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Executive Summary

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Executive Summary

In the 1998 Amendments to the Higher Education Act (HEA), Congress directed the National Center for Education Statistics (NCES) to conduct a new study of higher education costs (expenditures)[1] paid by institutions and prices paid by students and their families. This report is the final product of Phase I of the study, which relied primarily on existing national data and statistical models.

The framework for the study was influenced by the findings of the National Commission on the Cost of Higher Education, published in *Straight Talk About College Costs and Prices* (1998). This study is one follow-up to the Commission's recommendations.

Congress directed that the study address a number of specific questions:

- How have tuition and fees changed over time compared with inflation?
- How have the major expenditure categories (including capital and technology costs) changed over time?
- How are expenditures related to prices?
- To what extent does institutional aid (i.e., financial aid provided by institutions) affect tuition increases?
- To what extent has federal financial aid been used to offset increases in institutional aid?

[1]In this report, the terms "costs" and "expenditures" are used interchangeably to mean the amount institutions spend to provide education and related educational services to students.

Goals and Limitations of the Study

Phase I had two major goals: (1) to address the questions raised by Congress (listed above) insofar as possible given currently available information; and 2) to examine the usefulness of existing statistical models for testing the relationships among revenues, costs, and prices in higher education.

The study is limited in its ability to provide specific answers to many of Congress' questions for several different reasons, not all of which could be changed in future research. The use of existing data, models, and institutional classification schemes restricted the ability to focus on certain aspects of costs and prices. For instance, institutional differences in types of students served and in program and discipline mix make it difficult for classification schemes to allow generalization across institutions. As a result, the comparison groups are formed of institutions that may not be truly comparable.

In addition, currently available national data are not sufficient to address many questions, reflecting the fact that institutions often do not collect the data required to answer questions about the relationships among prices, revenues, and expenditures. These data concerns are further complicated by several factors, including the absence of consistent definitions for terms such as technology, tuition discounting, and merit aid; the lack of uniformity in defining capital costs; and the lack of consistent institutional accounting conventions. There are differences between the ac-

counting standards used for public and private not-for-profit institutions, which are particularly relevant to the measurement of capital costs. Public and private not-for-profit institutions are subject, respectively, to standards from the Government Accounting Standards Board (GASB) and the Financial Accounting Standards Board (FASB). Recent changes to both sets of standards may improve the data collected by NCES, but it will take several years until all changes are implemented at the institutional level.

Despite these limitations, currently available national data can be used to describe and analyze aggregate trends in costs, prices, and revenues for groups of institutions, as well as to examine the strength of various relationships among these factors. Such analyses can improve and expand upon previous national studies and address some of the issues raised by Congress in the 1998 HEA Amendments.

Study Design and Methodology

Using primarily data from the Integrated Postsecondary Education Data System (IPEDS), this study analyzes trends in costs, prices, and revenues at postsecondary institutions from 1988–89 to 1995–96 (to 1997–98 for public institutions) and explores relationships among the variables. The analyses of relationships use existing statistical models, updated and extended over a longer period of time than in previous studies. All financial data were adjusted for inflation to constant 1999 dollars using the Consumer Price Index.[2] A different model was used for the public sector than for the private not-for-profit sector because research has consistently documented that there are fundamental differences in the financing structures, enrollment markets, and tuition decisionmaking processes between the sectors.

The study also examines relationships between tuition and financial aid variables. Because neither of the two existing models includes financial aid (except institutional aid) among the independent variables, new models were developed to analyze these relationships. In addition to using data from IPEDS, the analyses use data from the Institutional Prices and Student Financial Aid Survey (IPSFA), a new survey that captures information on both tuition and financial aid. At the time of this report, financial aid data from this survey were only available for one year, so an examination of changes over time to allow trends to be identified was not possible.

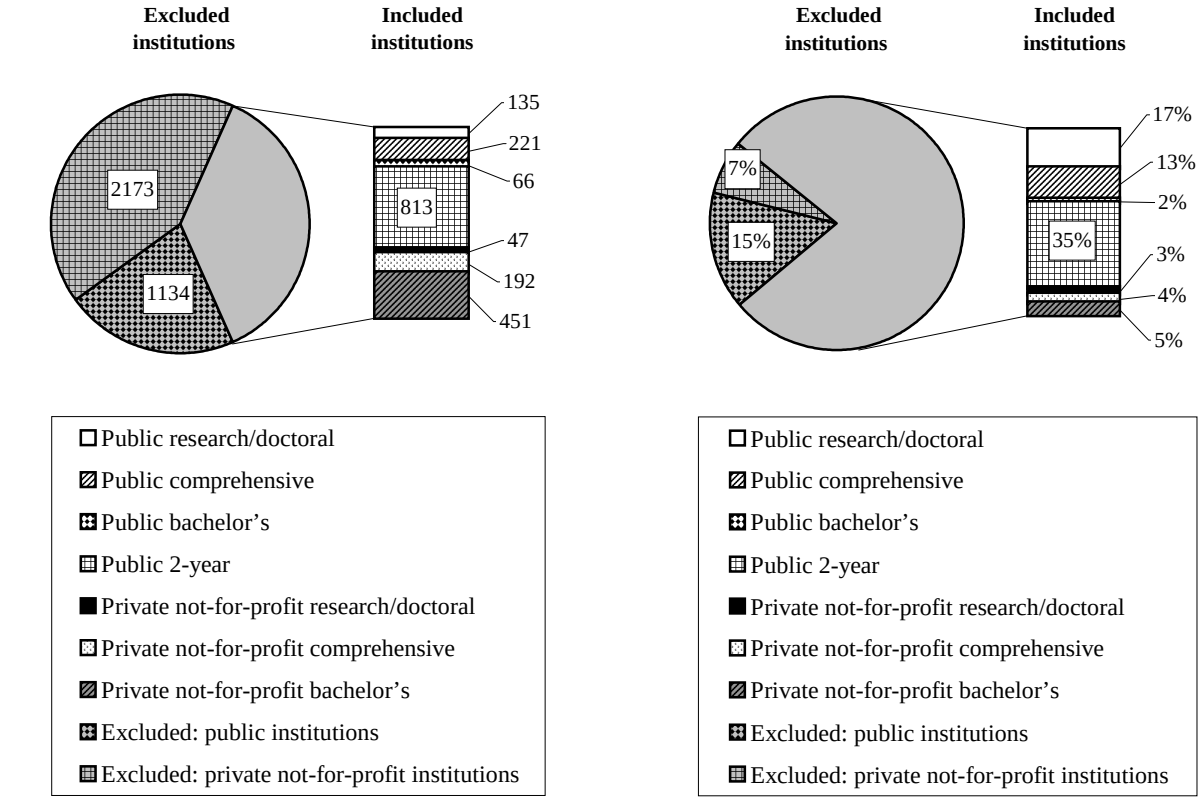
The universe of institutions examined in this study was drawn from the IPEDS universe, although some IPEDS institutions were excluded to increase comparability and to deal with missing data.[3] For example, an attempt was made to include only institutions with primarily undergraduate enrollment, as undergraduate tuition charges were the focus of the study. The institutions in the final universe were grouped by sector; 4-year institutions were then divided into research/doctoral, comprehensive, and bachelor's institutions. All analyses were performed separately on each group of institutions because the groups face different financial pressures and constraints.

The number of institutions and proportions of undergraduate enrollment included in the final groups of institutions are provided in figures 1 and 2. Although the groups of institutions comprise

[2]The Consumer Price Index for All Urban Consumers (CPI-U, 1982-84 = 100) measures change in relation to a base period, in this case the average index level for a 36-month period covering 1982, 1983, and 1984, which is set equal to 100.

[3]See the institutional universe section in Chapter I and the data and methods sections of Chapters III, IV, and V for discussion of the exclusion of institutions.

Figure 1.—Number of institutions included in and excluded from the final universe, by type of institution: 1997–98



NOTE: Refers to final universe for panels of institutions used in chapters III and IV, based on IPEDS data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Full 1998 Collection Year.

Figure 2.—Percent of undergraduate fall enrollment at institutions included in and excluded from the final universe, by type of institution: 1997–98

NOTE: Refers to final universe for panels of institutions used in chapters III and IV, based on IPEDS data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Full 1998 Collection Year.

less than half of all public and private not-for-profit institutions in the IPEDS universe, they enroll more than three-quarters of undergraduates attending IPEDS institutions in the public and private not-for-profit sectors.

To provide a framework for this study's analyses, NCES commissioned papers from seven national experts in higher education finance and student aid. A summary of an invitational meeting convened by NCES to discuss the commissioned papers, as well as the papers themselves, are included in the report.

Findings and Conclusions

The conclusions reached from the trend analyses and models in this report are consistent with earlier research and the views of the expert authors who contributed commissioned papers for this report. The detailed analyses found variations in the nature and the strength of relationships between costs and prices across types of institutions, and within types of institutions over time.

Changes in tuition and other revenue sources over time

In both the public and private not-for-profit sectors, average tuition charges increased at a faster rate than inflation over the period of the analyses, and tuition charges also increased faster than most expenditure categories within the institutions. The share of overall revenue coming from tuition has increased on average for all institutional types in both sectors, compared with relative decreases in other revenue sources.

Across all types of public institutions, in-state undergraduate tuition and fees increased annually—by an average of 4.1 percent at research/doctoral institutions, 4.2 percent at comprehensive institutions, 4.3 percent at bachelor's institutions, and 3.4 percent at 2-year institutions—between 1988–89 and 1997–98 (figure 3). On average, gross tuition revenue accounted for increasing proportions of total educational and general (E&G)[4] revenue over this period, while revenue from state appropriations declined as a proportion of the total.

Across all types of private not-for-profit institutions, undergraduate tuition and fees increased annually—by an average of 3.6 percent at research/doctoral institutions, 4.1 percent at comprehensive institutions, and 3.7 percent at bachelor's institutions—between 1988–89 and 1995–96 (figure 4). On average, gross tuition revenue accounted for increasing proportions of total E&G revenue over this period. At the same time, the proportion of E&G revenue from endowment income and private gifts, grants, and contracts decreased.

Changes in expenditures over time

On the expenditure side for both public and private not-for-profit institutions, instruction expenditures continued to constitute the largest proportion of total E&G expenditures,[5] but remained flat or decreased as a proportion of E&G expenditures. Meanwhile, institutional scholarships and fellowships constituted one of the fastest growing expenditure categories and made up an increasing proportion of total E&G expenditures (figures 3 and 4).

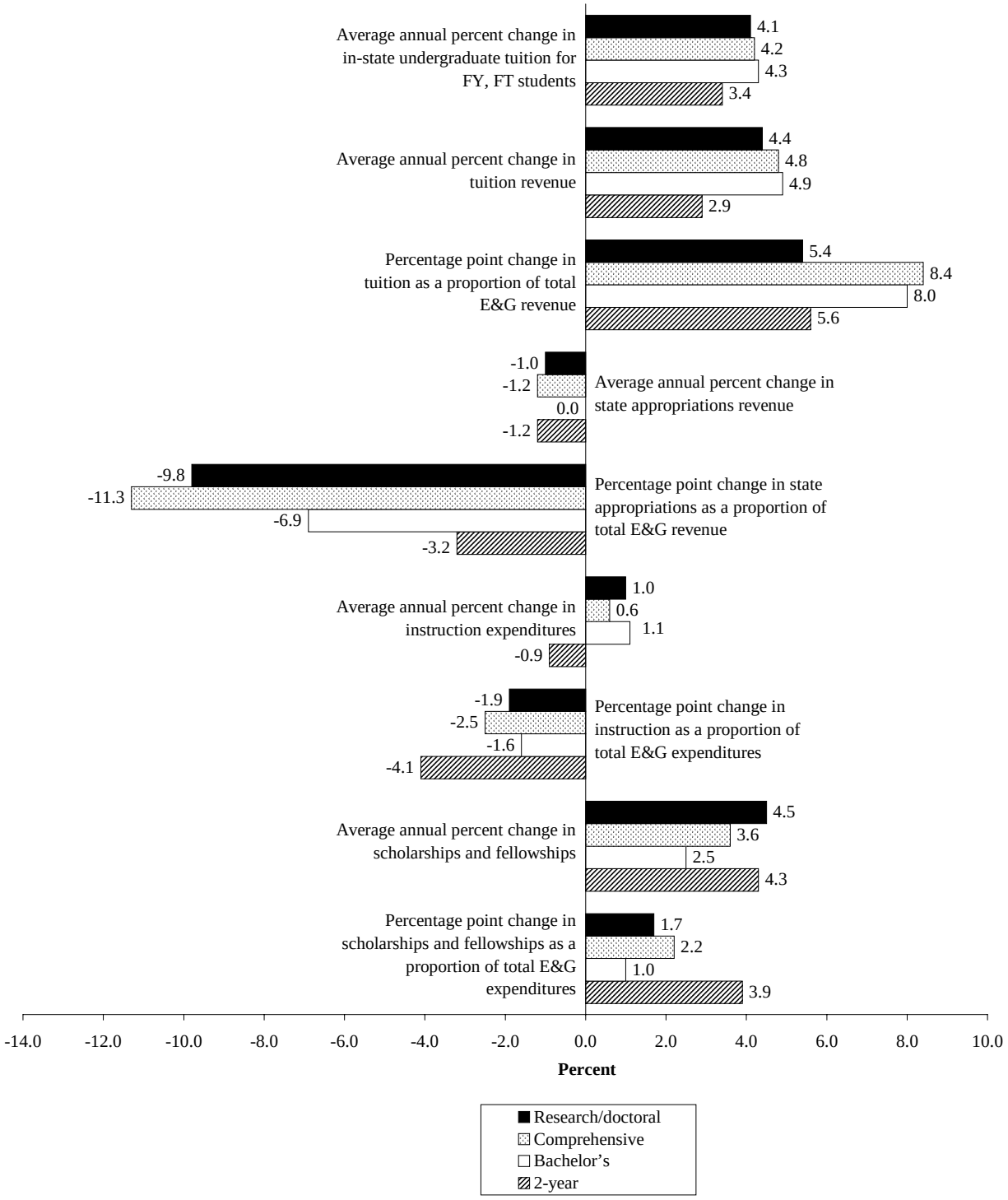
Relationship of tuition changes with changes in revenues, expenditures, and other factors

For *public 4-year institutions*, revenue from state appropriations remains the largest source of revenue and is the single most important factor associated with changes in tuition.

[4]E&G revenues include tuition and fees, government appropriations, government grants and contracts, private gifts, endowment income, sales and services, and other revenue; they exclude revenue for auxiliary enterprises, hospitals, and independent operations.

[5]E&G expenditures include instruction, research, public service, academic support, student services, institutional support, plant operations and maintenance, scholarships and fellowships, and transfers; they exclude expenditures for auxiliary enterprises, hospitals, and independent operations.

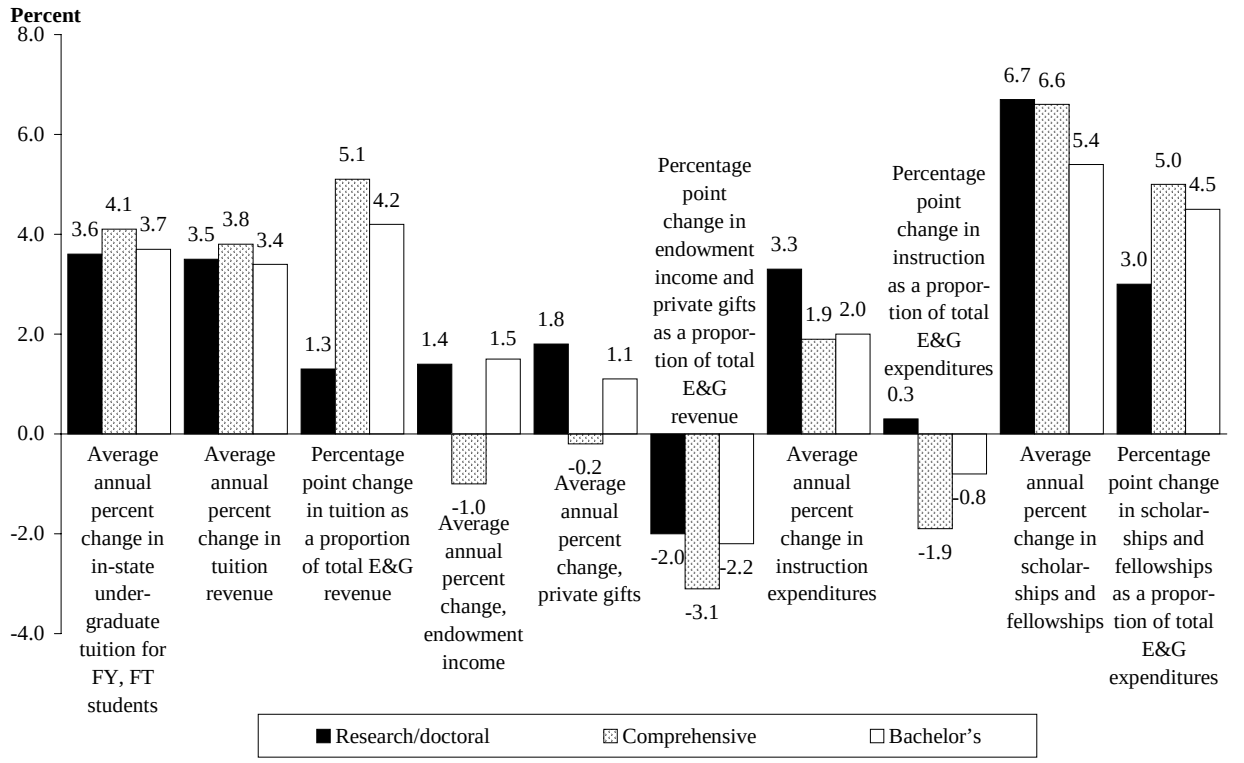
Figure 3.—Percent change in various financial indicators at public institutions, by type of institution: 1988–89 to 1997–98



NOTE: FY, FT means full-year, full-time students. E&G signifies educational and general revenue or expenditures. All changes were calculated using constant 1999 dollars.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Full Collection Years 1989 to 1998.

Figure 4.—Percent change in various financial indicators at private not-for-profit 4-year institutions, by type of institution: 1988–89 to 1995–96



NOTE: FY, FT means full-year, full-time students. E&G signifies educational and general revenue or expenditures. All changes were calculated using constant 1999 dollars.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Full Collection Years 1989 to 1996.

State appropriations revenue decreased relative to other sources of revenue for all types of public 4-year institutions, and in fact experienced real annual decreases for research/doctoral and comprehensive institutions over the time period examined (figure 3).

Decreasing revenue from government appropriations (in which state appropriations make up the majority) was the most important factor associated with tuition increases at public 4-year institutions over the period of analysis. At public research/doctoral institutions, the correlation between change in appropriations and change in tuition was –0.315, a medium sized relationship (the relationships were small at the other two groups of public 4-year institutions).

Although increases in instruction expenditures were associated with increases in tuition at public 4-year institutions, they did not explain as much of the variation in tuition changes as decreases in state appropriations revenue did. At public research/doctoral institutions, the correlation between change in instruction expenditures and change in tuition was 0.087, a small sized relationship (the relationships also were small at the other two groups of public 4-year institutions). In addition, the proportion of total E&G expenditures

for instruction for these groups of institutions declined slightly over the time period examined.

For *public 2-year institutions*, the model found that changes in revenue and expenditure categories accounted for a very low percentage of the variation in tuition changes over the entire period of analysis—7.3 percent—in comparison with the public 4-year sector, which had values ranging from 39.1 percent for research/doctoral institutions to 61.3 percent for comprehensive institutions. This suggests there are some important differences between public 2-year and 4-year institutions that are not captured in this model.

The findings suggest that prices at *private not-for-profit 4-year institutions* were related to both "internal" institutional budget constraints and "external" market conditions. In the private not-for-profit sector, there is no single overriding factor as strongly related to tuition as state appropriations revenue is in the public 4-year sector.

For all types of private not-for-profit 4-year institutions, certain "internal" factors—higher costs in two areas (institutional aid and average faculty compensation levels) and lower levels of revenue from two nontuition sources (endowment income and private gifts, grants, and contracts, together considered philanthropic revenue)—were associated with higher levels of undergraduate tuition. At private not-for-profit research/doctoral institutions, the correlation between the tuition and institutional aid variables was 0.801 and the correlation between the tuition and faculty compensation variables was 0.547, both of these large sized relationships (the relationships also were large at comprehensive and bachelor's institutions, with the exception of the relationship with institutional aid at bachelor's institutions, which was a medium sized relationship). The correlation between tuition and philanthropic revenue was 0.511, also a large relationship (the relationships also were large for the other two groups of institutions).

In addition, certain "external" factors—such as the availability of institutional aid for students, the price of attending public institutions in the same state, and per capita income in the state—were associated with tuition levels for all types of private not-for-profit 4-year institutions. At private not-for-profit research/doctoral institutions, the correlation between tuition and average tuition at public 4-year institutions in the state was 0.357 and the correlation between tuition and per capita state income was 0.294, both of these medium sized relationships (the relationships also were medium sized at comprehensive and bachelor's institutions).

Some differences were found regarding whether and the extent to which other factors—for example, instruction expenditures—were related to tuition, suggesting that the three types of private not-for-profit 4-year institutions face different competitive environments.

Patterns in financial aid

Patterns in financial aid differ considerably among the types of institutions (figure 5), yet some tendencies emerge within each broad institutional sector.

At *public 4-year institutions*, more than two-thirds of first-time, full-time, degree/certificate-seeking undergraduates received aid from any source, on average. The average percentages receiving aid and the average amounts received varied depending on the type of aid and the type of institution, but the highest figures were for student loan aid at all types of public 4-year institutions.

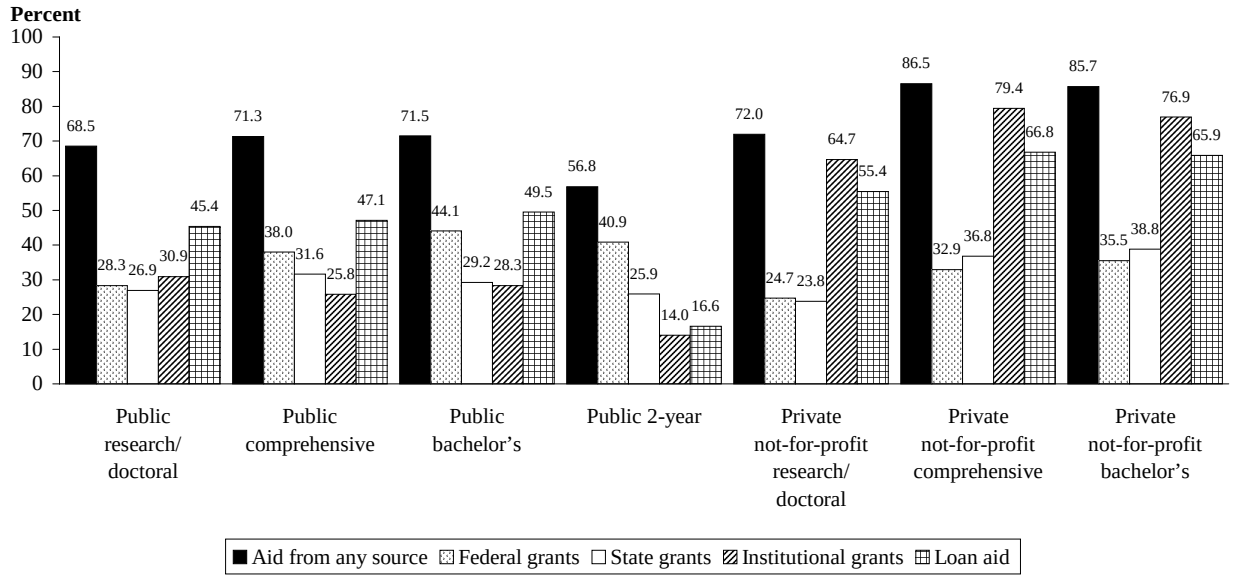
Public 2-year institutions presented a distinctly different situation. At these institutions, on average, 56.8 percent of first-time, full-time, degree/certificate-seeking undergraduates received aid from any source; the highest percentage and the highest average amount were for federal grant aid; and relatively low percentages of students received student loans or institutional aid.

At *private not-for-profit 4-year institutions*, about three-quarters of first-time, full-time, degree/certificate-seeking undergraduates received aid from any source, on average. The highest average percentages of students received institutional aid. Student loan aid was the second highest in terms of the average percentage of students receiving aid.

Relationship of tuition changes with financial aid patterns

Regarding the relationship between financial aid and tuition, the models found no associations between most of the aid variables (federal grants, state grants, and student loans) and changes in tuition in either the public or private not-for-profit sectors. The single exception is institutional aid, which was found to have a positive association with tuition increases for public comprehensive and private not-for-profit comprehensive institutions. The correlation between the change in tuition and the institutional aid variable was 0.103 at public comprehensive institutions and 0.188 at private not-for-profit comprehensive institutions, both of these small sized relationships.

Figure 5.—Average proportions of first-time, full-time, degree/certificate-seeking undergraduates receiving aid, by type of institution and aid source



NOTE: Financial aid data are for either 1997–98 or 1998–99, depending on which year was reported by the institution.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999, Institutional Prices and Student Financial Aid Survey (IPSFA).

Usefulness of statistical models for testing relationships among revenues, costs, expenditures, and prices

In general, the study shows that available national data can be used to explore aggregate trends in revenues, costs, and prices for broad groups of institutions. Models using these data also can point out associations between revenue and expenditure variables and tuition—for example, as state appropriations for public 4-year institutions decrease, the average undergraduate tuition at this type of institution tends to increase. However, these statistical models are correlational in nature and cannot lead to definitive conclusions regarding the underlying relationships among changes in variables over time. Ideally, new models would need to be constructed to explore the simultaneous direct and indirect effects of costs, revenues, financial aid, market conditions and other external influences, family resources, and college prices.

Finally, even with future improvements in definitions and prospective data collection, the technique of cost analysis will always provide only partial answers to questions about the reasons for price increases at colleges and universities. Given the distinctive characteristics of higher education—such as the availability of nontuition sources of revenue—there is little reason to expect a consistent relationship between costs and prices across all institutions or groups of institutions, even though a specific relationship may be present at one particular institution. Nevertheless, the analyses presented in this report highlight trends and point to associations between variables that can lead to a better understanding of the nature of higher education finance.