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Linking Institutional Expenditures to Student Success: An Analysis of Public Institutions of Higher Education

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Abstract

While the primary and secondary education literatures are rich with studies of the impact of school expenditures on student outcomes, the corresponding literature within higher education is much less developed. This research, focusing on public, baccalaureate-granting institutions within the United States, explores the connection between institutional expenditures, institutional characteristics, student characteristics and degree completion. I find that, tested jointly, institutional expenditures are statistically significant predictors of institutional graduation rates, even after controlling for relevant student and institutional characteristics, including institutional selectivity. However, tested individually, not all expenditure categories matter equally. Specifically, I find that increased institutional expenditures on instruction and institutional support are positively related to graduation rates, while increases in expenditures for public service have a negative effect on graduation rates. Expenditures for research, academic support, student services, plant operation and maintenance, and institutional scholarships and fellowships are statistically unrelated. I conclude with a discussion of the implications of these findings for institutions of higher education, students, and legislatures.

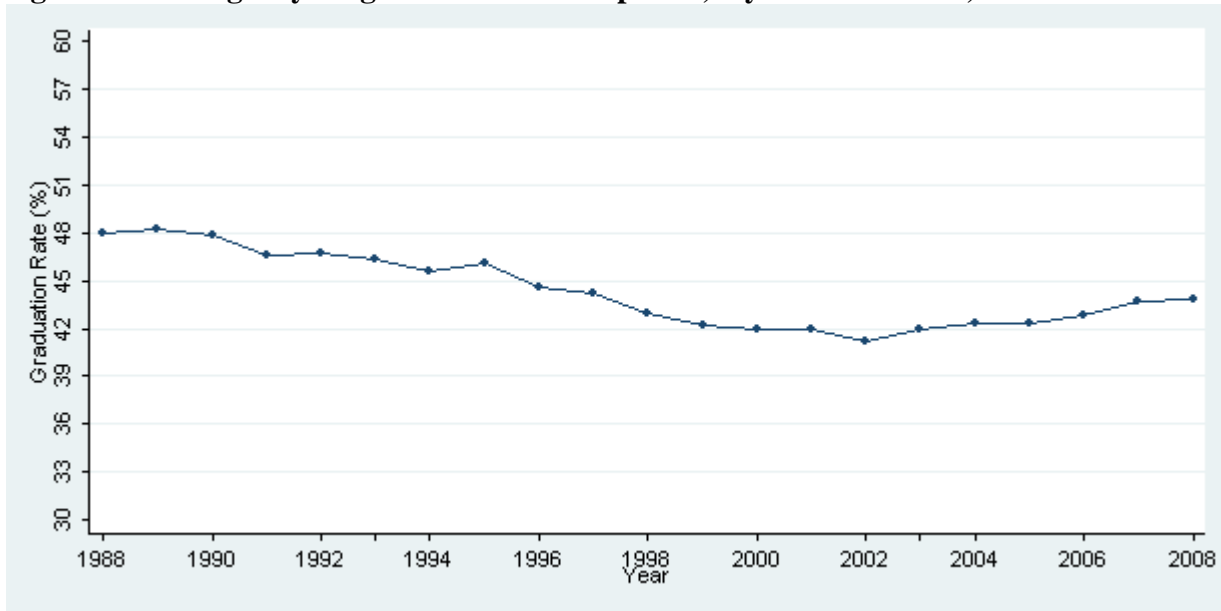
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Introduction and Review of the Literature

Degree completion rates at public, four-year institutions of higher education in the United States have, on average, slightly but steadily eroded over the last two decades (ACT, 2008).

Figure 1 graphically displays this trend over time.

Figure 1: Average 6-year graduation rate at public, 4-year institutions, 1988-2008



Source: American College Testing Program, 2008

As this figure shows, less than half of all students who enroll in a public, four-year institution leave that institution with a baccalaureate degree. However, what Figure 1 conceals is the extent of the variation in graduation rates which exists between institutions. Looking only at the 2000 cohort, data from the National Center for Education Statistics' Integrated Postsecondary Education Database (NCES IPEDS) reveal an average institutional 6-year graduation rate of 43.8 percent, with an associated standard deviation of 16.7 percent. As these numbers reveal, there is wide variation across institutions in terms of student degree completion.

The market for higher education in the United States is plagued with information asymmetry—that is, the producers of higher education know relatively more about the product than the consumers (Pusser, 2007). This asymmetry problem is compounded by the fact that higher education is largely an “experience good”, the value of which cannot be properly determined until well after purchase (Nelson, 1974). As Nelson discusses, consumers purchasing these types of goods often depend on producer signals of quality which function to alleviate this information asymmetry. Graduation rates have evolved as one of these signals.

Certainly, graduation rates are not a perfect measure of institutional efficiency or effectiveness. As Cohn, Rhine and Santos (1989) point out, colleges and universities are complex organizations that simultaneously pursue a number of goals, of which student degree completion is only one. However, much evidence suggests that graduation rates have become an increasingly important comparative metric for the various stakeholders in higher education, including the federal government, state legislatures, institutional administrators, parents, and students (Titus, 2004). As Schmitz (1993) discusses, graduation rates meet the criteria for being a “good” indicator: they are cost effective to generate, feasible to collect, and resonate with a broad lay audience. Parents and students, correctly or incorrectly, rely on this measure as an assessment of the probability of degree completion given enrollment. Similarly, state and federal governments are reassured by high graduation rates that public dollars appropriated for higher education are being used appropriately; some states have even included graduation rates within funding formulas which determine state appropriations for higher education (Alexander, 2000; Titus, 2004). Given the increased financial pressure due to growth in demand from an increasingly diverse student population, increases in research and instructional costs, and

stagnant or decreasing public appropriations, increased responsiveness to stakeholder demands has become a reality for many institutions.

Organizational behavior theory suggests that institutional characteristics and behaviors influence student outcomes (Berger, 2002). Gansemer-Topf and Schuh (2006), among others, argue that institutional financial strategy is a critical component of institutional behavior. However, the empirical evidence supporting the influence of institutional expenditure choices on student achievement is sparse. A recent paper by Volkwein and Tandberg (2008) provides evidence that the performance of a state's higher education system is largely determined by uncontrollable factors such as state affluence and demographics and is relatively less influenced by the strategic actions of state higher education governance. Similarly, the extent to which the institutions that compose state public higher education systems can strategically allocate resources to influence metrics such as completion rates is uncertain. As Ryan (2004) notes, while relatively few analyses have addressed this topic in the higher education literature, there is a rich corresponding literature in the primary and secondary education journals which can provide some insight.

One of the earliest studies in this regard, the Coleman Commission Report of 1966, concludes that family background is the dominant predictor of student success and that school characteristics such as per pupil expenditures are of little importance (Coleman, et al., 1966). This finding is reinforced Hanushek in his seminal review of the literature which concludes that "there is no strong systematic relationship between school expenditures and student performance" (1986). However, others have reached the opposite conclusions, finding empirical support for the connection between per-pupil expenditures and student achievement (Dewey, Husted, & Kenny, 1999; Figlio, 1997; Hedges, Laine, & Greenwald, 1994). Vignoles et al.

(2000), reviewing this literature, conclude that methodological inconsistencies and imperfect data likely explain the majority of these contradictory findings.

However, as Vignoles et al. (2000) recognize, the majority of the empirical analyses that compose this rich literature rely, explicitly or implicitly, on a largely similar theoretical underpinning: the production function approach. This approach assumes the existence of a production function which translates inputs, such as students, teachers, and expenditures into outputs, such as graduation, standardized test scores, or postsecondary matriculation. This transforms the problem of educational achievement into a maximization problem: given a finite number of dollars to spend on education and a variety of competing expenditure categories, what spending allocation represents the most efficient utilization of resources (i.e. accomplishes the highest possible level of student achievement given the resources available)? The greatest value of this approach is perhaps the theoretical clarity that it provides. To quote Hanushek (1989), “if the production function for schools is known, then it is possible to predict what would happen if resources were added or subtracted” (45).

The adoption of the production function approach in the higher education literature has been much less systematic. The bulk of the student retention and persistence models developed within this literature are theoretically grounded in psychological or sociological constructs that focus on student characteristics, such as integration (Tinto, 1975) and satisfaction (Bean, 1980), and largely ignore the impact of institutions on students. The adoption of these frameworks has led to a rich vein of literature that connects student survey data regarding self-reported level of campus engagement and integration to student outcomes such as gains in learning (G. Pike, Kuh, & Gonyea, 2003). However, more recent analyses have questioned the assumption of causality built into these studies, finding that the explanatory power of such variables as student

satisfaction and engagement is greatly diminished once the relevant student characteristics are included in the model (Carini, Kuh, & Klein, 2006; Gordon, Ludlum, & Hoey, 2008).

A review of the recent literature which attempts to link institutional characteristics—including institutional expenditures—to student outcomes reaches very differing conclusions. Toutkoushian and Smart (2001) find that increases in institutional expenditures for academic support are negatively related to student learning. Ryan (2004) finds a positive relationship between expenditures for academic support and instructional expenditures and graduation rates. Titus (2004) finds a negative relationship between institutional expenditures for administration and student persistence. Gansemer-Topf and Shuh (2006) find that expenditures for instruction, academic support, and institutional grants have positive, direct effects on graduation rates, while expenditures for institutional support have negative, direct effects. Finally, Pike, Smart, Kuh, and Hayek (2006) find no direct, systematic relationship between institutional expenditures and graduation rates. Much like the corresponding primary and secondary education literature, the lack of consistency in methodological and sampling choices across these analyses makes synthesis difficult. Ultimately, to quote Pike et al (2006), “the few studies of expenditures and college outcomes have produced inconsistent findings, making it impossible to derive a robust theoretical or conceptual framework for guiding research in this area” (849).

Purpose

The purpose of this research is to explore the linkages between institutional expenditures in a variety of categories and graduation rates while controlling for relevant institutional and student characteristics. Specifically, institutional expenditures in eight distinct categories are analyzed: instruction, research, public service, academic support, student services, institutional support,

plant operation and maintenance, and institutional scholarships and fellowships.¹ This research extends the previous literature in two ways. First, it develops a more complete model of student degree completion than can be found in the previous literature. It includes all relevant institutional and student controls within the theoretical model, allowing for estimation that is minimally impacted by omitted variable bias. It also includes a broader range of institutional expenditure categories than can be found in the previous literature, allowing for a more complete and nuanced understanding of the relationship between expenditures and student achievement. Second, it analyzes a broader sample of institutions than can be found in the previous literature, permitting a greater degree of generalizability than previous studies. This study addresses two primary research questions:

1. Is there a relationship between institutional expenditures and student degree completion, even after controlling for relevant student and institutional characteristics?
2. Within this context, do expenditures in some categories matter more than in others?

Data Description

The sample includes relevant student and institutional characteristics from public, four-year institutions of higher education in the United States. The majority of the data utilized in this study are from the National Center for Education Statistics' Integrated Postsecondary Education Database (NCES IPEDS). The dependent variable is the six-year graduation rate of the 2000 cohort. Student and institutional control variables are from 2000. The institutional expenditure variables utilized in the analysis represent the average of each respective expenditure category from FY2001-2007 and are divided by total institutional full-time equivalent (FTE) enrollment in

¹ Specific definitions of each expenditure category can be found in Appendix I.

order to facilitate comparisons across institutions of varied sizes. The included measure of institutional selectivity is taken from the Barron's *Profiles of American Colleges, 2001* and was merged with the IPEDS data through manual matching based on institution name and location. All institutions with incomplete information are excluded. The final sample includes 278 institutions from an initial universe of 678.²

Empirical Estimation

Based on the above discussion, an OLS regression model was specified in order to test the two research questions. The model is specified as follows:

$$\text{Institutional six-year graduation rate} = \beta_0 + \beta_1(\text{institutional per-FTE expenditures}) + \beta_2(\text{student characteristics}) + \beta_3(\text{institutional characteristics}) + \beta_4(\text{institutional selectivity}) + \varepsilon$$

Table 1 provides a brief summary of the specific expenditure and control variables utilized in the analysis along with expected signs.

INSERT TABLE 1 ABOUT HERE

Instruction and academic support are expected to be signed positively, as these two expenditure categories are the most directly related to student learning and therefore graduation rates.

Assuming that revenues are fixed in the short term and expenditures are zero sum (Ryan, 2004), I expect expenditures on research, public service, student services, institutional support, and plant operations to be inversely related to graduation rates as expenditure in these categories do not directly contribute to student learning. The sign for institutional expenditures for scholarships and fellowships is ambiguous as this category represents institutional spending on both need- and

² A full list of the institutions included in the analysis can be found in Appendix II.

merit-based financial aid. *Ceteris paribus*, additional need-based financial aid would be expected to be negatively related to graduation rates as it would represent the matriculation of lower SES students; conversely, additional merit-based aid would be expected to be positively related to graduation rates as this would reflect the admission of higher ability students. Unfortunately, IPEDS data are not sufficiently nuanced to permit the separation of this expenditure category into its constituent parts for separate analysis.

Most of the control variables are common in the existing literature and warrant no further discussion, with a few exceptions. FTE is expected to be positively signed, reflecting economies of scale in education; however, the quadratic term is expected to be negatively signed, reflecting the diminishing marginal returns of additional enrollments due to the fixed nature of institutional capital assets. The expected sign of the Carnegie classification dummy variables is unknown, as this research represents a first attempt at comparing across Carnegie categories. On one hand, we could suspect that the focus of the Carnegie Baccalaureate institutions on undergraduate teaching could yield higher graduation rates; on the other, it is plausible that the Carnegie Doctoral and Master's institutions attract higher quality faculty who are more effective educators. Finally, selectivity is expected to be positively related to graduation rates (Gansemer-Topf & Schuh, 2006; Melguizo, 2008). The reasoning for this is straightforward: highly selective institutions have more control over their student populations, and can choose to admit only those with higher estimated probabilities of degree completion. Critically, from an institutional perspective, the bulk of the student and institutional characteristics included in the model are exogenously determined, at least in the short run. To put it another way, while the control variables matter in determining student success, they are factors over which institutions—especially public institutions—have little ability to influence.

Table 2 presents the results of the regression. For ease of interpretation, both coefficients and standardized (beta) coefficients are presented.

INSERT TABLE 2 ABOUT HERE

Interpretation of Results

All coefficients were estimated in STATA 10.0 and are estimated with heteroscedasticity-consistent standard errors. As shown by the F-statistic of 88.47 (with an associated P-value of less than .0001), the specified model has statistically significant predictive value over a null (intercept-only) model. Specifically, the R^2 of .8456 indicates that the regression model as specified explains nearly 85 percent of the observed variation in institutional 6-year graduation rates. Following estimation, the multicollinearity among the explanatory variables was evaluated by calculating variance inflation factors (VIFs) for each independent variable. The results of this diagnostic indicate that multicollinearity could be influencing the estimated coefficients as the mean VIF of 6.65 exceeds the suggested maximum mean VIF of 1 (Chatterjee & Price, 1991). However, given the large number of statistically significant coefficients, multicollinearity does not seem to be affecting the estimation (O'Brien, 2007)

The control variables included in the model generally behave as expected with regard to sign and statistical significance. The positive sign on the coefficient of FTE and the negative sign on its quadratic term support both economies of scale in educational provision and diminishing marginal returns to increasing size. Specifically, this analysis shows increasing returns to scale until enrollment reaches approximately 36,000 students, a number which is over two standard deviations above the mean institutional size of the institutions included in the sample. Interestingly, Carnegie classification does not seem to matter, as none of the

coefficients on these variables are statistically significant at generally accepted levels, tested individually or jointly. This suggests that parent and student concerns that the diverse nature of Doctoral and Master's institutions could compromise student degree completion are misplaced.

Consistent with expectation, a joint hypothesis test indicated that, even after controlling for relevant student and institutional characteristics, including institutional selectivity, institutional expenditures are statistically significant predictors of graduation rates ($F(8, 251) = 8.09$, $\text{Prob} > F < .0001$). This finding confirms Berger's (2002) assertion that institutional characteristics do influence student outcomes and is consistent with much of the more recent literature on the subject (Ryan, 2004; Titus, 2004; Gansemer-Topf and Shuh, 2006). Further, joint hypotheses tests of each of the categories of control variables also indicated that student characteristics, institutional characteristics, and institutional selectivity also matter in this context. Clearly, this demonstrates the complexity and nuance involved in determining institutional graduation rates.

An analysis of the coefficients associated with the individual expenditure categories indicates that, consistent with expectation, not all expenditure categories matter equally. Interestingly, while the coefficients are generally signed as expected, all fail to reach statistical significance except for three: instruction, public service, and institutional support. This suggests that, while expenditures for research, academic support, student services, plant operation and maintenance, and institutional scholarships and fellowships may influence other student outcomes, they do not seem to directly impact student degree completion. This is a finding that is somewhat surprising, especially for the academic support category, as this is a category which ostensibly should contribute greatly to student academic success. Perhaps, similar to the corresponding K-12 literature, how the funds are spent matters more than the amount allocated.

Unfortunately, the broad categorization of financial data in IPEDS prevents a more nuanced analysis.

However, for three expenditure categories, expenditures do directly matter for degree completion. As expected, instructional expenditures are positively related to graduation rates. Specifically, holding all else constant, a \$1000 dollar per FTE increase in instructional expenditures yields a .36% increase in graduation rates. Public service expenditures are strongly and negatively related to institutional graduation rates. Holding all else constant, a \$1000 dollar per FTE increase in public service expenditures is associated with a 1.24% decline in graduation rates. This is a finding that is perhaps intuitive, given that public service expenditures by definition are expenditures that are non-instructional and benefit groups external to the institution.

Interestingly, and contrary to expectation and the findings of the previous literature, institutional support expenditures are positive and statistically significant predictors of graduation rates. In fact, as the standardized beta coefficient reveals, of all the expenditure categories, institutional support has by far the strongest impact on graduation rates, an effect which is more than twice as large as that of public service, the expenditure category with the next largest effect. This is, on its face, a difficult finding to reconcile with the previous literature as it directly contradicts the findings of both Ryan (2004) and Gansemer-Topf and Shuh (2006). To quote Ryan (2004), institutional support expenditures “do not have a direct effect on students’ academic and social experiences in college” (102).

However, the organizational behavior literature presents a very different view. Cameron’s (1986) study of organizational behavior in higher education finds that proactive,

strategic management has a statistically and substantively significant impact on institutional effectiveness across a number of dimensions. Top level institutional administrators, including presidents, vice presidents, provosts, and deans, “exercise a great deal of choice and can have major impact[s] on organizational effectiveness...they do this both by exerting influence on, changing, or selecting the environment in which they operate and by changing the configuration and processes of the organization itself in order to improve performance” (Cameron, 1986, 107). As Berger (2002) notes, these administrators are responsible for “programmatic and policy decisions that have widespread effects across the entire campus” (Berger, 2002, 42). As such, it is not unreasonable to suspect that, similar to other markets, the highest performing administrators command higher salaries than their lower performing counterparts (Hall & Liebman, 1998), a phenomenon that would be captured within IPEDS as higher per-FTE institutional support expenditures. Unfortunately, quantitative data of the nature utilized in this analysis are unable to answer the logical next question: namely, what strategies are being implemented by the more effective administrators to enhance student degree completion? Although this research provides a starting point towards addressing this question, more detailed, qualitative research is needed to develop a better understanding of the interaction between institutional administrators, the choices that they make, and student outcomes.

Conclusion

This research has important implications for the study of the relationship between institutions and student outcomes. First, it has shown that, while institutional expenditures matter, many of the factors which predict student degree completion are beyond the immediate control of most public institutions, including, perhaps most importantly, institutional selectivity. This finding reinforces the conclusion reached in prior studies that comparisons of institutions

based on degree completion must be done very carefully (Ryan, 2004). This is an especially critical conclusion given the increased scrutiny paid to graduation rates by federal and state governments. Any policies which reward or punish institutions based on degree completion rates must differentiate between the part of the equation that institutions can and cannot influence.

Second, it has shown that, while many of the determinants of student success are at least in the short term beyond the control of institutions, institutional decisions regarding expenditure choices do have a direct impact on student degree completion. Students clearly benefit from additional expenditures on instruction; conversely, increasing expenditures for public service have a negative impact. Institutional administrators are charged with the delicate task of balancing institutional expenditures in such a way as to promote the mission of the institution while simultaneously serving higher education's most important (and most visible) customers—the students. This research finds suggestive evidence that institutions get what they pay for in terms of administrator quality: higher per-FTE expenditures on institutional support, all else equal, appears to yield administrators that are better able to walk this tightrope and successfully promote institutional effectiveness, at least in terms of degree completion. Ultimately, however, much more research is needed to confirm the validity of these findings.

Table 1: Descriptive Statistics

	Mean	Std. Dev	Expected Sign
6-year graduation rate (%)	46.47	15.65	
<u>Expenditures per FTE (\$000)</u>			
Instruction	5.538	2.587	+
Research	1.737	3.162	-
Public Service	0.831	0.992	-
Academic Support	1.375	0.754	+
Student Services	1.04	0.543	-
Institutional Support	1.587	0.811	-
Plant Operation	1.328	0.601	-
Scholarships and Fellowships	0.974	0.517	*
<u>Student Characteristics (%)</u>			
Pct. 25+	23.122	12.326	-
Pct. part time	6.878	9.332	-
Pct. receiving federal grant aid	31.281	15.347	-
Pct. Nonwhite	27.962	26.593	-
Pct. out of state	14.75	13.78	+
Pct. Female	54.798	8.496	-
<u>Institutional Characteristics</u>			
FTE (000)	10.588	8.737	+
Dummy, Carnegie Doctoral = 1	0.324	0.469	
Dummy, Carnegie Baccalaureate = 1	0.122	0.328	*
Dummy, Carnegie Master's = 1	0.529	0.5	*
Dummy, Urban MSA = 1	0.248	0.433	-
Dummy, College prep required =1	0.493	0.501	+
In-state tuition charge (\$000)	3.144	1.039	+
<u>Institutional Selectivity Dummies</u>			
Barron's Most Competitive	0.011	0.104	
Barron's Highly Competitive	0.047	0.212	-
Barron's Very Competitive	0.158	0.366	-
Barron's Competitive	0.424	0.495	-
Barron's Less Competitive	0.223	0.417	-
Barron's Noncompetitive	0.137	0.344	-

*Unknown

Table 2: Regression Results

6-year graduation rate (%)	Coef.	Robust Std. Err.	Beta
<u>Expenditures per FTE (\$000)</u>			
Instruction	0.361 **	0.178	0.060
Research	-0.068	0.211	-0.014
Public Service	-1.236 ***	0.419	-0.078
Academic Support	0.340	0.891	0.016
Student Services	-0.525	0.806	-0.018
Institutional Support	3.277 ***	0.770	0.170
Plant Operation	1.722	1.150	0.066
Scholarships and Fellowships	-0.764	1.081	-0.025
<u>Student Characteristics (%)</u>			
Pct. 25+	-0.472 ***	0.049	-0.372
Pct. Part time	-0.012	0.052	-0.007
Pct. Receiving Fed. Grant	-0.092 **	0.038	-0.090
Pct. Nonwhite	-0.064 ***	0.021	-0.109
Pct. Out of state	0.015	0.032	0.013
Pct. Female	0.165 ***	0.053	0.089
<u>Institutional Characteristics</u>			
FTE (000)	0.654 ***	0.177	0.365
FTE (000) squared	-0.009 **	0.004	-0.170
Dummy, Carnegie Doctoral = 1 [#]			
Dummy, Carnegie Baccalaureate = 1	-0.654	1.995	-0.014
Dummy, Carnegie Master's = 1	-0.399	1.380	-0.013
Dummy, Urban MSA = 1	-0.946	1.170	-0.026
Dummy, College prep required =1	3.430 ***	0.855	0.110
In-state tuition charge (\$000)	1.524 ***	0.454	0.101
<u>Institutional Selectivity Dummies</u>			
Barron's Most Competitive [#]			
Barron's Highly Competitive	-8.837 ***	3.029	-0.119
Barron's Very Competitive	-18.317 ***	3.451	-0.428
Barron's Competitive	-23.381 ***	3.523	-0.740
Barron's Less Competitive	-27.382 ***	3.597	-0.729
Barron's Noncompetitive	-28.244 ***	3.849	-0.621
Constant	57.340 ***	5.559	
		N=278	
		R ² =.8456	

[#]Omitted (Reference) Category

*** p<.01, ** p<.05, *p<.1

Appendix I: IPEDS Expenditure Category Definitions

Instruction

Expenditures of the colleges, schools, departments, and other instructional divisions of the institution and expenditures for departmental research and public service that are not separately budgeted. Includes expenditures for credit and noncredit activities. Excludes expenditures for academic administration where the primary function is administration (e.g., academic deans). Also includes general academic instruction, occupational and vocational instruction, special session instruction, community education, preparatory and adult basic education, and remedial and tutorial instruction conducted by the teaching faculty for the institution's students.

Research

Funds expended for activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the institution. Does not include non-research expenditures (e.g., training).

Public service

Funds budgeted specifically for public service and expended for activities established primarily to provide non-instructional services beneficial to groups external to the institution. Examples are seminars and projects provided to particular sectors of the community and expenditures for community services and cooperative extension services.

Academic support

Expenditures for the support services that are integral part of the institution's primary mission of instruction, research, or public service. Includes expenditures for libraries, museums, galleries, audiovisual services, academic computing support, ancillary support, academic administration, personnel development, and course and curriculum development. Also includes expenditures for veterinary and dental clinics if their primary purpose is to support the institutional program.

Student services

Funds expended for admissions, registrar activities, and activities whose primary purpose is to contribute to students' emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program. Examples are career guidance, counseling, financial aid administration, and student health services (except when operated as a self-supporting auxiliary enterprise).

Institutional support

Expenditures for the day-to-day operational support of the institution. Includes expenditures for general administrative services, executive direction and planning, legal and fiscal operations, and public relations and development. Excludes expenditures for physical plant operations.

Operation and maintenance of plant

Expenditures for operations established to provide service and maintenance related to campus grounds and facilities used for educational and general purposes. Specific expenditures include expenditures for

utilities, fire protection, property insurance, and similar items. Excludes expenditures made from the institutional plant fund accounts.

Scholarships and fellowships

Expenditures made in the form of outright grants-in-aid, tuition and fee waivers, prizes and trainee stipends to individuals enrolled in formal undergraduate or graduate coursework, either for credit or noncredit. Includes Pell grants and aid to students in the form of tuition or fee remissions. Excludes those remissions that are granted because of faculty or staff status, or for which services to the institution must be rendered, such as payment for teaching, or student loans. Also excludes College Work-Study Program expenses.

Appendix II: Full List of Institutions Included in the Sample

Alabama A & M University	The University of Montana
University of Alabama in Huntsville	Montana State University-Northern
Alabama State University	University of Nebraska at Omaha
The University of Alabama	Peru State College
Auburn University-Montgomery	University of Nevada-Reno
Jacksonville State University	Keene State College
University of North Alabama	Rowan University
Troy University	New Jersey City University
University of Alaska Anchorage	Kean University
University of Alaska Fairbanks	Montclair State University
University of Alaska Southeast	New Jersey Institute of Technology
University of Arizona	Ramapo College of New Jersey
University of Arkansas at Little Rock	The Richard Stockton College of New Jersey
University of Arkansas Main Campus	William Paterson University of New Jersey
Arkansas State University-Main Campus	Eastern New Mexico University-Main Campus
University of Arkansas at Monticello	New Mexico Highlands University
University of Central Arkansas	New Mexico Institute of Mining and Technology
	SUNY College of Agriculture and Technology at Cobleskill
Henderson State University	SUNY at Albany
California State University-Bakersfield	SUNY at Binghamton
California State University-Stanislaus	SUNY at Buffalo
California State University-San Bernardino	SUNY at Fredonia
California State Polytechnic University-Pomona	SUNY at Geneseo
California State University-Chico	SUNY College at New Paltz
California State University-Dominguez Hills	SUNY College at Oneonta
California State University-Fresno	SUNY College at Oswego
California State University-Fullerton	SUNY-Potsdam
California State University-Long Beach	SUNY College at Purchase
California State University-Los Angeles	SUNY College at Old Westbury
California State University-Northridge	SUNY College at Plattsburgh
California State University-Sacramento	SUNY Maritime College
University of California-Berkeley	Appalachian State University
University of California-Davis	East Carolina University
University of California-Irvine	Elizabeth City State University
University of California-Los Angeles	Fayetteville State University
University of California-Riverside	North Carolina A & T State University
University of California-San Diego	University of North Carolina at Asheville
University of California-Santa Barbara	University of North Carolina at Chapel Hill
University of California-Santa Cruz	University of North Carolina at Charlotte
California Maritime Academy	University of North Carolina at Greensboro
Humboldt State University	North Carolina Central University
San Diego State University	

San Francisco State University	North Carolina State University at Raleigh
San Jose State University	University of North Carolina-Wilmington
Sonoma State University	University of North Carolina at Pembroke
Adams State College	Winston-Salem State University
University of Colorado Denver	Western Carolina University
University of Colorado at Colorado Springs	Minot State University
University of Colorado at Boulder	University of North Dakota
Colorado School of Mines	North Dakota State University-Main Campus
Colorado State University	Valley City State University
Fort Lewis College	University of Akron Main Campus
Mesa State College	Cleveland State University
Metropolitan State College of Denver	Miami University-Oxford
University of Northern Colorado	Shawnee State University
Western State College of Colorado	University of Toledo-Main Campus
Central Connecticut State University	Youngstown State University
University of Connecticut	Cameron University
Eastern Connecticut State University	University of Central Oklahoma
Southern Connecticut State University	Langston University
Western Connecticut State University	Northeastern State University
Delaware State University	Northwestern Oklahoma State University
University of the District of Columbia	Oklahoma Panhandle State University
University of Central Florida	Oklahoma State University-Main Campus
Florida Agricultural and Mechanical University	University of Oklahoma Norman Campus
Florida Atlantic University	University of Science and Arts of Oklahoma
Florida International University	Southeastern Oklahoma State University
Florida State University	Southwestern Oklahoma State University
University of Florida	Eastern Oregon University
University of North Florida	Oregon Institute of Technology
University of South Florida	Oregon State University
The University of West Florida	University of Oregon
Albany State University	Portland State University
Clayton State University	Southern Oregon University
Georgia Southern University	Western Oregon University
University of Georgia	Millersville University of Pennsylvania
Savannah State University	University of Rhode Island
Boise State University	Black Hills State University
University of Idaho	Dakota State University
Chicago State University	Oglala Lakota College
University of Illinois at Chicago	South Dakota School of Mines and Technology
University of Illinois at Urbana-Champaign	South Dakota State University
Southern Illinois University Edwardsville	University of South Dakota
Western Illinois University	Austin Peay State University
Ball State University	East Tennessee State University

University of Southern Indiana	The University of Tennessee
University of Northern Iowa	The University of Tennessee-Martin
University of Kansas	Angelo State University
Kansas State University	University of Houston-Downtown
Pittsburg State University	Lamar University
Washburn University	Midwestern State University
Wichita State University	University of North Texas
Eastern Kentucky University	Prairie View A & M University
University of Kentucky	Sam Houston State University
University of Louisville	Stephen F Austin State University
Northern Kentucky University	Sul Ross State University
Western Kentucky University	Texas A & M University
Grambling State University	The University of Texas at Arlington
Louisiana State University and Agricultural & Mechanical College	The University of Texas at El Paso
Louisiana State University-Shreveport	Texas Southern University
McNeese State University	Texas Tech University
University of New Orleans	Texas Woman's University
University of Louisiana at Monroe	West Texas A & M University
Southern University at New Orleans	Southern Utah University
University of Maine at Fort Kent	Utah State University
University of Maine at Machias	Weber State University
University of Maine	Castleton State College
Maine Maritime Academy	Johnson State College
Frostburg State University	Lyndon State College
University of Maryland-Baltimore County	University of Vermont
Morgan State University	College of William and Mary
Salisbury University	James Madison University
Towson University	Norfolk State University
Bridgewater State College	Central Washington University
Fitchburg State College	The Evergreen State College
University of Massachusetts-Boston	Washington State University
Massachusetts College of Liberal Arts	University of Washington-Seattle Campus
University of Massachusetts-Dartmouth	Western Washington University
Worcester State College	Glenville State College
Central Michigan University	Shepherd University
Grand Valley State University	West Virginia State University
Michigan State University	West Virginia University Institute of Technology
University of Michigan-Flint	West Virginia University
Northern Michigan University	University of Wisconsin-Whitewater
Saginaw Valley State University	University of Wisconsin-Eau Claire
Wayne State University	University of Wisconsin-Green Bay
Bemidji State University	University of Wisconsin-La Crosse

Minnesota State University-Mankato
Southwest Minnesota State University
Alcorn State University
Delta State University
Jackson State University
Mississippi State University
Lincoln University
Missouri Southern State University
Missouri Western State University
Truman State University
Northwest Missouri State University
Southeast Missouri State University
Montana State University-Billings

University of Wisconsin-Oshkosh
University of Wisconsin-Parkside
University of Wisconsin-Stout
University of Wisconsin-Superior
University of Wisconsin-Madison
University of Wisconsin-Milwaukee
University of Wisconsin-Platteville
University of Wisconsin-River Falls
University of Wisconsin-Stevens Point
University of Wyoming
California State University-San Marcos
California State University-Monterey Bay
Florida Gulf Coast University

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