not directly comparable with data for earlier years.

Direct costs of instruction have not grown substantially relative to total costs. Over the last two decades, the direct costs of instruction—primarily faculty salaries and benefits—have uniformly represented a minority of total spending, ranging from 35 to 44 percent in 2005 *(see Figure 17, next page)*. The proportion of total spending going for the direct cost of instruction has declined since 1998 in both the public and private research sectors.

Since 1998, instructional spending in both public and private institutions grew more slowly than nearly all other spending areas, and it also grew more slowly than in the prior decade *(see Figure 18, next page)*. Some of this reduction in growth may not be actual cost cutting, but a reflection of lower marginal instructional spending during periods of enrollment growth, since institutions can add new students to existing programs less expensively than if they had to build whole new programs from scratch. But some of the lower costs seem attributable to real cost reductions from a continuing shift from full- to part-time faculty and staff. The periodic National Study of Postsecondary Faculty shows that, in 1987, two-thirds of faculty and staff were employed full-time. By 2003, that had dropped to 57 percent, with declines widespread across all sectors.[16] A similar decline appeared in the number of faculty with tenure. Less than one-half of higher education faculty had tenure in 2003, compared with 58 percent in 1987. And the share of full-time faculty not on the tenure track nearly tripled during that time, reaching 21 percent in 2003.

[16] Cataldi, Emily Forest, Ellen M. Bradburn, and Mansour Fahini. 2005. *Background Characteristics, Work Activities, and Compensation of Instructional Faculty and Staff: Fall 2003.* NCES 2001-252. Washington, DC: National Center for Education Statistics; Kirshstein, Rita J., Nancy Matheson, and Zhongren Jing. 1987. *Instructional Faculty and Staff in Higher Education Institutions: Fall 1987 and Fall 1992.* NCES 97-470. Washington, DC: National Center for Education Statistics.

Figure 17

Direct costs of instruction are a minority of total spending

Median spending per FTE student 1987, 1998 and 2005 (in 2005 dollars)

Institution type	Cost per FTE student			Instruction spending as a % of...	
	Instruction spending	Full educational cost	Education and general spending	Full educational costs	Education and general spending
Public research					
1987	$6,612	$10,555	$16,663	62.6%	39.7%
1998	$7,031	$11,635	$19,441	60.4%	36.2%
2005	$7,255	$11,660	$20,978	62.2%	34.6%
Public master's					
1987	$4,583	$8,305	$10,073	55.2%	45.5%
1998	$4,931	$9,394	$11,941	52.5%	41.3%
2005	$5,064	$9,713	$11,581	52.1%	43.7%
Public associate's					
1987	$3,677	$7,024	$8,152	52.3%	45.1%
1998	$4,103	$8,062	$9,622	50.9%	42.6%
2005	$4,051	$8,089	$9,291	50.1%	43.6%
Private research					
1987	$9,319	$16,639	$23,789	56.0%	39.2%
1998	$13,216	$24,156	$29,019	54.7%	45.5%
2005	$14,134	$25,231	$34,177	56.0%	41.4%
Private master's					
1987	$4,441	$10,062	$12,687	44.1%	35.0%
1998	$6,001	$13,926	$15,096	43.1%	39.7%
2005	$6,577	$15,438	$15,946	42.6%	41.2%
Private bachelor's					
1987	$4,632	$11,599	$15,140	39.9%	30.6%
1998	$6,283	$16,314	$17,536	38.5%	35.8%
2005	$6,655	$17,314	$18,349	38.4%	36.3%

Source: Delta Cost Project IPEDS database, 19-year matched set.

At least partially as a result of these shifts in tenured and tenure-track faculty, the share of direct instructional costs claimed by faculty salaries has steadily declined among all sectors over the past two decades. In 1987, faculty salaries accounted for roughly 73 to 75 percent of direct instruction costs, and had dropped about five percentage points by 2005. While rising benefit costs have offset some of these declines, it is still clear that faculty costs are not what is driving spending increases. Neither, for the most part, do they explain growing cost differences among institutions.

Figure 18

Instructional spending grew more slowly than in the past and more slowly than other spending

Average annual percent change in median spending per FTE student, 1987-2005

	Public research		Public master's		Public associate's	
	1987-1996	1998-2005	1987-1996	1998-2005	1987-1996	1998-2005
Educational and general spending	1.8%	1.1%	1.7%	-0.4%	1.4%	-0.5%
Full educational costs	0.7%	0.0%	0.9%	0.5%	1.0%	0.0%
Other educational costs	0.8%	0.4%	0.9%	0.8%	1.0%	0.5%
Noneducational costs	3.6%	1.1%	4.9%	-3.9%	5.5%	-3.9%
Instruction	0.5%	0.4%	0.6%	0.4%	1.0%	-0.2%
Research	3.9%	3.2%	4.3%	3.2%	-3.7%	1.0%
Public service	5.0%	7.2%	5.4%	3.7%	2.1%	0.0%
Academic support	2.3%	0.1%	2.0%	0.6%	1.0%	0.2%
Student services	2.4%	0.9%	1.3%	0.4%	2.0%	0.3%
Institutional support	0.6%	0.9%	1.8%	1.2%	1.3%	0.5%
Operations/maintenance	-0.4%	2.0%	-0.6%	1.8%	-0.3%	0.9%
Scholarships & fellowships	5.6%	-9.4%	4.9%	-10.0%	6.0%	-4.3%
Institutional grants	9.5%	7.5%	7.6%	6.4%	6.1%	4.6%

	Private research		Private master's		Private bachelor's	
	1987-1996	1998-2005	1987-1996	1998-2005	1987-1996	1998-2005
Educational and general spending	2.6%	2.4%	2.3%	0.8%	2.5%	0.6%
Full educational costs	1.8%	0.6%	1.8%	1.5%	1.7%	0.9%
Other educational costs	2.8%	1.3%	1.4%	1.4%	1.6%	1.3%
Noneducational costs	2.9%	4.5%	5.1%	-3.9%	5.5%	-3.1%
Instruction	2.2%	1.0%	1.8%	1.3%	1.0%	0.8%
Research	1.9%	7.3%	2.2%	4.9%	4.7%	7.0%
Public service	3.7%	0.4%	4.5%	-2.0%	-2.8%	4.5%
Academic support	2.8%	2.4%	2.1%	2.1%	1.8%	2.3%
Student services	3.5%	1.9%	3.1%	1.8%	3.0%	2.8%
Institutional support	2.4%	1.6%	1.2%	1.9%	1.3%	1.1%
Operations/maintenance	2.3%	0.9%	0.1%	0.2%	0.4%	0.9%
Scholarships & fellowships	4.6%	2.2%	6.5%	-5.0%	6.3%	-6.0%
Institutional grants	6.5%	4.4%	8.6%	4.3%	8.7%	3.1%

Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Prior to 1997 scholarships and fellowships for private institutions included institutional spending on student grants from all sources of revenue. Since the 1997 FASB reporting changes, scholarships and fellowship expenditures are separated by funding source and now distinguish institutional grant aid and scholarships and fellowships. Thus, since 1997 scholarships and fellowships in private institutions are confined to grant aid expenses paid to auxiliaries (such as dorms).

The spending differences between sectors relate far more to differences in noninstructional costs than to the direct costs of education. Remarkably, direct spending on instruction falls within a relatively narrow span across most types of institutions, ranging in 2005 from a median cost of $4,051 per FTE student at public associate's colleges to $7,255 at public research institutions. The notable exception was private research universities, which, at $14,134 per FTE student, spent nearly twice as much as their public counterparts *(see Figure 15, page 26)*.

It is the indirect, or *noninstructional,* portion of educational costs—student services and the proportion of shared services that can be attributed to instruction—that really begins to distinguish spending patterns by different types of institutions. At public institutions of all types, these costs averaged about $4,000 per student in 2005. Private institutions spent more than double that amount, averaging about $10,000 per student. These differing dollar amounts carried over to strikingly different *percentages* of total spending for the different sectors, in contrast to the relatively uniform proportionate spending for the direct cost of instruction. In 2005, private nonresearch institutions (bachelor's and master's institutions) spent more than 55 percent of their instructionally related budgets on noninstructional educational costs. Public nonresearch institutions spent considerably less, about 40 percent of their total spending. Private research universities spent less still, at 33 percent of their total budgets—but even so, that was one-half more than the proportionate expenditure by *public* research universities.

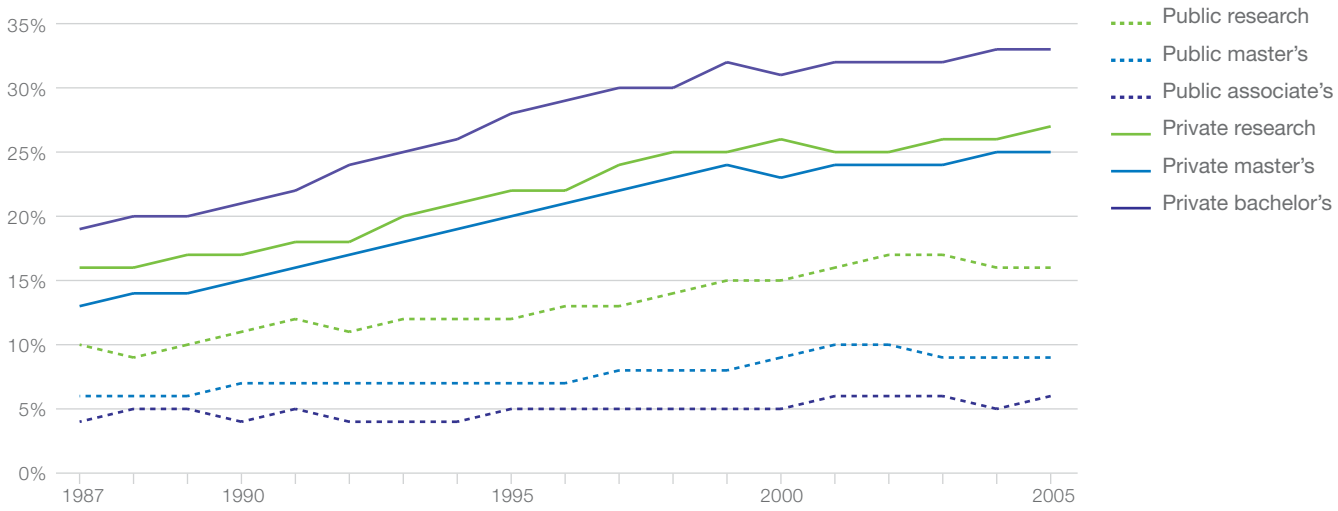
Spending on institutional aid to students is the largest area of discretionary spending increases. The biggest consistent area of increased spending has been in institutional student aid. Unlike research and service, institutional aid is generally funded from discretionary revenues—either tuition, state appropriations or private gifts. So increased spending on institutional aid takes revenues away from other purposes. However, some proportion of student tuition revenues come from students who would not have enrolled except for the institutional aid, so spending on institutional aid can be seen as a growing cost of business to enroll students.

Since 1998, spending from institutional sources for student grant aid has grown faster than any other single spending area in public higher education *(see Figure 18, preceding page)*, and growth rates exceed those of private institutions. Though in the private sector, the median institutional aid in 2005 was roughly $4,000 to $6,500 per student, compared to only $1,200 among public research universities. These figures do not include tuition discounts that are offered to students *(see Figure 19)*, a phenomenon that doesn't show up in spending because the monies are never received by the institution. As with institutional aid, tuition discounting is particularly prevalent at private institutions, where it has grown by two-thirds or more over the past two decades. Tuition discounts at public research universities have also climbed, but more modestly. Research on tuition discounting done by the National Association of College and University Business Officers additionally documents differences in discounting patterns

Figure 19

Tuition discounting is particularly prevalent at private institutions

Tuition discount rates



Source: Delta Cost Project IPEDS database, 19-year matched set.

within sectors, with larger discounts for freshmen among small private colleges with relatively low tuitions.[17]

Public service and research are the second fastest areas of spending growth for public institutions. Among public four-year institutions, the greatest spending growth—after institutional grants—has occurred in public service, often closely followed by spending on research. These functions are funded with "soft money" from contracts and grants, and are a somewhat volatile area of spending, with large fluctuations from year to year. Since 1998, spending increases for research and service grew faster than other areas among private institutions, in contrast to the earlier decade where they were eclipsed by the rate of growth in institutional aid and student services, among other areas. In private colleges, however, the rate of spending on institutional aid declined significantly since 1998.

Interacting trends:

Four notable interactions between revenues and costs, and degree production

In public institutions, increase in tuition never made it to the bottom line. Although public sector institutions have seen the greatest increases in tuition rates in percentage terms, these new

[17] Shedd, Jessica, and Christina Redmond Daulton. 2006. "A Current Look at Tuition Discounting." Washington, DC: National Association of College and University Business Officers. Available at www.nacubo.org.

revenues have not translated to growth in spending, as tuition revenues primarily replaced lost state appropriations. Looking simultaneously at changes since 1998 in both tuition and spending tells us a good deal about financing shifts occurring in higher education *(see Figure 20)*. Since 1998, total spending per student has gone down in inflation-adjusted dollars among public community colleges and master's institutions while increasing modestly at public research universities, primarily in noneducation costs. Despite these spending constraints, median tuition prices and revenues across the public sector have generally risen more than 30 percent.

Figure 20

Sticker price increases have outpaced spending increases

Percent change in median sticker prices, tuition revenues, and spending, 1998-2005

	Sticker price	Net tuition revenue per FTE	Direct instructional spending per FTE	Full educational spending per FTE	Total E&G spending per FTE
Public research	45.6%	34.6%	3.2%	0.2%	7.9%
Public master's	42.3%	36.6%	2.7%	3.4%	-3.0%
Public associate's	28.5%	34.1%	-1.3%	0.3%	-3.4%
Private research	24.0%	16.7%	6.9%	4.5%	17.8%
Private master's	23.5%	19.0%	9.6%	10.9%	5.6%
Private bachelor's	22.6%	16.5%	5.9%	6.1%	4.6%

Source: Delta Cost Project IPEDS database, 19-year matched set.

Among private nonprofit institutions, by contrast, tuition increases have translated into increased spending, although the rates of growth in spending have slowed down since 1998. Thus, there is no uniform causal relationship between spending and tuition increases. At private institutions, tuition *has* increased with spending growth, and the former has financed the latter. At public institutions, however—especially nonresearch institutions—spending growth has remained relatively flat, and most of the revenues from tuition increases replaced state revenues. This is an instance of cost shifting, rather than cost increases.

One additional note on Figure 20: In *all* four-year sectors, public and private, net revenue from tuition has gone up less rapidly than sticker prices because of the growth in tuition discounting. And that brings us to the next issue—changes in who is subsidizing education.

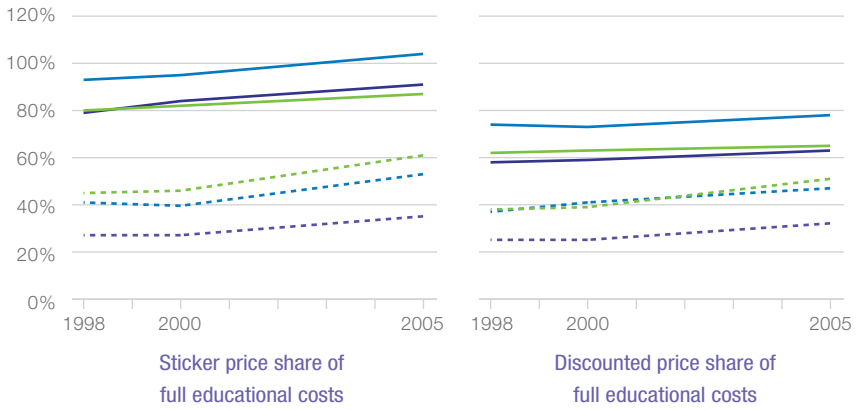
The sticker tuition price is increasingly meaningless as a measure of institutional revenues or prices charged to students. The more accurate measure is the student share of educational costs. In both public and private nonprofit institutions—as opposed to profit-making institutions—revenues from student tuitions cover just a portion of what institutions spend to educate each student. The balance is subsidized by the institution. In public institutions, the lion's share of general subsidies has historically come from state appropriations. In nonprofit institutions,

the source has been private gifts and unrestricted earnings from endowments.[18] Figure 21 shows a snapshot, for the 1998, 2000 and 2005 periods and for each of the six major sectors, of the proportion of full educational costs that were covered by students paying the full sticker price, and the average subsidy going to students after tuition discounts and institutional aid. For 2000 and 2005, the table also shows the percentage of full-time, first-time undergraduate students who receive some type of institutional grant, a calculation that was not reported for 1998.[19]

Figure 21

Revenues from student tuitions cover just a portion of what institutions spend

Shift in student share of costs (averages)



Average proportion of full-time, first-time undergraduate students receiving institutional grants

	2000	2005
Public research	31.4%	37.0%
Public master's	36.0%	27.9%
Public associate's	15.8%	14.7%
Private research	64.3%	67.5%
Private master's	77.9%	81.3%
Private bachelor's	74.4%	78.0%

Source: Delta Cost Project IPEDS database, 19-year matched set.

Student share of costs increased everywhere. The student share of costs for students attending public research and master's institutions are quite similar; both have grown from around 37 percent of costs after discounts in 1998 to over 47 percent of costs in 2005. In 2005, the student share of costs continued to be lowest among public associate's institutions, despite increasing from 24 percent of costs in 1998 to 31 percent of costs in 2005. Among public institutions, institutional grants are most prevalent in research universities, with 37 percent of full-time, first-time undergraduates receiving such aid, compared to more than two-thirds in private institutions who benefit from tuition discounts. The student share of costs is highest among the private master's degree sector, now exceeding 75 percent of costs after discounts. In that sector, students who pay the full sticker price—less than 20 percent of all full-time, first-time undergraduates—are paying close to full costs.

[18] The metrics for cost/price/subsidy evaluation are based on a methodology described by Gordon Winston; the methodology was emulated by the 1997 Congressional Commission on College Costs. See Winston, Gordon C. and Ivan C. Yen. 1985. "Costs, Prices, Subsidies and Aid in U.S. Higher Education," Discussion Paper No. 32. Williamstown, MA: Williams Project on the Economics of Higher Education; National Commission on the Cost of Higher Education. 1998. *Straight Talk About College Costs and Prices.* Washington, DC: American Council on Education.

[19] More detailed calculations for these figures can be found on the Delta Cost Project's website at www.deltacostproject.org.

In reading these figures, it's important to remember that they are averages, and therefore they mask some differences in costs and subsidies within institutions. There has always been a considerable amount of cross-subsidization within institutions: revenues generated in low-cost disciplines such as humanities and social sciences, or from low-cost students such as those in the lower divisions, will often be reallocated to pay for higher-cost disciplines such as business, engineering, medicine and fine arts, and for upper-division and graduate education. We do not know from these figures which types of students received the discounts—whether graduate and professional, or undergraduates, or anything about their income levels and the basis on which awards are given. We do know that revenue from students paying the full sticker price is increasingly being used to subsidize costs for students getting institutional aid. Improving data about the students who are receiving tuition discounts and institutional aid should be a priority for future public reporting, in both public and private institutions.

Costs per completions are growing more rapidly than costs per student among research universities. If we really want to assess what we're getting for our higher education investment, and what additional expenditures will buy us, spending per FTE student needs to be compared to trends in spending per degree and certificate completion. And, until better data becomes available, the best proxy measure of overall spending productivity is spending per completions (all degrees and certificates), and how that compares to spending per student.

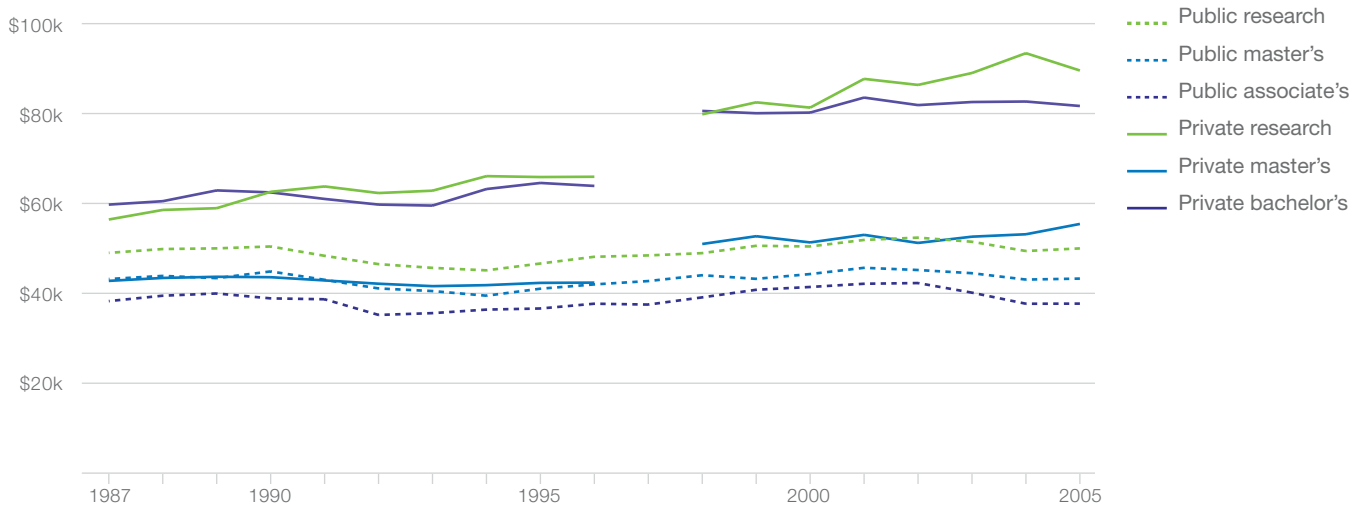
Across sectors, trends in spending per completions look very similar to the trends we've already outlined for spending per FTE student *(see Figure 22)*. The greatest growth in spending per completions has occurred at selective private institutions, in contrast to flatter spending/completions among public institutions. But when changes in spending per student are compared to costs per *completions*, some different patterns emerge. Since 1998, costs per completions have grown more rapidly than costs per student in both public and private research universities *(see Figure 23)*, in contrast to patterns among master's institutions and private bachelor's institutions, which have seen lower costs per completions than costs per student.

What do these patterns say about productivity in higher education? It's hard to say; the industry has not traditionally measured costs per degree attained. At one level, if spending per degrees and completions is increasing less rapidly than costs per student, one might say that productivity is increasing. But the modest uptick in completions per enrollments discussed earlier *(see Figure 8, on page 18)* occurred both where spending is increasing, as in private research and master's level institutions, and where costs are flat or are being cut, as in public institutions. That suggests that degree productivity can be increased simply by increasing the proportion of full-time students, unrelated to changes in spending. And if productivity is simply a measure of funds against completions, productivity will "increase" if budgets are cut. Whether it is also possible to increase productivity while maintaining access to part-time and low-income students, and maintaining quality in educational results, is another question. To get a better understanding of this very important element of educational performance, we need to look at spending in relation to value-added, which will require better data about student learning as well as other dimensions of educational quality.

Figure 22

The greatest growth in spending per completions is at private institutions

Median full educational costs per completions (both degrees and certificates), 1987-2005 (in 2005 dollars)



Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Full educational cost data for private institutions from 1997-2005 is not directly comparable with data for earlier years.

Figure 23

At research institutions, costs per completion and degree are now growing faster than per-student costs

Average annual percent change in median full educational costs per FTE student, completion and degree

	1987-1996 Full educational costs per…			1998-2005 Full educational costs per…		
	FTE student	Completion	Degree	FTE student	Completion	Degree
Public research	0.7%	-0.2%	-0.3%	0.0%	0.3%	0.2%
Public master's	0.9%	-0.3%	-0.4%	0.5%	-0.2%	-0.2%
Public associate's	1.0%	-0.2%	0.0%	0.0%	-0.5%	0.4%
Private research	1.8%	1.7%	1.9%	0.6%	1.7%	1.6%
Private master's	1.8%	-0.1%	0.0%	1.5%	1.2%	0.8%
Private bachelor's	1.7%	0.7%	0.8%	0.9%	0.2%	0.2%

Source: Delta Cost Project IPEDS database, 19-year matched set.

Summary of trends

Enrollments

- Enrollments are up everywhere, with the rate of growth since 1998 well above that of previous decades.
- Proportionately more students are enrolling in public two-year, proprietary, and private master's level institutions.
- Diversity in student populations has increased, driven by particularly rapid growth among Hispanic, Black and Asian populations.
- Since 1998, higher proportions of low-income and minority students are enrolling in public two-year colleges than in previous decades.
- Degree and credential completions per student enrolled have generally increased over the past two decades.

Revenues

- Per capita revenues have increased most rapidly among private colleges and research universities, with much lower growth among public master's and community colleges.
- In all sectors, most of the revenue growth has been from tuition rather than government funding, private gifts, or earnings from endowment.
- Tuition growth has been largest, in percentage terms, among public institutions—though the largest dollar increases in tuition have occurred in private institutions.
- The combination of state and local appropriations and tuition revenues still comprises the vast majority of discretionary revenues for all public institutions.
- Net tuition revenues increased at a slower rate than sticker prices, because of the growing use of tuition discounting, which is particularly prevalent among private institutions.
- Disparities between sectors in terms of access to unrestricted revenues have grown considerably, with private institutions appearing to have more discretion over spending decisions in 2005 than in prior decades, in contrast to public institutions, which appear to have less discretion over how to spend the revenues they have.

Spending

- Even with recent cost cutting in some institutions, overall spending has continued to rise, with the largest increases in private research institutions. Between 1998 and 2005, inflation-adjusted per capita spending at public master's and two-year institutions has held fairly steady or even declined.
- The direct costs of instruction have not grown as a proportion of total spending in any sector.
- Spending differences between public and private sectors are pronounced in the non-instructional share of educational spending—student support services, academic support and other services to students.
- Spending on research and public service increased faster than other spending areas among four-year institutions. Since these areas are not funded from general revenue sources, these increases do not reflect reallocation decisions within the institutions.
- Spending on institutional grant aid was the greatest source of increased costs from discretionary revenue sources.
- In public institutions, increases in tuition did not translate to comparable increases in spending. In private institutions, spending increases are paid for through both tuition and private resources.
- The student share of costs increased everywhere, including sectors with growth in private revenues. Yet even here, the slight growth in spending from institutional revenues did not mean that tuition increases were lowered.
- Costs per degree are growing faster than costs per student among public and private research universities. Master's and private bachelor's institutions, however, have grown costs per degree less than costs per student.

Putting it all together

This presentation of trends may well raise as many questions as it answers. Easy generalizations about the funding dynamics currently at work in higher education are hard to come by. It is a time of unprecedented growth in enrollments and spending, with more students—and more money—going to more institutions than at any time in our history. Institutional spending is increasing, and students are paying a higher share of operating costs. But along with spending increases, there is plenty of evidence of funding cutbacks and of reductions in spending for core instructional programs.

There are at least two stories to be told here, one of a private sector where competition for students and resources are clearly driving costs; and one of a public sector characterized by rapid changes in revenues, growing privatization and cost cutting. Both are relevant to the public policy discussion: there is no firewall between public institutions and private institutions, and they are competing for the same pool of faculty and students. So growing spending in the private institutions is increasing pressure on public institutions to grow spending—even if this spending is not going into direct services for students.

There are at least two stories to be told here, one of a private sector where competition for students and resources are clearly driving costs; and one of a public sector characterized by rapid changes in revenues, growing privatization and cost cutting.

Among the sectors where spending increased most rapidly, it is also not clear that this increased investment paid off in greater access, degree attainment or improvements in quality. Most importantly, the rising tide is not lifting all boats equally, and the growing inequality in access to revenue is evidenced in dramatic and growing differences between some institutions that are prospering and others that are falling behind. Most troublesome, the institutions that serve the majority of low-income students are overwhelmingly those that have the least to invest in their success, and more low-income students are being concentrated in these institutions. These trends, if they remain uncorrected, bode ill for meeting future needs for increasing capacity and degree attainment in higher education.

To focus the conversation going forward, we return to the questions asked at the outset of this review to see what the data tell us about questions asked by the public and policy makers:

Are college tuitions rising because spending is growing? If so, where is the money going?

For more than three-quarters of the students enrolled in higher education, the answer is no: students at public institutions are paying for a higher proportion of costs, but their money is not translating into a higher level of service. These students are paying more, and getting less.

For students in private nonprofit institutions, the answer is clearly yes: students are paying more, and the institutions are spending more. But even here, there is not clear evidence that greater spending is translating to improvements in degree productivity.

Where spending is going up, it is not for the most part going into core academic programs. The greatest increases have been in contracted funding for research and public service, and for institutional aid. Except for the private research sector, the share of spending going to instruction has merely kept pace with inflation, and has actually been reduced at public two-year institutions. This suggests that labor force productivity is increasing in higher education—contrary to the predominant theory about the inevitability of cost increases to pay for faculty. This could raise questions about consequences of funding cuts on quality, because of the reductions in access to full-time faculty. But in higher education, in contrast to K-12, there is no consistent research showing that access to full-time faculty pays off in greater student learning, student retention or degree attainment. Without such evidence, increasing funding for full-time faculty would seem to be more of an issue of faculty quality of life than a means to produce better educational results.

Where spending is going up, it is not for the most part going into core academic programs. The greatest increases have been in contracted funding for research and public service, and for institutional aid.

Is there any evidence of cost cutting? If so, are tuitions being held down as a result?

There *is* evidence of cost cutting. Spending per FTE student has grown more slowly than inflation at public community colleges and at public master's level institutions over the last several years, with the greatest reductions occurring in spending for the direct cost of instruction. Public research universities, although their cost per FTE grew more rapidly than at other public sector institutions, also showed some evidence of cost containment, especially in comparison to private institutions.

However, spending cuts have not resulted in tuition reductions—and will not, unless costs are cut much more drastically than they have been to date. Tuitions at public institutions continued to increase, despite spending cuts, because the tuition share of total costs increased. If policy makers want to reduce the growth in tuitions, they need to pay attention to costs, and not just prices, and specifically to the student share of costs.

What is the relation between revenue source and spending? Have increased private revenues reduced pressure on growing college tuitions? Will increased spending from endowments mitigate tuition increases?

Revenues have been privatized in both the public and private sectors, predominantly from growing dependence on student tuitions. In the public sector, growing dependency on contracted funding for research and service has reduced institutional discretion over spending

decisions. So even when the institutions have more money, they have less discretion over how to spend the money they have. There is no evidence that private funds, other than student tuitions, are going to pay for instruction and student support in either the public or private sector. The patterns to date suggest that privatization may benefit the research and service functions, but has yet to create infusions of new revenue for core instructional programs.

Are low-income students losing access to higher education as a result of tuition increases?

An increasing percentage of low-income, Black and Hispanic students are enrolling at public two-year and proprietary institutions. It isn't immediately clear whether these enrollment shifts are attributable to rising tuitions mostly impacting low-income students, to greater competition for limited seats in the four-year sector, or to some combination of the two. It is worrisome especially for future generations of first-generation and low-income students. If they are being priced or squeezed out of four-year institutions, it will put more pressure on community colleges and call into question the United States' ability to meet future workforce needs for baccalaureate, master's and professional degree holders.

The larger question of whether growing proportions of low-income students are being left out of higher education altogether can't be answered with the public data that are available at this time.

Can institutions increase productivity as a way to lower costs and, ultimately, tuitions?

Hypothetically they could; they appear not to have done so to date. Productivity may already be rising at public master's and two-year institutions, where degree and certificate completion is increasing relative to enrollments, and costs per completions are growing more slowly than costs per student. Yet cost cutting in the public sector has not translated to tuition reductions. To contain costs to students, institutions need to both contain spending *and* maintain the student share of total costs.

To contain costs to students, institutions need to both contain spending and maintain the student share of total costs.

What should public policy makers do to address the college cost problem?

This last question is the most important—and the most difficult. But the answer begins with redefining the traditional understanding of the college cost problem, from an exclusive focus on tuition and financial aid, to a better understanding of spending and of how spending relates to performance. And it will also require a better way to measure quality, other than student admissions selectivity and revenue.

If past is prologue, that transition won't be easy. Recommendations to focus on costs rather than prices from the 1997 Congressional Commission on College Costs, the follow-up study by the National Association of College and University Business Officers, and the 2006 report of the Secretary of Education's Commission on the Future of Higher Education have resulted in short flurries of activity, followed by a reversion to business as usual. The history seems to be that the policy debate is still focused defensively on accounting-level reporting about costs, rather than on spending in relation to performance. A sustained change will require simpler metrics, better distinctions between performance measures and accounting metrics, regular public reporting of aggregate trends, and greater attention to how spending translates to degree attainment from policy makers at all levels: institutional, state and federal.

It also will require benchmarks that speak to the intersection of costs and quality, rather than the traditional approach of comparing institutions only on the basis of revenues and inputs. This means better information about spending in relation to student learning results and other dimensions of quality—a very deep issue the academy has yet to confront.

Improvements in consumer information may also help. If parents and students knew more about where their money is being spent, and how much of an institution's wealth ends up in the classroom, it would inform their decisions in a way that might change institutional behavior. To do this, cost and productivity measures need to be embedded in regular public accountability reports about higher education, at the institutional level and in state-level systems. So far, the accountability systems being designed by the higher education community speak to prices and financial aid, but not to spending. Similar gaps exist in state-level accountability metrics.

Still, important as the data are, better information will not lead to containment of costs and, ultimately, of tuition, without a concerted effort by institutional leaders and public policy officials. In the final analysis, college costs go up because they can: demand for higher education is extraordinarily high. So long as institutions, parents and students equate money with quality, pressure on institutions to grow revenues to enhance reputation and improve market position will continue. Spending priorities will be dictated by revenue availability, not by public needs for access, instructional quality or degree completion. Meanwhile, growing proportions of students will attend institutions that are struggling to maintain basic services at a quality appropriate to college-level work. And growing inequality in higher education will translate directly to growing social and economic inequality in our society. It is not a trajectory that bodes well for the future.

Important as the data are, better information will not lead to containment of costs and, ultimately, of tuition, without a concerted effort by institutional leaders and public policy officials.

This gloomy scenario is not inevitable, however. Americans are justly proud of their system of higher education, and well understand that high-quality, accessible and affordable higher education is key to our collective economic and civic future. Previous generations found the policy vision to craft the best system of higher education in the world. We have a good foundation on which to build.

Technical appendix

Higher education finance data: The Delta database

Comparison data for postsecondary education draw heavily from the federal government's Integrated Postsecondary Education Data Survey (IPEDS) system, a series of surveys on different aspects of higher education. Though IPEDS has collected data since 1986,[20] definitional changes throughout the years, as well as some major changes in financial reporting standards mandated by the accounting standards boards, often make comparisons over time difficult. To facilitate long-term trend analyses, the Delta Project on Postsecondary Education commissioned a secondary database to be developed that mitigates many of the problems with conducting trend analyses through IPEDS.

The Delta database

The Delta database was developed to study national trends in postsecondary education revenues and expenditures from 1987 through 2005 using institutional data reported to IPEDS; it was supplemented with information from the Financial Institution Shared Assessment Program (FISAP) database beginning in 1994. The information in the database allows institutional spending to be analyzed in relation to student enrollments, financial aid, institutional selectivity, completions, faculty/staff characteristics, and revenue. The database, which includes over 6,000 institutions, will be updated annually.

To perform trend analyses that are not influenced by compositional changes in the number of institutions in operation in any given year, three panels of data—or "matched sets"— were developed (including only degree-granting, public and private nonprofit institutions). The three panels—a nine-year panel from 1997-2005, a 14-year panel from 1992-2005, and a 19-year panel from 1987-2005—include only those institutions that consistently reported data on three variables for each of the years in the selected time period: instructional expenditures, full-time equivalent (FTE) enrollment and degrees conferred.[21]

To provide consistency in reporting, most of the revenue and spending data in this report were analyzed using the 19-year panel (including data reported for single years, such as 2005). The number of institutions included within each sample is shown in Figure A1 (next page);[22] the relatively

[20] IPEDS was preceded by a prior generation of federal data collection, known as the Higher Education General Information Surveys (HEGIS). HEGIS was first implemented in 1965, in reporting categories quite similar to those that evolved into IPEDS.

[21] The three panels are also referred to as the 19-year matched set, the 14-year matched set, and the 9-year matched set.

[22] Some institutions that reported only partial financial data at the campus level were grouped together at the system level; thus those institutions are not individually identifiable in the database, but are nonetheless included.

small difference between the three samples is accounted for primarily by the inclusion of more public associate's and private baccalaureate institutions in the latter years. Even the 19-year set collectively accounts for close to 90 percent of all postsecondary enrollments as reported in the National Center for Education Statistics "Digest of Education Statistics." It compares quite favorably to the sample of institutions used for the annual College Board "Trends" surveys, which included 2,976 institutions in 2007, including proprietary and specialty institutions that we exclude from this sample, and the National Association of College and University Business Officers (NACUBO) sample for tuition discounting (852 institutions) and endowments (785).

Figure A1

Number of institutions included in the matched sets

Sector	1987-2005	1992-2005	1997-2005
Public research	152	152	152
Public master's	239	240	241
Public associate's	723	750	751
Private research	87	87	87
Private master's	314	315	315
Private bachelor's	465	470	473
Total	1,980	2,014	2,019

Imputing data in the Delta Cost Study

A review of the data showed that some institutions did not have data for the FTE enrollment, completion and instructional expenditure variables that were used to place them into the matched sets. In some cases, these gaps covered a number of years for an institution, including those for which there were no data for any years or institutions that either began or ended reporting over the period. However, in other cases, a single variable and/or year of missing data excluded institutions, with otherwise fully reported data, from being included in our panel datasets.

To develop a more robust dataset, we adopted a relatively conservative approach to impute data for an institution any time that there was a one-year gap between two data values (e.g., we would fill in missing 1998 data for a series if there were data for 1997 and 1999). The approach we used was conservative because if the gap between values was two years or more, we did *not* fill in the gap. In addition, when there were missing data at the beginning or end of the series for an institution, we did not try to fill in these values.

It should be noted that most missing data involved gaps of one year (e.g., many schools did not report expenditures for 1996 or degrees in 1999), rather than gaps of two or three years. Data for FTEs were virtually complete (only one imputation was made).

The approach we used to impute data for missing years was as follows:

- For each of the six Carnegie classification groups we use, we estimated a regression for that group for each of the revenue, expenditure, enrollment and completion variables in the dataset. If the data were missing for a year (but were available for both the year before and the year after), we computed a predicted value that was used to replace the missing value (and created a flag variable to indicate there was an imputation for that year).
- The regression specification was as follows: the logarithm of each variable for a year was regressed on its value for the previous year and its value for the next year; the regression also included dummy variables for each year.
- If a year of data was missing, the predictions from the regression essentially created a weighted average of the two years of data around the missing point and then made an additional adjustment based on the overall trends for that Carnegie group for the year. If for example, expenditures in the sector went up in one year and then down to their earlier level, the regression would account for this pattern rather than simply averaging the two years around the missing point.

Figure A2 shows the number of imputed values, by year, for the three variables used to select institutions for inclusion into the three panels, or "matched sets." The imputation succeeded in including a number of large schools in the matched sets (including Johns Hopkins, MIT and Cornell University), which previously had limited missing data.

Figure A2

Number of institutions with imputed values, by year

Year	Instruction	Degrees	FTE
1987	0	0	0
1988	1	1	0
1989	0	1	0
1990	9	0	0
1991	0	0	0
1992	0	1	0
1993	1	0	0
1994	0	0	0
1995	3	0	0
1996	118	0	0
1997	12	5	0
1998	9	0	0
1999	45	35	0
2000	4	1	0
2001	2	1	0
2002	1	1	1
2003	1	1	0
2004	0	1	0
2005	0	0	0
Total	206	48	1

Changes in financial accounting standards in IPEDS

One of the complications of performing cost analyses of trends over a multi-year period comes from changes in financial accounting conventions that have changed IPEDS expenditure and revenue categories. During the 1987 to 2005 year period covered by the database, there have been three changes in IPEDS reporting formats. From 1987 to 1996, both public and private institutions reported financial information using the same form, now known as the "Old Form," with public institutions continuing to use the Old Form through the early 2000s. In 1997, private institutions began reporting under the Financial Accounting Standards Board (FASB) reporting standards. Public institutions also changed reporting standards and began phasing in the Governmental Accounting Standards Board (GASB) standards between 2002 and 2004. Most public institutions were using GASB reporting standards in 2002; though some public institutions continued to use the Old Form through 2003, all institutions were required to report using GASB standards by 2004. The changes in accounting standards between the three formats affect reporting of revenues, expenses/expenditures, and scholarships and fellowships.

Changes in revenue reporting. On the revenue side, the Old Form either grouped together, or left out altogether, many sources of revenue that are now reported in a disaggregated format on the FASB and GASB forms. The Old Form collected only current unrestricted, restricted and auxiliary funds. It did not include revenues related to endowments, loans, and plant and equipment—such as contributions to endowments, interest from student loans, and capital appropriations—which are all now collected under the FASB and GASB reporting standards. Tuition, fees and auxiliary revenues were reported as a gross amount on the Old Form, but are now reported separately on FASB and GASB with tuition discounts, including scholarships and fellowships, subtracted from the revenues. However, allowances to tuition, fees and auxiliary revenues (such as tuition discounts or scholarships) can be added back to the net amounts to allow comparison with the gross amounts reported on the Old Form.

The new GASB format also divides revenues into operating, nonoperating and other revenues, and in several categories (such as state grants and contracts) adding these together will result in a comparable value as reported in FASB and under the Old Form. Finally, investment income is now reported separately under FASB and GASB, and additions to permanent endowments are reported whereas they were excluded on the Old Form.

Changes in expenditure reporting. On the expenditure side, differences pre- and post-FASB/GASB have resulted in some reporting trends that are more difficult to reconcile over time. Though most spending categories remained intact, operation and maintenance of physical plant and equipment and depreciation were both affected by the change in accounting formats. Under the new FASB standards, operation and maintenance expenditures are allocated across functions (such as instruction, research, public service, academic support, etc.), but remain a distinct category on the Old Form and under GASB reporting. The result of this accounting is that private institutions reporting under FASB rules will have higher expenditures across functions than those institutions reporting under GASB or the Old Form. However, operation and maintenance expenditures allocated under FASB can be backed out to facilitate comparisons with the GASB and Old Form reporting.

Depreciation-related expenditures are now included in FASB and GASB with plant and equipment depreciated over expected useful life. Under the Old Form, there was essentially no depreciation recorded for building purchases or construction, and purchases of equipment, vehicles and furniture were recorded as full expenditures in the year they were purchased with no accounting for future depreciation. In addition, interest on debt is now included in both FASB and GASB, but was excluded on the Old Form. So while FASB and GASB both calculate the depreciation of assets and interest on debt similarly, it is impossible to crosswalk these expenditures with the Old Form.

Scholarship and fellowship expenditure reporting also has changed with the shift in accounting formats. The Old Form presented scholarship and fellowship expenditures as a gross amount of awards granted, whereas the FASB reports net grant aid to students and the new GASB reports the net amount in a specific scholarship and fellowship expense category that excludes discounts and allowances.

The Delta database was designed to overcome, as best as possible, differences in reporting standards that occurred between 1987 and 2005. While the changes in revenue reporting can be adjusted to facilitate comparisons over time, some of the changes in the reporting of expenditures, particularly related to depreciation and interest on debt, oftentimes make it impossible to compare expenditures pre- and post-1997 for private institutions, and pre- and post- 2002 for public institutions.

Inflationary adjustments

All data are reported in the database in "current year" dollars. Adjustments for inflation for analytical presentations in this report are made using the Bureau of Labor Statistics Consumer Price Index (CPI-U) for 2005, using a calendar-year base adjustment. Other indices are available for those who prefer to use them. There are at least two specialized price indices designed for higher education, the Higher Education Price Index (HEPI), initially developed by Ken Halstead and now maintained by the Commonwealth Fund, and the other is the Higher Education Cost Adjustor (HECA), developed by the State Higher Education Executive Officers (SHEEO) organization. The HEPI adjusts prices based on a sample of data collected from colleges and universities, reflecting their patterns of spending (professional salaries and wages, equipment, utilities), in contrast to the composition of household expenditures contained in the CPI-U. The HEPI has been criticized because it is perceived as self-referential—for instance, justifying higher spending based on higher spending. The HECA was developed as an alternative, and it adjusts prices using two federal indices, the employment cost index (ECI) and the gross domestic product (GDP) implicit price deflator. The ECI is based on a survey of private sector professional workers, and the GDP deflator reflects general price inflation in the U.S. economy. Between 1990 and 2002, the CPI-U increased an average of 3.4 percent per year; compared to an average change for the HEPI of 4.47 percent per year and 4.07 percent for the HECA.[23]

Means and medians

In analyzing spending, this report primarily uses median spending per FTE student, though in some instances mean spending per student is used. Again, the Delta database includes raw data so other analysts can choose to utilize different measures if they care to.

Most of the higher education cost literature, including international comparisons of U.S. spending compared to other countries, report spending in mean or average spending per FTE

[23] State Higher Education Executive Officers. 2004. "The Higher Education Cost Adjustment: A Proposed Tool for Assessing Inflation In Higher Education Costs," in *State Higher Education Finance, FY2003.* Available at www.sheeo.org/finance/shef_fy03.pdf. See also the CommonFund, "HEPI Questions and Answers." Available at www.commonfund.org/Commonfund/CF+Institute/CI_About_HEPI.htm.

students enrolled. Averages by their nature mask differences in spending across programs within institutions, such as between undergraduate and graduate instruction. When averages are aggregated to sector levels, they mask what are some very wide variations between high-cost/high-revenue and low-cost/low-revenue institutions even though these institutions are all classified as being in the same sector. For example, in 2005, the range of spending among 152 public research universities ran from a low of $8,073 per FTE student to a high of $382,239 per FTE student per year in one institution (though in 150 of the 152 institutions spending was less than $60,000 per FTE student). As Figure A3 shows, the difference between mean and median educational costs is lowest among public two-year and master's institutions, meaning there isn't that much variation across the country in spending patterns for these institutions. The largest differences are in the research universities, in particular the private nonprofit research universities, where there is a 55 percent difference between median and mean measures.

Figure A3

Full educational costs per FTE student, 2005

Sector	Median	Mean	Percent difference
Public research	$20,978	$26,187	25%
Public master's	$11,581	$12,369	7%
Public associate's	$9,291	$9,904	7%
Private research	$34,177	$52,807	55%
Private master's	$15,946	$18,008	13%
Private bachelor's	$18,349	$22,396	22%

Calculated variables and data definitions

Most revenue and expenditure information in the report are adjusted to account for school size by dividing by student FTE enrollments, using the FTE "frequently used variable" reported by NCES. If the latter FTE is not available, an estimated FTE was calculated using fall-reported full-time enrollments and the NCES standard for calculating estimated part-time enrollments based on the sector of enrollment. All FTE figures are for fall enrollments.

In addition to adjusting for enrollments, we have used a number of calculated variables in this report. The most important of these are:

1) Direct instructional costs, full educational costs and total costs

a. The **direct instructional cost** equals instruction expenditures as reported in IPEDS and includes all revenue sources expended within the instructional category.

IC = instruction/FTE student

b. The **full educational cost** includes spending on instruction (IC), as well as student services, the instruction-related share of spending on academic and institutional support, and operations and maintenance.

FEC = (instruction + student services + (IS * (academic support + institutional support + operation & maintenance)))/FTE student

The instruction share (IS) of other spending is calculated as instructional spending as a share of instruction, research, and public service.

IS = instruction / (instruction + research + public service)

c. **The total education and general costs** include all spending for core operating support, including sponsored research but *excluding* auxiliary enterprises.

E&G = (instruction + research + public service + academic support + student services + institutional support + operation & maintenance + scholarships & fellowships)/FTE student

2) Gross tuition and net tuition

Gross tuition is the total tuition and fee revenue reported by the institution. **Net tuition** equals gross tuition revenue minus any institutional grant aid provided by the institution.

Gross tuition = tuition and fees/FTE student

Net tuition = gross tuition – (institutional grants and tuition discounts/FTE student)

3) Institutional grants and tuition discounts

Institutional grants measure institutional spending on grants to students, including revenues that are restricted (such as from private donors) as well as general funds (tuition, unrestricted earnings from endowment, state and local appropriations). The **tuition discount** is the institutional grant share of net tuition and institutional grants.

Institutional grants = spending on grants from both unrestricted and restricted sources

Tuition discount = institutional grants/(net tuition + institutional grants)

4) Cost/price subsidy

Cost/price subsidy juxtaposes revenues against expenditures to indicate who is paying for the cost of educating students. We have looked at these relationships two ways—the subsidies going to those students who pay the full sticker price (sticker/subsidy), and those going to students after discounts and institutional aid (discount/subsidy).

Sticker price share = (gross tuition revenue/FTE student)/(full educational cost/FTE student)

Sticker subsidy = (full educational cost/FTE student) – (gross tuition revenue/FTE student)

Discounted price share = (net tuition revenue/FTE student)/
(full educational cost/FTE student)

Average subsidy = (full educational cost/FTE student) – (net tuition revenue/FTE student)

5) Unrestricted and restricted revenue

Unrestricted revenues—tuition, appropriations, and private gifts, investment returns, and endowment income—are revenues that institutions are generally able to spend on whichever activities they choose. **Restricted revenues**, however, must be spent on specific activities for which the money was received (e.g., contracted research). Though we are unable to precisely calculate which revenues are restricted or unrestricted because monies associated with gifts and endowments may be restricted for specific purposes, we estimate the proportions as:

Unrestricted revenue = (tuition and fees + state and local appropriations + private gifts, grants, and contracts + investment returns + endowment income)/FTE student

Restricted revenue = (state and local grants and contracts + federal appropriations, grant, and contracts + auxiliary enterprises + hospitals, independent operations, and other sources)/FTE student

This estimate clearly overestimates the proportion of revenues that are unrestricted, because some private gifts are restricted by the donor.

Data availability

The Delta database will be made available to interested users. Please contact the Delta Cost Project at deltaproject@deltacostproject.org.

Data appendix

Figure B1

Standard errors for shares of dependent undergraduate enrollment by parent's income, 1996-2004 (in 2002 dollars)

	Standard error for share	
	1996	2004
Below $20,000	0.46	0.27
$20,000-$39,999	0.44	0.25
$40,000-$59,999	0.55	0.28
$60,000-$79,999	0.41	0.28
$80,000 and above	0.71	0.38

Figure B2

Distribution of dependent undergraduate students by parent's income group, 1996 (in 2002 dollars)

Parents' income	Public four-year doctoral	Public four-year nondoctoral	Public two-year	Private four-year doctoral	Private four-year nondoctoral	Proprietary two- and four-year	Other Institutions	Total
Below $20,000	24.7%	15.3%	34.0%	5.5%	14.7%	2.7%	3.1%	100%
$20,000-$39,999	25.8%	15.8%	36.3%	5.2%	12.7%	1.8%	2.5%	100%
$40,000-$59,999	24.8%	16.9%	34.7%	6.5%	13.4%	1.4%	2.4%	100%
$60,000-$79,999	29.2%	14.2%	35.0%	6.2%	12.8%	1.4%	1.1%	100%
$80,000 and above	33.2%	13.8%	25.5%	11.9%	13.5%	0.9%	1.2%	100%
Total	28.3%	15.0%	32.3%	7.6%	13.4%	1.5%	1.9%	100%

Figure B3

Standard errors for distribution of dependent undergraduate students by sector and parent's income group, 1996-2004 (in 2002 dollars)

Parents' income	Public four-year doctoral	Public four-year nondoctoral	Public two-year	Private four-year doctoral	Private four-year nondoctoral	Proprietary two- and four-year	Other Institutions	
Below $20,000	1.79	1.14	1.98	0.68	2.26	0.43	0.50	1996
$20,000-$39,999	1.63	1.34	1.96	0.51	0.96	0.28	0.47	
$40,000-$59,999	1.38	0.92	2.17	0.51	1.35	0.17	0.59	
$60,000-$79,999	1.44	0.95	1.85	0.62	1.48	0.15	0.20	
$80,000 and above	1.78	0.72	1.30	1.30	1.63	0.09	0.13	
Total	1.20	0.61	1.14	0.57	1.25	0.15	0.27	
Below $20,000	1.20	1.04	1.22	1.09	1.08	0.48	0.18	2004
$20,000-$39,999	0.81	0.76	0.88	0.49	0.59	0.29	0.14	
$40,000-$59,999	0.86	0.92	0.89	0.43	0.63	0.24	0.18	
$60,000-$79,999	0.87	0.71	0.89	0.52	0.82	0.23	0.15	
$80,000 and above	0.94	0.64	1.11	0.67	0.89	0.15	0.10	
Total	0.50	0.47	0.58	0.39	0.56	0.18	0.07	

Source: NPSAS, 1996 and 2004.

Note: Enrollment count is for dependent undergraduate students enrolled only at Title IV eligible institutions and branch campuses in the fall of the survey year.

Figure B4

Median revenues per FTE student, 1987-2005 (in 2005 dollars)

Public research institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total revenue	$20,155	$20,331	$20,924	$21,012	$20,821	$21,071	$22,577	$22,170	$23,041	$22,951
Unrestricted revenue	$13,174	$13,214	$13,353	$13,490	$13,191	$13,033	$13,567	$13,766	$14,285	$14,450
Tuition and fees	$3,234	$3,370	$3,347	$3,442	$3,670	$4,110	$4,404	$4,631	$4,636	$4,945
State/local appropriations	$8,920	$8,498	$8,457	$8,574	$8,363	$8,177	$8,085	$8,161	$8,260	$8,276
State appropriations	$8,889	$8,431	$8,430	$8,574	$8,363	$8,177	$8,085	$8,161	$8,217	$8,122
Local appropriations	$118	$101	$108	$67	$73	$69	$74	$76	$88	$103
Private gifts	$702	$696	$751	$737	$813	$895	$954	$959	$954	$1,042
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$57	$74	$80	$73	$66	$59	$73	$77	$94	$105
Restricted revenue	$6,820	$6,447	$6,725	$6,918	$6,910	$7,181	$7,325	$7,887	$8,033	$8,580
State/local grants and contracts	$357	$363	$404	$403	$422	$419	$456	$503	$573	$570
State grants and contracts	$308	$331	$382	$388	$375	$391	$432	$445	$495	$513
Local grants and contracts	$32	$29	$36	$41	$39	$42	$48	$43	$45	$54
Fed. appropriations, grants & contracts	$2,361	$2,500	$2,612	$2,513	$2,617	$2,865	$3,035	$3,286	$3,251	$3,640
Auxiliary enterprises	$2,654	$2,608	$2,646	$2,694	$2,631	$2,645	$2,707	$2,793	$2,896	$2,944
Hospitals, independent operations and other sources	$422	$439	$460	$521	$518	$420	$433	$474	$551	$574

Public master's institutions										
Total revenue	$12,423	$12,356	$12,640	$12,665	$12,336	$12,436	$12,872	$13,033	$13,359	$13,731
Unrestricted revenue	$8,941	$9,069	$9,067	$9,086	$8,812	$8,853	$8,922	$9,245	$9,571	$9,731
Tuition and fees	$2,355	$2,351	$2,409	$2,447	$2,515	$2,856	$3,149	$3,341	$3,396	$3,461
State/local appropriations	$6,082	$6,011	$5,909	$5,841	$5,631	$5,623	$5,390	$5,525	$5,744	$5,630
State appropriations	$6,067	$5,987	$5,902	$5,804	$5,620	$5,618	$5,376	$5,523	$5,743	$5,625
Local appropriations	$209	$234	$323	$155	$394	$501	$238	$641	$156	$219
Private gifts	$113	$124	$133	$144	$147	$167	$163	$172	$176	$179
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$15	$14	$16	$19	$22	$19	$19	$15	$16	$19
Restricted revenue	$3,271	$3,266	$3,356	$3,364	$3,265	$3,454	$3,644	$3,636	$3,649	$3,966
State/local grants and contracts	$178	$173	$181	$196	$229	$231	$270	$285	$362	$375
State grants and contracts	$163	$150	$166	$185	$191	$203	$250	$256	$334	$334
Local grants and contracts	$19	$16	$19	$13	$15	$15	$17	$15	$10	$18
Fed. appropriations, grants & contracts	$921	$880	$1,002	$968	$927	$1,027	$1,094	$1,010	$1,036	$1,057
Auxiliary enterprises	$1,771	$1,629	$1,565	$1,586	$1,572	$1,620	$1,674	$1,731	$1,756	$1,742
Hospitals, independent operations and other sources	$162	$179	$212	$212	$221	$199	$195	$167	$192	$234

Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median.

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Public research institutions**
$23,348	$23,572	$24,546	$25,218	$25,487	$25,164	$26,513	$26,518	$28,085	**Total revenue**
$14,475	$14,875	$15,387	$15,482	$15,436	$15,339	$15,120	$15,200	$15,630	Unrestricted revenue
$4,914	$5,041	$5,180	$5,305	$5,286	$5,769	$6,060	$6,734	$7,096	Tuition and fees
$7,982	$8,346	$8,532	$8,734	$8,675	$8,637	$8,133	$7,754	$7,568	State/local appropriations
$7,982	$8,346	$8,532	$8,734	$8,645	$8,544	$7,955	$7,645	$7,461	State appropriations
$106	$107	$129	$137	$161	$90	$147	$178	$155	Local appropriations
$1,033	$1,167	$1,245	$1,337	$1,351	$816	$742	$637	$705	Private gifts
-$17	$590	$502	$735	$1,575	$138	$272	$277	$334	Investment returns
$116	$118	$131	$139	$132	$183	$674	—	—	Endowment income
$8,071	$7,987	$8,348	$8,760	$9,173	$10,071	$10,578	$11,111	$11,079	Restricted revenue
$573	$588	$646	$688	$733	$1,524	$1,646	$1,694	$1,822	State/local grants and contracts
$530	$530	$579	$638	$678	$707	$655	$664	$696	State grants and contracts
$65	$49	$48	$49	$52	$815	$889	$803	$773	Local grants and contracts
$3,180	$3,204	$3,525	$3,577	$3,636	$3,917	$4,380	$4,536	$4,647	Fed. appropriations, grants & contracts
$2,959	$2,861	$3,105	$3,025	$3,097	$2,745	$2,931	$3,006	$3,067	Auxiliary enterprises
$573	$639	$648	$698	$730	$1,056	$978	$1,055	$1,106	Hospitals, independent operations and other sources
									Public master's institutions
$13,940	$14,174	$14,894	$15,475	$15,538	$15,391	$15,875	$15,879	$15,888	**Total revenue**
$9,924	$10,353	$10,637	$10,762	$10,798	$10,707	$10,665	$10,786	$10,936	Unrestricted revenue
$3,619	$3,645	$3,761	$3,864	$3,864	$3,990	$4,353	$4,740	$5,003	Tuition and fees
$5,718	$5,926	$6,096	$6,396	$6,257	$6,187	$5,714	$5,453	$5,381	State/local appropriations
$5,717	$5,897	$6,091	$6,370	$6,208	$6,131	$5,704	$5,393	$5,328	State appropriations
$343	$609	$572	$199	$200	$1,191	$623	$635	$2,795	Local appropriations
$173	$201	$223	$272	$276	$167	$140	$154	$139	Private gifts
—	—	—	—	$590	$94	$87	$60	$113	Investment returns
$19	$20	$19	$25	$23	$63	$133	—	—	Endowment income
$3,792	$3,903	$4,120	$4,490	$4,501	$4,676	$4,788	$4,771	$4,837	Restricted revenue
$334	$350	$406	$447	$513	$627	$577	$561	$577	State/local grants and contracts
$298	$317	$354	$428	$508	$465	$423	$427	$411	State grants and contracts
$17	$13	$15	$14	$13	$111	$129	$130	$127	Local grants and contracts
$1,010	$1,084	$1,169	$1,207	$1,213	$1,332	$1,349	$1,433	$1,391	Fed. appropriations, grants & contracts
$1,766	$1,732	$1,765	$1,940	$1,872	$1,732	$1,677	$1,803	$1,793	Auxiliary enterprises
$224	$259	$249	$300	$310	$327	$298	$290	$301	Hospitals, independent operations and other sources

(continued on next page)

Figure B4 (continued)

Median revenues per FTE student, 1987-2005 (in 2005 dollars)

Public associate's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total revenue	$8,976	$8,909	$8,889	$9,077	$8,755	$8,908	$9,342	$9,821	$10,043	$10,252
Unrestricted revenue	$6,786	$6,769	$6,601	$6,698	$6,501	$6,549	$6,799	$7,008	$7,220	$7,362
Tuition and fees	$1,290	$1,324	$1,369	$1,373	$1,404	$1,587	$1,759	$1,821	$1,853	$1,851
State/local appropriations	$5,247	$5,239	$5,055	$5,050	$4,847	$4,681	$4,787	$4,920	$5,073	$5,185
State appropriations	$4,062	$3,958	$3,868	$3,812	$3,651	$3,513	$3,525	$3,666	$3,808	$3,811
Local appropriations	$1,592	$1,621	$1,616	$1,556	$1,487	$1,495	$1,661	$1,744	$1,842	$1,860
Private gifts	$42	$43	$46	$53	$50	$55	$62	$61	$61	$68
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$8	$9	$8	$7	$8	$6	$7	$6	$8	$8
Restricted revenue	$1,947	$1,954	$2,070	$2,146	$2,098	$2,261	$2,455	$2,569	$2,625	$2,639
State/local grants and contracts	$251	$259	$280	$295	$266	$262	$256	$283	$317	$339
State grants and contracts	$223	$217	$251	$260	$249	$231	$228	$248	$286	$313
Local grants and contracts	$40	$46	$51	$51	$42	$38	$45	$45	$46	$47
Fed. appropriations, grants & contracts	$797	$799	$898	$924	$927	$1,089	$1,252	$1,313	$1,312	$1,276
Auxiliary enterprises	$564	$570	$590	$598	$590	$620	$638	$639	$652	$660
Hospitals, independent operations and other sources	$187	$188	$189	$201	$181	$152	$138	$138	$172	$180

Private research institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total revenue	$27,945	$29,637	$32,190	$29,437	$31,138	$35,053	$35,754	$34,808	$35,885	$34,362
Unrestricted revenue	$19,063	$19,907	$20,610	$20,952	$21,864	$23,232	$24,012	$23,549	$24,102	$24,806
Tuition and fees	$15,103	$15,932	$16,193	$16,557	$17,405	$18,134	$18,761	$19,224	$19,683	$19,889
State/local appropriations	$765	$726	$693	$661	$584	$305	$216	$209	$219	$258
State appropriations	$765	$726	$693	$661	$583	$305	$216	$209	$219	$236
Local appropriations	$164	$64	$57	$56	$52	$59	$59	$60	$58	$66
Private gifts	$2,370	$2,590	$2,743	$2,562	$2,948	$3,293	$2,845	$3,037	$3,504	$3,196
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$1,028	$1,004	$1,071	$1,155	$1,232	$1,217	$1,194	$1,161	$1,409	$1,435
Restricted revenue	$8,322	$9,654	$9,732	$10,088	$10,269	$11,421	$11,580	$12,264	$11,800	$10,878
State/local grants and contracts	$425	$456	$473	$462	$537	$547	$539	$547	$532	$524
State grants and contracts	$389	$426	$459	$460	$466	$504	$496	$505	$489	$466
Local grants and contracts	$31	$29	$24	$31	$50	$39	$36	$29	$39	$45
Fed. appropriations, grants & contracts	$2,810	$2,918	$2,568	$2,671	$2,761	$2,985	$3,165	$3,468	$3,374	$2,893
Auxiliary enterprises	$3,343	$3,553	$3,832	$3,925	$3,893	$3,927	$4,048	$3,926	$4,123	$3,913
Hospitals, independent operations and other sources	$1,159	$1,081	$1,189	$1,447	$1,191	$1,461	$1,238	$1,220	$1,252	$1,234

Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median.

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Public associate's institutions**
$10,390	$10,765	$11,133	$11,103	$11,064	$11,087	$11,368	$11,693	$11,864	**Total revenue**
$7,513	$7,713	$7,982	$7,879	$7,707	$7,583	$7,599	$7,757	$8,052	Unrestricted revenue
$1,938	$2,009	$2,050	$2,121	$2,086	$2,174	$2,320	$2,557	$2,698	Tuition and fees
$5,190	$5,341	$5,583	$5,568	$5,455	$5,177	$5,071	$4,988	$5,081	State/local appropriations
$3,905	$4,088	$4,189	$4,262	$4,121	$3,871	$3,516	$3,446	$3,549	State appropriations
$1,862	$1,915	$1,921	$1,913	$1,795	$1,949	$1,922	$1,960	$1,865	Local appropriations
$76	$79	$85	$90	$103	$86	$77	$69	$66	Private gifts
—	—	—	—	$41	$49	$46	$36	$60	Investment returns
$10	$10	$11	$13	$17	$17	$4	—	—	Endowment income
$2,681	$2,783	$2,967	$3,012	$3,109	$3,284	$3,570	$3,636	$3,483	Restricted revenue
$363	$390	$408	$446	$505	$518	$622	$592	$556	State/local grants and contracts
$329	$360	$368	$391	$441	$422	$485	$444	$431	State grants and contracts
$40	$47	$48	$54	$47	$91	$103	$108	$113	Local grants and contracts
$1,274	$1,328	$1,412	$1,361	$1,394	$1,556	$1,752	$1,877	$1,816	Fed. appropriations, grants & contracts
$685	$690	$713	$718	$715	$722	$744	$776	$761	Auxiliary enterprises
$183	$189	$182	$191	$203	$172	$138	$135	$131	Hospitals, independent operations and other sources
									Private research institutions
$46,403	$44,886	$42,706	$48,605	$37,592	$34,971	$42,689	$48,991	$46,627	**Total revenue**
$31,706	$31,585	$31,296	$34,930	$24,621	$26,211	$30,506	$37,170	$35,576	Unrestricted revenue
$20,136	$19,856	$21,696	$21,860	$22,765	$23,365	$24,122	$24,949	$25,759	Tuition and fees
$222	$244	$240	$221	$207	$168	$172	$171	$144	State/local appropriations
$222	$244	$231	$221	$207	$168	$172	$171	$144	State appropriations
$69	$74	$73	$73	$75	$70	$77	$59	$29	Local appropriations
$5,154	$5,319	$5,450	$5,324	$6,641	$5,354	$5,054	$4,090	$3,967	Private gifts
$6,846	$7,191	$5,443	$7,554	-$348	-$1,249	$1,805	$7,423	$4,518	Investment returns
—	—	—	—	—	—	—	—	—	Endowment income
$10,319	$10,144	$8,992	$10,594	$10,968	$12,042	$12,504	$12,222	$12,750	Restricted revenue
$368	$364	$394	$419	$411	$466	$437	$401	$371	State/local grants and contracts
$324	$281	$300	$295	$340	$354	$388	$354	$340	State grants and contracts
$54	$60	$64	$105	$90	$131	$135	$99	$84	Local grants and contracts
$2,686	$2,946	$3,383	$3,210	$3,190	$3,830	$4,155	$4,684	$4,191	Fed. appropriations, grants & contracts
$3,974	$3,822	$3,966	$4,237	$4,023	$4,118	$4,271	$4,347	$4,239	Auxiliary enterprises
$884	$966	$883	$1,043	$993	$1,357	$1,533	$1,287	$1,430	Hospitals, independent operations and other sources

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Figure B4 (continued)

Median revenues per FTE student, 1987-2005 (in 2005 dollars)

Private master's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total revenue	$15,558	$15,390	$15,765	$16,370	$16,513	$16,942	$17,342	$18,328	$18,601	$19,096
Unrestricted revenue	$11,216	$11,179	$11,264	$11,778	$11,986	$12,315	$12,581	$13,421	$13,716	$14,485
Tuition and fees	$9,024	$9,169	$9,470	$9,947	$10,068	$10,556	$11,157	$11,756	$12,187	$12,618
State/local appropriations	$505	$526	$506	$472	$412	$253	$202	$214	$194	$177
State appropriations	$509	$527	$508	$472	$416	$252	$198	$206	$192	$177
Local appropriations	$7	$159	$43	$2	$150	$188	$263	$337	$265	—
Private gifts	$1,362	$1,185	$1,183	$1,113	$1,102	$1,037	$975	$1,023	$1,046	$1,181
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$323	$310	$314	$370	$345	$313	$309	$308	$283	$338
Restricted revenue	$4,378	$4,391	$4,393	$4,389	$4,353	$4,446	$4,463	$4,456	$4,575	$4,497
State/local grants and contracts	$321	$341	$373	$342	$377	$481	$481	$433	$462	$419
State grants and contracts	$313	$342	$360	$341	$370	$472	$479	$427	$460	$405
Local grants and contracts	$21	$29	$62	$24	$35	$31	$19	$39	$36	$42
Fed. appropriations, grants & contracts	$841	$815	$870	$886	$820	$893	$937	$841	$849	$769
Auxiliary enterprises	$2,516	$2,542	$2,463	$2,472	$2,432	$2,377	$2,432	$2,421	$2,380	$2,419
Hospitals, independent operations and other sources	$382	$374	$376	$392	$379	$347	$323	$334	$384	$440

Private bachelor's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total revenue	$18,819	$18,836	$19,533	$19,697	$19,944	$20,256	$20,534	$21,015	$22,165	$22,956
Unrestricted revenue	$12,624	$12,608	$12,953	$13,347	$13,661	$13,920	$14,298	$14,823	$15,737	$16,447
Tuition and fees	$9,120	$8,951	$9,581	$9,919	$10,358	$10,725	$11,401	$11,747	$12,079	$12,549
State/local appropriations	$474	$462	$466	$463	$371	$215	$178	$165	$158	$144
State appropriations	$423	$462	$466	$462	$371	$215	$178	$165	$158	$144
Local appropriations	$1,186	$492	—	$4	$3	$1	—	—	—	—
Private gifts	$2,200	$2,159	$2,187	$2,126	$2,088	$2,065	$2,045	$1,985	$2,046	$2,222
Investment returns	—	—	—	—	—	—	—	—	—	—
Endowment income	$843	$803	$846	$804	$776	$717	$710	$707	$727	$849
Restricted revenue	$6,126	$6,029	$6,378	$6,295	$6,249	$6,449	$6,460	$6,594	$6,514	$6,468
State/local grants and contracts	$361	$394	$434	$490	$510	$599	$604	$575	$565	$552
State grants and contracts	$356	$366	$422	$476	$507	$599	$604	$570	$563	$541
Local grants and contracts	$34	$94	$56	$80	$14	$63	$27	$21	$25	$23
Fed. appropriations, grants & contracts	$1,041	$1,011	$1,095	$1,102	$1,043	$1,164	$1,200	$1,120	$1,072	$960
Auxiliary enterprises	$3,692	$3,685	$3,692	$3,600	$3,595	$3,594	$3,613	$3,736	$3,778	$3,845
Hospitals, independent operations and other sources	$450	$428	$476	$513	$464	$442	$432	$425	$460	$512

Source: Delta Cost Project IPEDS database, 19-year matched set.

Note: Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median.

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Private master's institutions**
$20,691	$21,155	$21,807	$22,107	$20,872	$20,403	$21,972	$23,392	$23,194	**Total revenue**
$16,895	$17,011	$17,661	$17,701	$16,963	$16,609	$17,576	$19,296	$19,165	Unrestricted revenue
$12,614	$12,753	$13,589	$13,855	$14,084	$14,545	$15,318	$15,840	$16,229	Tuition and fees
$192	$195	$225	$218	$206	$183	$145	$117	$107	State/local appropriations
$192	$195	$225	$218	$206	$183	$145	$117	$107	State appropriations
—	—	—	$19	$18	—	—	—	—	Local appropriations
$2,007	$1,984	$2,220	$2,061	$1,997	$1,863	$1,692	$1,634	$1,764	Private gifts
$1,372	$1,591	$1,131	$983	$65	-$325	$238	$1,178	$808	Investment returns
—	—	—	—	—	—	—	—	—	Endowment income
$3,687	$3,524	$3,659	$3,770	$3,813	$3,914	$3,983	$4,067	$3,932	Restricted revenue
$193	$196	$212	$211	$216	$227	$215	$194	$178	State/local grants and contracts
$172	$171	$208	$204	$210	$225	$204	$175	$174	State grants and contracts
$43	$31	$31	$54	$44	$40	$21	$23	$19	Local grants and contracts
$385	$383	$409	$367	$369	$398	$391	$412	$419	Fed. appropriations, grants & contracts
$2,395	$2,393	$2,533	$2,555	$2,640	$2,673	$2,719	$2,735	$2,794	Auxiliary enterprises
$317	$332	$329	$347	$356	$366	$348	$415	$382	Hospitals, independent operations and other sources
									Private bachelor's institutions
$25,058	$27,012	$26,613	$26,669	$23,702	$23,253	$25,645	$28,953	$27,959	**Total revenue**
$19,645	$20,963	$20,484	$20,640	$17,700	$17,083	$19,704	$22,087	$21,910	Unrestricted revenue
$12,142	$12,624	$13,633	$13,905	$14,196	$14,750	$14,995	$15,780	$16,028	Tuition and fees
$206	$169	$158	$170	$164	$163	$128	$121	$102	State/local appropriations
$206	$171	$161	$171	$165	$163	$136	$117	$106	State appropriations
—	$22	$16	$28	$28	$951	$29	$18	$14	Local appropriations
$4,220	$4,216	$4,357	$4,300	$4,134	$3,594	$3,314	$3,316	$3,403	Private gifts
$2,721	$3,063	$2,105	$1,734	$47	-$688	$396	$2,298	$1,742	Investment returns
—	—	—	—	—	—	—	—	—	Endowment income
$5,362	$5,544	$5,755	$5,889	$5,784	$5,957	$5,973	$6,107	$5,777	Restricted revenue
$284	$286	$286	$311	$300	$309	$299	$261	$242	State/local grants and contracts
$265	$281	$284	$309	$280	$309	$290	$257	$233	State grants and contracts
$107	$44	$55	$39	$37	$49	$66	$50	$31	Local grants and contracts
$577	$573	$548	$509	$495	$557	$552	$579	$515	Fed. appropriations, grants & contracts
$3,795	$3,825	$3,920	$3,980	$4,006	$4,085	$4,167	$4,218	$4,137	Auxiliary enterprises
$406	$407	$403	$455	$415	$410	$412	$501	$444	Hospitals, independent operations and other sources

Figure B5

Median expenditures per FTE student, 1987-2005 (in 2005 dollars)

Public research institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Educational and general spending	$16,663	$17,029	$17,437	$17,589	$17,669	$17,747	$18,372	$18,751	$19,403	$19,565
Full educational costs	$10,555	$10,307	$10,478	$10,308	$10,532	$10,495	$10,655	$11,018	$11,259	$11,271
Instruction	$6,612	$6,617	$6,524	$6,382	$6,573	$6,648	$6,775	$6,949	$7,083	$6,907
Other educational costs	$3,857	$3,871	$3,869	$3,889	$3,863	$3,866	$3,811	$3,897	$3,951	$4,126
Noneducational costs	$5,967	$6,176	$6,526	$6,617	$7,039	$7,334	$7,919	$7,954	$8,197	$8,200
Instruction	$6,612	$6,617	$6,524	$6,382	$6,573	$6,648	$6,775	$6,949	$7,083	$6,907
Research	$2,238	$2,418	$2,685	$2,698	$2,888	$2,868	$3,144	$3,117	$3,028	$3,158
Public service	$609	$598	$633	$678	$784	$758	$804	$908	$929	$944
Academic support	$1,477	$1,513	$1,596	$1,602	$1,589	$1,627	$1,680	$1,768	$1,757	$1,812
Student services	$712	$706	$743	$770	$792	$795	$797	$819	$874	$879
Institutional support	$1,493	$1,494	$1,486	$1,492	$1,477	$1,441	$1,444	$1,508	$1,545	$1,577
Operations/maintenance	$1,443	$1,401	$1,397	$1,378	$1,356	$1,329	$1,326	$1,363	$1,358	$1,388
Scholarships & fellowships	$1,019	$1,033	$1,127	$1,127	$1,171	$1,322	$1,385	$1,374	$1,478	$1,670
Institutional grants	$287	$301	$335	$364	$413	$463	$505	$521	$575	$650

Public master's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Educational and general spending	$10,073	$10,093	$10,283	$10,358	$10,255	$10,393	$10,631	$10,898	$11,257	$11,675
Full educational costs	$8,305	$8,486	$8,413	$8,538	$8,258	$8,320	$8,419	$8,642	$8,900	$9,037
Instruction	$4,583	$4,575	$4,568	$4,495	$4,432	$4,501	$4,585	$4,719	$4,818	$4,833
Other educational costs	$3,791	$3,764	$3,826	$3,879	$3,763	$3,703	$3,884	$3,969	$4,038	$4,118
Noneducational costs	$1,472	$1,537	$1,656	$1,634	$1,670	$1,856	$1,992	$1,982	$2,023	$2,254
Instruction	$4,583	$4,575	$4,568	$4,495	$4,432	$4,501	$4,585	$4,719	$4,818	$4,833
Research	$75	$77	$75	$85	$86	$96	$99	$110	$109	$110
Public service	$189	$193	$206	$220	$249	$244	$276	$288	$307	$302
Academic support	$895	$917	$926	$944	$914	$938	$960	$1,009	$1,032	$1,065
Student services	$757	$765	$744	$743	$785	$814	$831	$865	$903	$847
Institutional support	$1,190	$1,224	$1,262	$1,232	$1,265	$1,212	$1,261	$1,306	$1,382	$1,402
Operations/maintenance	$1,131	$1,103	$1,052	$1,004	$981	$973	$985	$1,037	$1,039	$1,070
Scholarships & fellowships	$906	$911	$1,046	$1,043	$1,044	$1,190	$1,258	$1,255	$1,291	$1,395
Institutional grants	$122	$147	$159	$173	$180	$197	$219	$209	$234	$236

Source: Delta Cost Project IPEDS database, 19-year matched set.

Notes: 1) Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median. 2) Expenditure data presented exclude auxiliary enterprises, hospital or other independent operations. 3) Because of FASB/GASB reporting changes, data prior to 1997 for private institutions, and data prior to 2002 for public institutions, may not be comparable with earlier years. 4) Prior to FASB/GASB reporting changes, scholarships and fellowships for private institutions included institutional spending on student grants from all sources of revenue. Since the reporting changes, scholarships and fellowship expenditures are separated by funding source and now distinguish between institutional grant aid and scholarships and fellowships. Thus, after the reporting changes, scholarships and fellowships were confined to grant aid expenses paid to auxiliaries (such as dorms).

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Public research institutions**
$19,374	$19,441	$20,051	$21,006	$20,918	$20,220	$20,132	$20,070	$20,978	**Educational and general spending**
$11,162	$11,635	$11,936	$12,009	$11,722	$11,862	$11,479	$11,555	$11,660	Full educational costs
$6,978	$7,031	$7,169	$7,259	$7,262	$7,137	$7,117	$7,294	$7,255	Instruction
$4,262	$4,289	$4,471	$4,459	$4,359	$4,358	$4,206	$4,272	$4,416	Other educational costs
$8,635	$8,678	$8,899	$9,340	$9,583	$8,423	$8,255	$8,718	$9,393	Noneducational costs
$6,978	$7,031	$7,169	$7,259	$7,262	$7,137	$7,117	$7,294	$7,255	Instruction
$3,209	$3,319	$3,453	$3,755	$3,821	$3,760	$3,880	$4,171	$4,149	Research
$896	$890	$940	$1,061	$1,176	$1,223	$1,341	$1,296	$1,452	Public service
$1,862	$1,873	$1,968	$1,947	$1,966	$1,820	$1,814	$1,847	$1,891	Academic support
$894	$927	$927	$963	$958	$963	$976	$992	$990	Student services
$1,572	$1,682	$1,744	$1,803	$1,765	$1,735	$1,800	$1,823	$1,792	Institutional support
$1,374	$1,397	$1,401	$1,458	$1,461	$1,610	$1,502	$1,639	$1,609	Operations/maintenance
$1,596	$1,651	$1,839	$1,813	$1,838	$873	$807	$815	$824	Scholarships & fellowships
$662	$721	$777	$762	$797	$1,002	$1,085	$1,139	$1,194	Institutional grants
									Public master's institutions
$11,615	$11,941	$12,604	$12,766	$12,721	$11,673	$11,661	$11,628	$11,581	**Educational and general spending**
$9,089	$9,394	$9,552	$9,784	$9,732	$9,604	$9,695	$9,705	$9,713	Full educational costs
$4,927	$4,931	$5,094	$5,174	$5,076	$5,044	$5,104	$5,161	$5,064	Instruction
$4,203	$4,381	$4,508	$4,593	$4,526	$4,568	$4,553	$4,502	$4,620	Other educational costs
$2,239	$2,284	$2,480	$2,692	$2,782	$1,934	$1,746	$1,715	$1,734	Noneducational costs
$4,927	$4,931	$5,094	$5,174	$5,076	$5,044	$5,104	$5,161	$5,064	Instruction
$115	$114	$117	$135	$137	$127	$134	$136	$142	Research
$286	$267	$302	$344	$354	$333	$359	$330	$344	Public service
$1,073	$1,142	$1,206	$1,225	$1,263	$1,189	$1,179	$1,184	$1,192	Academic support
$928	$1,026	$1,041	$1,049	$1,066	$1,055	$1,042	$1,050	$1,052	Student services
$1,375	$1,424	$1,483	$1,522	$1,507	$1,522	$1,527	$1,557	$1,544	Institutional support
$1,077	$1,103	$1,095	$1,158	$1,186	$1,212	$1,170	$1,185	$1,246	Operations/maintenance
$1,421	$1,471	$1,610	$1,613	$1,682	$849	$708	$688	$706	Scholarships & fellowships
$259	$274	$287	$316	$373	$371	$417	$406	$422	Institutional grants

(continued on next page)

Figure B5 (continued)

Median expenditures per FTE student, 1987-2005 (in 2005 dollars)

Public associate's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Educational and general spending	$8,152	$8,066	$8,012	$8,154	$7,949	$7,986	$8,514	$8,848	$9,053	$9,225
Full educational costs	$7,024	$7,012	$6,834	$6,928	$6,797	$6,732	$7,111	$7,322	$7,556	$7,684
Instruction	$3,677	$3,662	$3,597	$3,585	$3,549	$3,524	$3,721	$3,865	$3,951	$4,019
Other educational costs	$3,308	$3,307	$3,141	$3,182	$3,130	$3,100	$3,281	$3,406	$3,524	$3,612
Noneducational costs	$817	$868	$951	$967	$994	$1,135	$1,217	$1,338	$1,319	$1,328
Instruction	$3,677	$3,662	$3,597	$3,585	$3,549	$3,524	$3,721	$3,865	$3,951	$4,019
Research	$35	$35	$31	$33	$36	$39	$38	$40	$33	$25
Public service	$121	$120	$116	$123	$115	$113	$131	$141	$144	$146
Academic support	$607	$629	$603	$623	$600	$585	$624	$635	$645	$661
Student services	$692	$693	$680	$705	$700	$697	$744	$775	$805	$829
Institutional support	$1,138	$1,141	$1,100	$1,124	$1,089	$1,067	$1,122	$1,157	$1,255	$1,282
Operations/maintenance	$851	$850	$808	$804	$760	$731	$769	$799	$817	$825
Scholarships & fellowships	$621	$637	$741	$756	$782	$921	$1,020	$1,079	$1,077	$1,047
Institutional grants	$54	$59	$64	$60	$62	$64	$71	$78	$81	$92
Private research institutions										
Educational and general spending	$23,789	$24,330	$24,585	$24,750	$25,176	$28,110	$28,738	$29,706	$31,003	$29,956
Full educational costs	$16,639	$16,747	$16,642	$16,863	$17,758	$18,724	$19,033	$19,389	$19,853	$19,529
Instruction	$9,319	$9,408	$9,911	$9,980	$10,502	$11,038	$11,045	$10,879	$11,135	$11,306
Other educational costs	$6,405	$6,970	$7,227	$7,109	$7,458	$7,690	$7,965	$7,899	$8,104	$8,206
Noneducational costs	$7,950	$8,024	$7,886	$8,987	$8,425	$10,108	$10,307	$10,093	$11,316	$10,242
Instruction	$9,319	$9,408	$9,911	$9,980	$10,502	$11,038	$11,045	$10,879	$11,135	$11,306
Research	$2,575	$2,673	$2,688	$2,881	$2,916	$3,094	$3,226	$3,062	$3,110	$3,060
Public service	$358	$320	$313	$289	$352	$349	$443	$441	$493	$496
Academic support	$2,021	$2,097	$2,232	$2,214	$2,258	$2,473	$2,485	$2,549	$2,562	$2,597
Student services	$1,222	$1,307	$1,302	$1,361	$1,443	$1,458	$1,537	$1,591	$1,620	$1,665
Institutional support	$3,266	$3,242	$3,357	$3,288	$3,324	$3,523	$3,514	$3,564	$3,626	$4,037
Operations/maintenance	$1,973	$2,111	$2,036	$2,036	$1,986	$2,218	$2,304	$2,271	$2,375	$2,411
Scholarships & fellowships	$3,157	$3,168	$3,226	$3,438	$3,486	$4,218	$4,561	$4,943	$5,236	$4,717
Institutional grants	$2,519	$2,595	$2,673	$2,764	$2,983	$3,399	$3,652	$4,233	$4,123	$4,422

Source: Delta Cost Project IPEDS database, 19-year matched set.

Notes: 1) Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median. 2) Expenditure data presented exclude auxiliary enterprises, hospital or other independent operations. 3) Because of FASB/GASB reporting changes, data prior to 1997 for private institutions, and data prior to 2002 for public institutions, may not be comparable with earlier years. 4) Prior to FASB/GASB reporting changes, scholarships and fellowships for private institutions included institutional spending on student grants from all sources of revenue. Since the reporting changes, scholarships and fellowship expenditures are separated by funding source and now distinguish between institutional grant aid and scholarships and fellowships. Thus, after the reporting changes, scholarships and fellowships were confined to grant aid expenses paid to auxiliaries (such as dorms).

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Public associate's institutions**
$9,425	$9,622	$10,179	$10,212	$10,024	$9,535	$9,196	$9,274	$9,291	**Educational and general spending**
$7,874	$8,062	$8,301	$8,344	$8,153	$7,970	$7,857	$7,979	$8,089	Full educational costs
$4,086	$4,103	$4,247	$4,341	$4,169	$3,993	$3,946	$3,967	$4,051	Instruction
$3,692	$3,845	$3,990	$3,999	$3,968	$3,860	$3,752	$3,858	$3,976	Other educational costs
$1,365	$1,440	$1,547	$1,578	$1,594	$1,335	$1,165	$1,148	$1,092	Noneducational costs
$4,086	$4,103	$4,247	$4,341	$4,169	$3,993	$3,946	$3,967	$4,051	Instruction
$22	$22	$24	$25	$23	$24	$25	$23	$23	Research
$147	$158	$157	$156	$152	$154	$141	$152	$158	Public service
$687	$725	$753	$773	$776	$728	$707	$714	$734	Academic support
$852	$878	$930	$927	$902	$888	$871	$873	$899	Student services
$1,293	$1,340	$1,387	$1,388	$1,380	$1,336	$1,314	$1,372	$1,393	Institutional support
$830	$851	$885	$881	$875	$885	$866	$888	$908	Operations/maintenance
$1,084	$1,153	$1,264	$1,237	$1,293	$1,024	$903	$888	$848	Scholarships & fellowships
$97	$99	$103	$113	$117	$122	$125	$127	$136	Institutional grants
									Private research institutions
$28,256	$29,019	$30,927	$30,083	$31,850	$31,409	$33,571	$33,541	$34,177	**Educational and general spending**
$22,478	$24,156	$25,170	$26,071	$26,043	$24,072	$26,102	$24,612	$25,231	Full educational costs
$12,981	$13,216	$13,961	$13,323	$14,157	$13,575	$14,033	$13,502	$14,134	Instruction
$9,279	$10,227	$10,478	$10,601	$11,003	$10,676	$11,085	$10,992	$11,214	Other educational costs
$6,763	$6,578	$7,014	$7,461	$7,541	$8,420	$8,657	$8,718	$8,940	Noneducational costs
$12,981	$13,216	$13,961	$13,323	$14,157	$13,575	$14,033	$13,502	$14,134	Instruction
$3,246	$3,271	$3,709	$3,550	$3,708	$4,571	$4,833	$4,960	$5,353	Research
$585	$612	$572	$614	$568	$599	$571	$654	$628	Public service
$2,859	$3,010	$3,395	$3,256	$3,441	$3,430	$3,489	$3,502	$3,556	Academic support
$2,033	$2,170	$2,397	$2,281	$2,229	$2,355	$2,385	$2,435	$2,475	Student services
$4,370	$4,634	$4,837	$4,678	$4,783	$4,952	$4,888	$5,406	$5,161	Institutional support
$2,484	$2,599	$2,691	$2,670	$2,671	$2,308	$2,539	$2,669	$2,765	Operations/maintenance
$575	$596	$595	$594	$726	$621	$789	$727	$696	Scholarships & fellowships
$4,930	$4,835	$5,658	$5,417	$5,512	$5,793	$6,274	$6,441	$6,538	Institutional grants

(continued on next page)

Figure B5 (continued)

Median expenditures per FTE student, 1987-2005 (in 2005 dollars)

Private master's institutions	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Educational and general spending	$12,687	$12,699	$12,751	$13,485	$13,783	$14,154	$14,612	$14,875	$15,488	$15,625
Full educational costs	$10,062	$9,975	$10,031	$10,451	$10,488	$10,678	$10,993	$11,232	$11,522	$11,799
Instruction	$4,441	$4,353	$4,432	$4,510	$4,514	$4,660	$4,731	$4,893	$5,013	$5,208
Other educational costs	$5,632	$5,518	$5,657	$5,741	$5,761	$5,844	$5,887	$6,032	$6,156	$6,363
Noneducational costs	$2,499	$2,599	$2,790	$2,933	$3,057	$3,373	$3,569	$3,708	$3,971	$3,921
Instruction	$4,441	$4,353	$4,432	$4,510	$4,514	$4,660	$4,731	$4,893	$5,013	$5,208
Research	$103	$107	$110	$83	$75	$72	$98	$87	$123	$126
Public service	$186	$220	$217	$214	$226	$222	$223	$228	$250	$276
Academic support	$869	$845	$843	$910	$890	$925	$984	$999	$1,013	$1,049
Student services	$1,236	$1,223	$1,248	$1,287	$1,330	$1,381	$1,416	$1,493	$1,556	$1,628
Institutional support	$2,296	$2,272	$2,269	$2,327	$2,364	$2,360	$2,307	$2,393	$2,467	$2,552
Operations/maintenance	$1,228	$1,208	$1,171	$1,174	$1,142	$1,162	$1,169	$1,174	$1,174	$1,237
Scholarships & fellowships	$2,078	$2,243	$2,344	$2,531	$2,692	$2,983	$3,279	$3,394	$3,475	$3,672
Institutional grants	$1,230	$1,325	$1,397	$1,482	$1,670	$1,828	$2,038	$2,228	$2,375	$2,577

Private bachelor's institutions										
Educational and general spending	$15,140	$15,100	$15,722	$15,946	$16,451	$17,035	$17,296	$17,744	$18,441	$18,826
Full educational costs	$11,599	$11,460	$11,487	$11,782	$11,991	$12,259	$12,339	$12,484	$12,890	$13,519
Instruction	$4,632	$4,452	$4,535	$4,563	$4,679	$4,869	$4,893	$5,067	$5,082	$5,070
Other educational costs	$7,005	$6,818	$7,012	$7,202	$7,292	$7,423	$7,529	$7,589	$7,793	$8,104
Noneducational costs	$3,367	$3,615	$3,802	$3,962	$4,133	$4,712	$4,901	$5,187	$5,426	$5,457
Instruction	$4,632	$4,452	$4,535	$4,563	$4,679	$4,869	$4,893	$5,067	$5,082	$5,070
Research	$156	$146	$176	$160	$144	$188	$226	$222	$260	$236
Public service	$234	$229	$273	$297	$244	$225	$225	$232	$204	$180
Academic support	$912	$888	$946	$1,002	$1,009	$978	$1,016	$1,056	$1,077	$1,069
Student services	$1,613	$1,636	$1,702	$1,735	$1,852	$1,918	$1,930	$2,008	$2,024	$2,097
Institutional support	$2,923	$2,775	$2,904	$2,904	$2,948	$2,990	$2,959	$3,022	$3,105	$3,287
Operations/maintenance	$1,610	$1,513	$1,556	$1,552	$1,554	$1,606	$1,587	$1,591	$1,600	$1,662
Scholarships & fellowships	$2,962	$3,207	$3,500	$3,610	$3,849	$4,369	$4,537	$4,715	$4,942	$5,131
Institutional grants	$1,801	$1,949	$2,016	$2,229	$2,443	$2,686	$2,945	$3,149	$3,372	$3,818

Source: Delta Cost Project IPEDS database, 19-year matched set.

Notes: 1) Subcategories may not sum to the aggregate categories because medians were calculated separately for each aggregate category and subcategory. For the aggregate categories, the data were summed at the institution level prior to computing the median. 2) Expenditure data presented exclude auxiliary enterprises, hospital or other independent operations. 3) Because of FASB/GASB reporting changes, data prior to 1997 for private institutions, and data prior to 2002 for public institutions, may not be comparable with earlier years. 4) Prior to FASB/GASB reporting changes, scholarships and fellowships for private institutions included institutional spending on student grants from all sources of revenue. Since the reporting changes, scholarships and fellowship expenditures are separated by funding source and now distinguish between institutional grant aid and scholarships and fellowships. Thus, after the reporting changes, scholarships and fellowships were confined to grant aid expenses paid to auxiliaries (such as dorms).

1997	1998	1999	2000	2001	2002	2003	2004	2005	**Private master's institutions**
$14,506	$15,096	$15,529	$15,470	$15,754	$15,550	$15,956	$15,807	$15,946	**Educational and general spending**
$13,262	$13,926	$14,626	$14,499	$14,766	$14,767	$15,168	$15,229	$15,438	Full educational costs
$5,657	$6,001	$6,225	$6,225	$6,393	$6,458	$6,637	$6,542	$6,577	Instruction
$7,404	$7,724	$8,275	$8,109	$8,098	$7,939	$8,316	$8,462	$8,520	Other educational costs
$1,114	$918	$828	$777	$832	$779	$815	$720	$693	Noneducational costs
$5,657	$6,001	$6,225	$6,225	$6,393	$6,458	$6,637	$6,542	$6,577	Instruction
$140	$144	$136	$143	$126	$175	$139	$157	$201	Research
$277	$305	$281	$299	$305	$280	$297	$282	$264	Public service
$1,184	$1,272	$1,407	$1,362	$1,410	$1,442	$1,476	$1,449	$1,475	Academic support
$1,891	$2,039	$2,122	$2,128	$2,112	$2,167	$2,261	$2,269	$2,307	Student services
$2,797	$2,972	$3,181	$3,036	$3,097	$3,142	$3,301	$3,423	$3,387	Institutional support
$1,474	$1,477	$1,508	$1,548	$1,511	$1,357	$1,522	$1,539	$1,498	Operations/maintenance
$1,153	$610	$632	$569	$664	$540	$460	$451	$427	Scholarships & fellowships
$2,857	$2,976	$3,057	$3,106	$3,247	$3,403	$3,674	$3,834	$4,000	Institutional grants
									Private bachelor's institutions
$16,725	$17,536	$18,178	$18,063	$17,767	$18,109	$18,356	$18,303	$18,349	**Educational and general spending**
$14,944	$16,314	$16,782	$16,511	$16,861	$16,889	$17,245	$17,365	$17,314	Full educational costs
$5,692	$6,283	$6,517	$6,388	$6,325	$6,627	$6,821	$6,634	$6,655	Instruction
$9,203	$9,664	$10,197	$10,295	$10,379	$10,179	$10,426	$10,539	$10,598	Other educational costs
$1,743	$1,508	$1,571	$1,487	$1,574	$1,596	$1,528	$1,399	$1,208	Noneducational costs
$5,692	$6,283	$6,517	$6,388	$6,325	$6,627	$6,821	$6,634	$6,655	Instruction
$226	$205	$229	$262	$318	$343	$351	$349	$330	Research
$226	$241	$254	$297	$301	$347	$341	$334	$327	Public service
$1,188	$1,346	$1,420	$1,495	$1,462	$1,530	$1,505	$1,576	$1,582	Academic support
$2,413	$2,700	$2,869	$2,839	$2,871	$3,019	$3,176	$3,157	$3,281	Student services
$3,494	$3,877	$3,972	$3,966	$4,019	$4,128	$4,153	$4,202	$4,194	Institutional support
$2,144	$1,972	$2,029	$2,002	$2,010	$1,827	$2,012	$2,095	$2,100	Operations/maintenance
$2,083	$1,919	$1,861	$1,602	$1,610	$1,672	$1,343	$1,302	$1,245	Scholarships & fellowships
$4,383	$4,562	$4,840	$4,744	$4,801	$5,087	$5,315	$5,494	$5,643	Institutional grants

Figure B6

Distribution of undergraduate students by institution type and race/ethnicity, 1998

Race/ethnicity	Public research	Public master's	Public associate's	Private research	Private master's	Private bachelor's	Proprietary	Other	Total
White	23.2%	14.3%	40.0%	4.0%	6.3%	5.9%	2.0%	4.4%	100.0%
Black	16.4%	20.6%	40.8%	3.4%	5.3%	6.0%	3.3%	4.1%	100.0%
Hispanic	14.8%	12.4%	48.5%	2.8%	6.8%	3.5%	2.9%	8.3%	100.0%
Asian	24.7%	14.4%	43.5%	7.2%	3.4%	2.5%	1.5%	2.9%	100.0%
American Indian	21.3%	13.4%	44.7%	1.8%	3.1%	2.2%	1.7%	11.9%	100.0%
Nonresident	24.3%	14.0%	27.3%	11.2%	8.4%	6.6%	2.9%	5.2%	100.0%
Unknown	14.4%	13.0%	43.6%	7.5%	8.5%	4.4%	4.2%	4.5%	100.0%
Total	21.4%	14.7%	41.0%	4.3%	6.1%	5.4%	2.3%	4.8%	100.0%

Distribution of undergraduate students by institution type and race/ethnicity, 2005

Race/ethnicity	Public research	Public master's	Public associate's	Private research	Private master's	Private bachelor's	Proprietary	Other	Total
White	23.0%	14.1%	40.2%	3.9%	6.2%	5.7%	2.4%	4.5%	100.0%
Black	15.2%	18.3%	43.1%	2.8%	5.3%	5.9%	5.0%	4.3%	100.0%
Hispanic	14.2%	11.2%	51.8%	2.5%	6.2%	3.7%	3.9%	6.7%	100.0%
Asian	24.9%	14.1%	44.4%	6.5%	3.3%	2.4%	2.0%	2.6%	100.0%
American Indian	20.1%	12.9%	43.9%	1.8%	2.9%	2.5%	2.5%	13.5%	100.0%
Nonresident	24.4%	16.5%	29.0%	9.6%	6.8%	6.7%	2.0%	5.0%	100.0%
Unknown	15.0%	12.8%	38.6%	6.7%	8.0%	5.0%	9.3%	4.6%	100.0%
Total	20.7%	14.2%	41.8%	4.0%	6.0%	5.3%	3.2%	4.7%	100.0%

Percentage point shift in distribution of undergraduate students by institution type and race/ethnicity, 1998-2005

Race/ethnicity	Public research	Public master's	Public associate's	Private research	Private master's	Private bachelor's	Proprietary	Other	Total
White	-0.2%	-0.2%	0.2%	-0.2%	0.0%	-0.1%	0.4%	0.1%	—
Black	-1.2%	-2.4%	2.3%	-0.6%	0.0%	0.0%	1.7%	0.1%	—
Hispanic	-0.7%	-1.2%	3.3%	-0.3%	-0.6%	0.2%	1.0%	-1.6%	—
Asian	0.3%	-0.3%	0.9%	-0.8%	-0.1%	-0.1%	0.4%	-0.3%	—
American Indian	-1.2%	-0.5%	-0.8%	0.0%	-0.1%	0.3%	0.8%	1.6%	—
Nonresident	0.1%	2.5%	1.7%	-1.6%	-1.6%	0.0%	-0.8%	-0.3%	—
Unknown	0.7%	-0.1%	-5.0%	-0.8%	-0.5%	0.6%	5.0%	0.1%	—
Total	-0.7%	-0.5%	0.8%	-0.3%	-0.1%	-0.1%	1.0%	0.0%	—

Source: Delta Cost Project IPEDS database, unmatched set.


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