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The Price of Prestige: A Study of the Impact of Striving Behavior on the Expenditure Patterns of American Colleges and Universities

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THE PRICE OF PRESTIGE: A STUDY OF THE IMPACT OF STRIVING BEHAVIOR ON THE EXPENDITURE PATTERNS OF AMERICAN COLLEGES AND UNIVERSITIES

BY

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Abstract

This study examined the effect that striving behavior has upon an institution's expenditures. While not the first study to examine such effects, it was the first to look across a multitude of institutional types, spanning seven levels of Carnegie classifications and encompassing public and private not-for-profit bachelors-granting schools to public and private research institutions. Further, by including 8 distinct lines of expenditures, the study was the first to provide such a comprehensive look at changes in institutional expenditures. The study drew on numerous theoretical constructs, including resource dependency, theory of strategic balance, isomorphism, and Perrow's theory of prestige in order to establish the framework for investigating institutional motivations for the pursuit of prestige. Utilizing these frameworks, this study posited 3 general research questions. First, how do expenditure patterns change over the 10-year period studied for nonstriving institutions and striving institutions? Second, how do expenditure patterns compare between nonstrivers and strivers? Finally, how does Carnegie classification impact institutional spending for strivers?

Two separate analyses were conducted in this study. The first utilized descriptive statistics and ANOVA models to determine mean differences between groups, whereas the second utilized descriptive statistics and multilevel modeling—specifically hierarchical linear modeling. The first analysis was conducted for 1,216 four-year, not-for-profit institutions that awarded bachelor's degrees and higher. This group was divided into striving institutions, defined as institutions whose 2010 Carnegie classification was at least 1 level higher on the Carnegie classification scale than their respective 2005 Carnegie classification and institutions

whose Carnegie classification had remained the same over the course of the studied period. The second analysis utilized the group of striving institutions from the first analysis. For this portion of the study, these 203 institutions were divided into 6 separate groups, defined by their final Carnegie classification. Statistically significant results pointed to a dramatic advantage in spending by striving institutions, lending credence to prior studies that found that striving institutions might spend more on various lines of expenditures than their nonstriving counterparts. Further, the study determined that spending patterns for striving institutions varied according to their final Carnegie classification. Finally, findings showed that an institution's striving behavior had a significant impact upon an institution's level of expenditures, as well as the rate of change in spending over time for numerous specific lines of expenditures, including research, institutional support, and academic support expenditures. Possible implications of these findings for theory and practice were discussed, as were possible limitations of the study. Finally, future research was suggested to develop improved methods of analyzing institutional spending and exploring qualitative means of investigating strategic decisions to pursue greater prestige.

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Dedication

This dissertation is dedicated to my wife, Jaclyn. Together, we share this accomplishment, for without your encouragement, compassion and humor it would not have been possible. Your love and support helped me find my voice and persevere as the pages, and months, piled up. Indeed, while this dissertation used a multitude of words to express complex thoughts and opinions, the most important ones I have ever written are simple and few. I will always love you, all the way around my back.

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Chapter 1: Introduction

Problem Statement

College affordability has been one of the greatest concerns for students and their families. It has also raised public policy issues for higher education at the state and national levels (McGuiness, 1997; McKeown-Moak, 2000; National Center for Education Statistics [NCES], 1997; National Commission on the Costs of Higher Education [NCCHE], 1998). Rising prices charged by colleges and universities have not been offset by attendant increases in family income (Stiglitz, Tyson, Orszag, & Orszag, 2000). Student financial aid programs, that have been in existence for many years, at all levels of government, as well as at the institutional level, have not kept pace with these price increases as reported by the College Board (2012). In fact, the purchasing power of these aid programs has actually declined over the past two decades. This effect has become particularly pronounced at private institutions, but it is also a growing concern at public institutions (McPherson & Schapiro, 1998).

Additional resources may be needed to bridge the mounting gap between educational prices and family resources. Increasing college costs have become a national concern (College Board, 2012; Elfin, 1996; NCCHE, 1998; Stansfield, 1998), as well as a concern for students (Scannell, 1996), federal and state government officials (McGuiness, 1997; McKeown-Moak, 2000), legislators (Gladieux & Hauptman, 1996), and higher education officials. Public perception has focused squarely on rising college costs. Since 1983, increases in the higher education price index (HEPI) have continued to outpace concurrent increases in the consumer price index (CPI). Thus, increasing college costs have been the primary focus of public attention and have been used to support the claim that college expenses are no longer affordable by middle-class families.

Bolstering these cries, a plurality of the public believes affordability is declining. Surveys reveal that 74% of those polled believe increases in college costs are excessive, 83% believe students have to borrow too much in order to go to college, and households feel they are being "squeezed" between high costs and the necessity of their children attending college (Immerwahr & Johnson, 2010). In 2000, 31% believed college was necessary for success; in 2009 that number was 55% (Immerwahr & Johnson, 2010). Indeed, families believe college is becoming less affordable, even as it becomes more essential. Public officials responsible for funding college access are of the same opinion, as evidenced by numerous commission reports on college cost (Boehner & McKeon, 2003; Commission on National Investment in Higher Education, 1997; NCCHE, 1998; National Center for Public Policy and Higher Education, 2008).

On the other hand, from the insider's perspective of the colleges and universities themselves, the issue is less one of excessive cost than one of insufficient resources (Rothman, Woechsner, & Woechsner, 2011). In the current market for higher education, institutions are forced to compete for students and faculty by consistently demonstrating their comparative advantage in terms of student and facility quality and state-of-the-art facilities (Jacob, McCall, & Stange, 2013). In effect, these institutions are placed on a treadmill, and to remain competitive, they must be constantly engaged in improvement efforts on all fronts. At the same time, public investment in higher education, especially at the state level, has been steadily declining (College Board, 2012). Institutions are caught in the vise between the drive to compete and the decline in public funding—in effect turning to tuition as the only revenue stream that they can organizationally control. Raising tuition is the only lever that institutions caught in this vise have left.

Higher education insiders are not convinced rising costs are a serious issue (Archibald & Feldman, 2011). The fact that colleges and universities, individually and collectively, do little to control costs may suggest insiders do not think cost alone is a serious problem. However, it may, instead, suggest that colleges and universities as organizations can do little to control rising costs. In higher education, the competition for students, faculty, and financial support produces external pressures that influence organizational choices (Pfeffer & Salancik, 2003). Indeed, these organizational, or strategic, choices may be driven by the desire to improve institutional attractiveness or prestige in order to acquire better students and faculty. Coupling this internal strain with the constant external pressure exerted by many other institutions competing for the same students and faculty in the same way, one can see how this never-ending one-upmanship, this drive for greater institutional prestige, can lead an institution down a path of increasing costs.

Maximization of Prestige by Higher Educational Institutions

The drive for prestige forces many schools to act irrationally. Institutions find themselves offering generous financial aid packages to top students while at the same time relaxing admission standards to those students who are willing and able to pay the full price (Brewer, Gates, & Goldman, 2005; Stecklow, 1995). One result is that an increasing number of students who do not need aid are getting it while a decreasing number who do need it are not getting it. Geiger (2002) wrote about the phenomenon of escalating tuition and the "high tuition/high aid" model, which has the effect of attracting increasingly wealthier student clientele at elite institutions due to their ability to pay the sticker price, "furthering processes that perpetuate social advantage" (p. 7).

Ehrenberg (2003) made the case that the measure of an institution's financial resources employed by *U.S News and World Report* (USNWR) "encourages institutions to spend more, not to spend less" (p. 158). Schools spend money to attract top-level students, including upgrading dormitories, student unions, computer facilities, and campus social events (Brewer et al., 2005; Kirp, 2003). Ehrenberg (2003) argued that in order to keep tuition down, schools should strive to keep expenditures down. However, schools are rewarded in the USNWR methodology for spending more per student. Thus, many institutions are caught in a reputational arms race and do not behave in a socially, or economically, efficient way. The economic inefficiencies inherent in concerns over prestige are discussed in detail in the prestige-maximizing section of the literature review.

Institutions that wish to increase their prestige are caught in a bind. Brewer et al. (2005) argued that the payback for pursuing prestige in higher education includes flexibility in admissions and financial aid, reduced teaching loads for faculty, increased private donations, and increased state appropriations. The authors concluded, however, that although "prestige is indeed rewarding in the U.S. higher education industry . . . the pursuit of prestige is a risky venture for institutions. It may also not be in society's best interest" (p. 132). Indeed, Astin (1992) made the claim that emphasizing reputation building "has generally negative consequences for undergraduate education" (p. 51). Prestige building may result in such large, detrimental consequences for some of the reasons outlined above, such as excessive expenditures and institutions that do not meet the needs of students who do not add to their prestige.

Identifying Striving institutions

It is a challenge to isolate characteristics of striving across institutions because each institution's striving decisions are, perhaps, inevitably linked to a specific market, competitors,

identity, leadership, and even history at any given time (O'Meara, 2007). Every institutional decision is influenced by a large number of factors, both internal and external. Indeed, such a complex situation makes it difficult to isolate specific behaviors and attribute them solely to the pursuit of prestige (O'Meara, 2005). Likewise, striving toward greater prestige may look different for a small liberal arts college in the fourth tier of the USNWR rankings than a comprehensive public 4-year institution. Indeed, different institutions may decide to employ their limited resources in different ways.

Regardless, it may prove useful to identify characteristics that may be used to diagnose institutional striving behavior. Building upon the earlier work of Aldersley (1995), Monks and Ehrenberg (1999), and drawing heavily from O'Meara (2007), it may be possible to posit a possible list of indicators (of striving) that may serve the discussion here. Table 1 summarizes such characteristics suggested by O'Meara and others.

Indeed, these characteristics might be used in some way to define a set of institutions as "striving" for the purpose of further study. Further, one may use these indices as a way to explain what happens at the institutional level during the striving process. The next section builds on the previous one, exploring specific organizational behavior of institutions striving toward greater prestige. Although institutions seek prestige in a variety of venues, this work focused on five areas that have been identified by researchers as areas of prestige-seeking behavior. Not coincidently, the operational areas parallel to those indicated above in this discussion of possible indicators of striving. Directly following these descriptions, institutions that are most likely to engage in striving behavior are discussed.

Table 1

Characteristics of Striving Institutions

Area of institutional operations	Indicators of striving
Student recruitment and admission	• Increased selectivity over recent years, including high school rank, GPA, and SAT/ACT • Increased use of early decision in admissions • Increase in institutional student grants
Faculty recruitment, roles and reward systems	• Greater attempt to hire "faculty stars" with research emphasis • Rise in faculty salaries, grants, awards, and prestigious fellowships • Rise in expectations for research for tenure and promotion • Decrease in faculty teaching loads
Curriculum and programs	• Shift of funding away from remedial programs to honors programs • Addition of graduate programs and shift in emphasis from undergraduate to graduate programs • Focus among faculty on making programs more rigorous
External relations and institutional identity	• Institutional actors working to shape an internal narrative about striving to frame major decisions • Institutional actors using various means to shape an external image of the institution as more prestigious • Recent hiring of one or more senior-level administrators from institutions of greater prestige • Increase in private grants and awards
Resource allocation	• Increase in spending on infrastructure • Shift in resources from instruction to administrative support • Investments made in competitive amenities • Increased spending on research activities

The Striving Process

Student recruitment and admissions. Institutions gain prestige when the quality or qualifications of their incoming students improve. Striving toward greater student selectivity means lowering student acceptance and yield rates. One striving behavior in this category is to actively solicit application from lesser-qualified students to make the admissions process more selective (Ehrenberg, 2003). Another strategy is to reject well-qualified applicants that the institution believes will attend Ivy League institutions, relegating them to the waiting list (Ehrenberg, 2003).

Further, another strategy is to ramp up the marketing of the institutions through multicolored brochures, website programs, social media outlets, and recruitment efforts. This strategy is aimed at both increasing the number of applicants and attracting more students with high GPA/SATs (O'Meara, 2007). Winston (2000) pointed out that part of making the institutions more desirable has to do with the "competitive amenities"—such as athletic facilities, residence halls, enhanced student services, and technology in classrooms—that institutions are willing to invest in as part of the "positional arms race" (O'Meara, 2007). Indeed, striving institutions are likely to market these amenities aggressively to improve acceptance and yield rates.

Another well-documented strategy for improving acceptance rate and yield with clear economic advantages for institutions is to admit more students through early decision (Avery, Fairbanks, & Zeckhauser, 2001). Early decision has benefits for both institutions and students, in that institutions get students for whom the institution was a top choice, thus lowering admittance rates and increasing yield (Ehrenberg, 2003). This helps institutions improve their

student selectivity. Students for whom the institution was a top choice are given an advantage in the process and find out they were accepted early in the admissions cycle.

What are the economic benefits to institutions? Early decision applicants are more likely to be from upper- or middle-income families and thus require less institutional grant aid than other applicants (Ehrenberg, 2003). Thus, increasing the number of early decision students helps to "dampen the growth rate of financial aid budgets" (Ehrenberg, 2003, p. 154). As such, early decision improves an institution's chances of getting full tuition price from students and makes these colleges and universities much less affordable and often unreachable for students from low- or middle-income families who cannot commit to an institution without knowing what financial aid it can provide (Machung, 1998). A less favorable ranking one year has been found to influence institutions to provide more generous grant aid the next, whereas higher-ranking institutions do not have to offer steep discounts to attract students with high entrance qualifications (Monks & Ehrenberg, 1999).

In summary, striving behavior in prestige-seeking institutions involves specific actions to increase student selectivity through improving acceptance rate and yield. These efforts rarely come cheap, though they may have a significant financial benefit if they are successful (O'Meara, 2007).

Faculty recruitment, roles, and rewards. Institutions seeking greater prestige will actively recruit more research-oriented faculty, even in institutions with primary teaching emphasis (Ehrenberg, 2003). A significant component of this effort will involve increasing faculty salaries and funds for new research, especially to "raid" star faculty from other, more prestigious universities. Because faculty salaries are a significant portion of the faculty resources criterion for USNWR rankings, institutions have a significant incentive to increase faculty

salaries outside of market conditions or any internal desire to do so (Ehrenberg, 2003; O'Meara, 2006).

A second faculty-driven striving strategy is raising promotion and tenure requirements. Research on striving institutions seems to suggest that institutions look to aspirational peers for norms for faculty work in order to raise expectations for tenure (Bloomgarden & O'Meara, 2007; Finnegan & Gameson, 1996; Ward & Wolf-Wendel, 2005). Indeed, research suggests that values held by faculty on personnel committees, such as "the best scholarship brings the most prestige to our positions," will likely influence the evaluation of faculty work in striving institutions (O'Meara, 2007). Further, Finnegan and Gameson (1996) studied comprehensive universities trying to adopt "research cultures." They found that the "cultural schema" of research culture was reinforced as key resources such as faculty hiring processes and promotion and tenure systems were employed to support it. Therefore, whether intentional or not, institutions pursuing prestige will often up the ante in terms of what is expected from faculty in research and external funding for promotion and tenure.

Indeed, the scarcity of faculty jobs, especially tenure-track jobs, in many disciplines contributes to an institution's behavior in raising expectations and standards for faculty work. The oversupply of applicants with research training, or an emphasis on research, who cannot find positions in research universities but who want to work in academia facilitates institutions and the departments within to build research cultures in places that were previously more focused on teaching and service (Ehrenberg, 2003).

Finally, a third striving behavior in faculty roles relates to workload. In their 1994 study, Massey and Zemsky (1995) found that as institutions pursued prestige, faculty and administrators decreased their total course load in exchange for greater faculty discretionary

time, which was used for research and scholarship, consulting and professional activities, and specialized teaching at the graduate level. Indeed, striving institutions seemed to decrease faculty teaching load to liberate time for activities likely to bring the institution prestige.

Curriculum and programs. Over the last two decades, many institutions strove to move from one Carnegie classification to another that they perceived to be more prestigious (Aldersley, 1995; Morphew, 2002). One institutional behavior associated with such aspirations in master's and some liberal arts colleges was adding more graduate-level programs and a shift of resources from undergraduate education to graduate programs (Aldersley, 1995; Morphew & Jenniskens, 1999). As an added benefit, and perhaps an additional driver, the higher-level degree programs can bring with them increased revenue.

However, there are a number of other ways curriculums and programs might be impacted by striving. Many institutions create additional honors programs and prestigious-sounding learning communities in order to attract more academically accomplished students. Some institutions within state systems have been forced to commence their remedial and developmental work by state legislatures that want those institutions to be associated with higher-quality students and prestige (O'Meara, 2006). Other institutions have removed developmental and remedial programs out of an institutional desire to look more like their aspirational peers that do not have them. In addition, retrenchment activities, wherein less prestigious programs are cut and resources are redirected toward higher-ranked ones, are included in this category (Massy & Zemsky, 1994). Thus, institutions often look critically at the curriculum and programs they offer and what they need to offer in order to increase their prestige and act accordingly.

Consequences of Striving

Economists who have studied higher education have found that prestige seeking seems to increase spending on infrastructure and administrative support (Morphew & Baker, 2004). In effect, striving shifts resources from instruction to administrative support. One of the USNWR ratings is a weighted average of educational expenditures per student. For example, Alpert's (1985) research found that as universities became more dependent on external funds, their internal expenditure patterns change to emphasize obtaining more of that support. The institution begins to de-emphasize areas that are important to their missions but unlikely to produce additional revenues (Morphew & Baker, 2004). This is important because large campaigns to attract additional donor support, increase endowments, and encourage faculty to bring in external funds are established strategies of university striving (O'Meara, 2006).

Likewise, Massey and Zemsky's (1994) concept of an "administrative lattice" provides an explanatory framework for how administrative cost increases as institutions strive. As faculty moves away from teaching and service toward more specialized research and seeking external funding, additional funding is needed to support these efforts. Clotfelter's (1996) research underscores the point that especially for universities attempting to move toward Research University I (RU1) status, significant investments in the way of infrastructure and administrative staff are required to obtain research funding. Once obtained, additional costs are needed to maintain and manage that research funding. Inevitably, these costs must come from somewhere and, as such, may divert funds previously spent on instruction and outreach.

A number of economists and scholars of organizational change have begun to look at the increased cost of striving (Ehrehberg, 2000; Zemsky, 1990). This trend points toward more spending on nonacademic support than on increased spending on academic-related services

(Morphew & Baker, 2004). Morphew and Baker (2004) found that a group of universities aspiring for RU1 status experienced significant changes in their spending patterns. In fact, they exhibited increased proportionate spending on institutional support and research.

In addition to a shift in resource allocation to support research and external funding, striving campuses are more likely to invest heavily in admissions, recruitment, and tuition discounting for students with higher GPAs/SATs than they otherwise would be able to recruit. While these behaviors in and of themselves are not a concern if resources are available, research suggests that money is being shifted proportionately away from instruction and outreach activities in the pursuit of prestige (Morphew & Baker, 2004). Given that it takes significant investment in order to see even small improvements in USNWR rankings, it is not clear these spending behaviors, or "investments" as it were, always pay off. Further, educational researchers have pointed to how these same institutions might use some of the same resources used on glossy brochures and donor relations to improve the quality of the student undergraduate experience (Kuh & Pascarella, 2004).

External relations and institutional identity. Higher education institutions, unlike many for-profit organizations, have unclear goals, processes, and products. Because higher education institutions depend on external perceptions of their legitimacy and quality to survive, it is no surprise that campuses that are actively striving will engage in significant external relations and marketing to change and improve their image. The campaign to reshape the external image of a college or university may include something as major as a name change or smaller, such as a revision of their website.

Morphew (2002) found that in the decade following 1990, more than 120 public and private 4-year colleges changed their names and became universities, at least in part, to gain

prestige. It is also not uncommon to find campuses posting their USNWR and related college rankings on the front pages of their websites. Regardless of the specific strategy, this type of organizational behavior is carefully orchestrated to portray a more prestigious image through new language used to describe the institution, new images, lists of recent faculty and student accomplishments, and recent donor gifts.

Internally, there is also a role that striving college leaders play in managing a collective institutional identity (Massy & Zemsky, 1994). College presidents, provosts, and deans often strategically inject a common sense of the college as striving through speeches and the framing of major decisions and resource allocation. This sense of institutional direction trickles down into departments and becomes a way those units frame their work (O'Meara, 2006).

Like human behavior, which is influenced by a complex and dynamic set of factors, each of the examples of organizational behavior discussed is in constant interaction with and influenced by other forces. For example, Volkwein and Sweitzer's (2006) research found that talented faculty and student interactions produced instructional and scholarly outcomes that combined to shape institutional attractiveness and prestige. Likewise, Meredith (2004) found that "changes in admissions outcomes affect a school's USNWR rankings which, in turn, affect the admission outcome" (p. 449). Further, N. Bowman and Bastedo (2009) found that various ranking systems had a significant impact upon numerous student admission indicators, including grade point average and high school standing. This seemed to suggest that there was an ongoing cycle of inputs that led to outcomes that led to inputs in the striving game.

It should also be noted that institutions competing in the "positional arms race" are not playing on an even playing field (O'Meara, 2006). Volkwein and Sweitzer (2006) analyzed the variables most strongly associated with institutional prestige and reputation, drawing on data

from USNWR, the Institute for Scientific Information's Web of Knowledge, IPEDS, AAUP, and college guidebooks. They found that older, larger, and wealthier institutions had an edge in competition for faculty and students and prestige. Institutional age, control, size, and resources served as foundations for faculty and student recruitment (Volkwein & Sweitzer, 2006). Non-church-related colleges received higher prestige ratings, and larger liberal arts colleges enjoyed more robust reputations than their smaller counterparts (Volkwein & Sweitzer, 2006). As such, striving behaviors in each of the five areas are in constant interaction with each other, and they have differing levels of success based on some circumstances out of their control.

Players in this reputational arms race: Who are the strivers? As mentioned previously, striving behavior varies across institutional types. However, given the current competitive nature of higher education, it is unlikely any 4-year colleges are immune. Rather, there are conditions that surround institutions that make them more or less vulnerable to striving behavior at given times in their histories. Institutions with these conditions have been found to be prevalent in the literature on striving. For example, using Brewer et al.'s (2005) typology of institutions as reputation building, prestige seeking, or prestigious, there are three institutional types that have been found most prevalent as prestige seeking in the literature: (a) comprehensive institutions striving to become doctoral campuses, (b) second-tier liberal arts colleges striving to enter the top tier; and (c) universities that have been previously classified just under the top research university status (Morphew & Baker, 2004; O'Meara, 2007). Using this same typology, community colleges and institutions that serve a local, regional, or small niche market are more likely to be reputation building in their orientation and therefore less responsive to USNWR rankings (O'Meara, 2006).

Sandwiched between community colleges and research universities, liberal arts institutions in the middle of USNWR rankings are among the most likely of institutions to pursue prestige (Massy & Zemsky, 1994; Morphew, 2002). Liberal arts colleges are especially susceptible to striving behavior because of their small size. Further, small institutions have been found to be more vulnerable to market trends, more in need of the resources that greater prestige promises, and more easily moved in a new direction when leadership changes than larger institutions (McPherson & Schapiro, 1999; Zemsky, Wegner, & Massy, 2005). Selective liberal arts colleges compete for a small number of highly qualified students who are able to pay full tuition price and for external funds (Ehrenberg, 2003). Furthermore, most liberal arts college faculty members attend research institutions and were socialized toward research university standards and culture.

Liberal arts college faculty must manage expectations about service and teaching while looking outward to disciplinary associations and research university departments for direction for their careers (Clark, 1987; Finnegan & Gamson, 1996). Morphew (2002) studied colleges that became universities and found that less selective institutions were significantly more likely to transform themselves from a college to a more comprehensive university mission than the most selective institutions. Thus, liberal arts colleges in the middle of the academic hierarchy are like players in the "positional arms race" (Winston, 2000).

Another group of institutions with as much to gain from striving behavior are public comprehensive universities. Both Finnegan (1993) and Wolf-Wendel and Ward (2005) observed that this group in the "middle of the institutional hierarchy" (Clark, 1987) was understudied and included campuses that were formerly liberal arts colleges or teacher colleges and/or had land-grant status and had always offered undergraduate and master's degrees. Morphew and Huisman

(2002) found that nonflagship universities were more likely than flagship universities to add duplicative degree programs, overall and at the graduate level. Wolf-Wendel and Ward referred to faculty life at striving comprehensives as "between a rock and a hard place" because the local traditions of teaching and service conflict with institutional aspirations related to more faculty publications and external grant funding. In addition, generational conflicts have emerged among faculty in comprehensive institutions as the job market has brought many research-oriented faculty to campuses with faculty who have emphasized teaching and service (Dubrow, Moseley, & Dustin, 2006; Finnegan, 1993).

Finally, a number of studies have found striving behavior among research universities (Geiger, 2004; Massy & Zemsky, 1995; Meredith, 2004; O'Meara, 2007). In many state systems, there is one major (often flagship) research university and then "close seconds," or other state universities that compete with the flagship for resources and prestige. Geiger (2004) has looked at striving in state research universities historically and chronicled how organizational aspirations over time were fulfilled. Morphew and Baker (2004) studied expenditure patterns of institutions that had recently moved into RU1 status and how their administrative costs changed during that time. Sweitzer and Volkwein (2007) explored the advantages some research universities have in terms of age, size, and governance in terms of competing for prestige. Regardless, it seems clear that those universities closest to the ideal norm of a prestigious research university can see the financial and other benefits of moving from the second tier to a top tier. This vision compels institutions to "reach for the brass ring" (Ehrenberg, 2003).

To summarize, liberal arts colleges, comprehensive universities, and lower-tier research universities are the institutions where most researchers have examined striving behavior and found it prevalent. Yet, no institutional type is immune to striving. Rather, institutions that face

a certain set of conditions and circumstances seem most vulnerable or likely to strive. Indeed, the research suggested that institutions that strive are often institutions just below the prestigious group threshold, institutions trying to recruit outside their local area of students, institutions that have recently become vulnerable to market trends and are searching for additional revenue, and institutions that—due to their size—are easily swayed by changes in leadership and institutions where the market has brought an oversupply of research-oriented faculty to a specific campus.

The previous discussions demonstrate how rising costs and the resulting tuition increases have created a public outcry demanding that universities better control costs in order to reign in skyrocketing tuitions. However, as has also been discussed, the market in which institutions dwell requires them, for a multitude of reasons, to continually seek out greater prestige and rewards that may result. Unfortunately, it has also been demonstrated that such striving behaviors result in increased costs for the university, especially in research and administrative costs. This "perfect storm" of factors has seemingly placed the institution of higher education between a rock and a hard place, as it were, creating a Mobius loop that threatens to keep the public at large and the universities pitted against each other.

Regardless of the difficulty that comes with participating in the game of prestige maximization, it seems evident that institutions cannot afford to stay on the sidelines. As such, most universities attempt to use the strategies discussed above as a way to systematically move up the rankings.

Using Carnegie classification as a barometer of prestige. Although the Carnegie classification was not created for the purpose of ranking postsecondary institutions, it has served a prestige function for many institutions because it examines variables linked to normative models of prestige and stature (e.g., federal research dollars, selectivity, number of doctorates

awarded, etc.). Indeed, Carnegie has restructured its classification numerous times in the hopes of reducing the "tournament mentality" associated with the classification (Carnegie Institute for Teaching, 2011). At the top of the current classification are the research universities that award more than 50 doctorates annually and measure high or very high on either of two research activity index scales. Many larger, more comprehensive universities aspire to this status because of the prestige accorded these institutions. However, if they are to reach this classification level, they must find then ways of increasing the amount of funding they receive for research, as this is the sticking point for differentiating between research universities' level of research activity, from the base level of a doctoral research university to the penultimate level, the research university–very high level.

Aldersley (1995) examined institutions that had shifted in Carnegie classification, one common source of prestige ranking, and found that upward drift, or the tendency for institutions to introduce higher-level programs to move up in Carnegie classification, was prevalent. Aldersley found these institutions were beguiled by the promise of prestige associated with doctoral education. As Finnegan and Gamson (1996) studied comprehensive universities trying to adopt research cultures, they found that the cultural schema of research culture was reinforced as resources such as faculty lines, tenure, promotion, and other such incentives were employed to support the pursuit of prestige. Studies of this phenomenon document how higher education institutions model themselves after more comprehensive, more prestigious institutions (Huisman, 1995; Morphew, 2002). These studies are not new in concept; the concept of and the problems associated with pursuing greater prestige has been identified earlier by scholars (Birnbaum, 1988; Merton, 1968; Riesman, 1956). However, these studies have not focused on the increased costs associated with institutional striving. More specifically, these studies have not investigated

how universities striving for greater prestige, and the policies they implement, affect the spending patterns of the organization.

Indeed, the pursuit of greater prestige through higher Carnegie classification status, studies suggest, may produce other unintended consequences for these institutions. For example, Alpert's (1985) research on the research university model illustrated the tension that exists between its graduate and undergraduate functions. His research suggested that as universities become more dependent on external sources of support (e.g., research funding), they change their internal expenditure patterns to emphasize their functions that correspond with these sources of support (e.g., graduate education and the administration of research) while deemphasizing other functions such as instruction. This, of course, could lead to decreases in the quality of teaching and student advising and require faculty to shift their attention away from traditional teaching and service functions in favor of research.

Research on institutions in these kinds of transitions highlights some of the inherent problems. For example, Henderson and Kane's (1991) study of universities that have pursued more prestigious status indicated that there might be negative consequences for faculty members, especially for faculty whose interests and background do not coincide with their institutions' aspirations. Finally, research that has examined the elimination of degree programs in research universities depicts how these institutions (particularly those engaged in explicit attempts to boost their prestige) are more likely to target for elimination those degree programs and services less likely to receive research-based funding and those primarily associated with undergraduate education (Gumport, 1993; Morphew, 2002).

Such aspirations to change Carnegie classifications by adding doctoral programs and, perhaps more importantly, increasing research funding tend to disproportionately increase

expenses at these institutions (Morphew & Baker, 2004). The focus on faculty research efforts as a method of achieving prestige has resulted in reduction of faculty loads and transfer of some traditional academic duties, such as teaching and advising, to non-tenure-track faculty, namely instructors (many part-time) and faculty associates. Such movement has resulted in a dramatic increase in overall faculty costs for individual universities.

The costs of running, or becoming, a research university, the summit of the prestige mountain, are many and often are undiscovered until they become overwhelming. Moreover, attracting and securing federal funding for research may not always pay for itself in terms of the facilities and capital costs required (O'Meara, 2007), not to mention the need to pay better faculty salaries and attract the best graduate students. The academic ratcheting that Ehrenberg (2003) described in much of his book resulted in significant administrative costs. For example, the decentralized administrative model that caters to faculty members' specialized interests does not allow a central administrator the opportunity to work to hold down costs. Rather, it increases the chances of duplicate programs and administrative units, as well as inefficient behavior in each of the autonomous units. Such a prevalence of duplicate program units may indicate the gradual formation of what Zemsky and Massy (1990) termed the administrative lattice.

Where might one expect the administrative lattice to appear most often? Research universities are a good place to start because they are where academic specialization is most often found. In addition, critical works by two economists point to the real costs that appear when an institution and its faculty focus primarily on research. Ehrenberg (2000) and Clotfelter (1996) applied an economist's lens to the study of how universities work. In the process, both provide grist for Zemsky and Massy's mill and evidence that aspiring to doctoral research university (DRU) status may be a costly proposition.

Ehrenberg's (2000) cogent analysis of why elite universities are incapable of cutting costs (and therefore tuition) provides lessons for those who want to understand more about how the rush to secure external funding may not be as profitable as expected, given the costs incurred, both real and in opportunity. More specific to this study and its objectives is this prime lesson: The many costs of institutional advancement may ultimately compete with a university's primary goals of teaching and research.

Clotfelter (1996) built upon this in his study of the revenues and expenditure patterns at several of the nation's elite colleges and universities. He noted that administrative staff costs, though not occupying as large a role in institutional expenditures as faculty salaries, grew at a much faster rate than faculty salaries during the early part of the 1990s. He mused that this growth in administrative staff might be linked to the professionalization of this group or the increasing complexity of their task. Clotfelter's (1996) research also showed that a research university attempting to become more prestigious should expect increased costs. This dynamic reinforced in some ways Ehrenberg's (2000) discussion of the inefficiencies of the decentralized academic model. Both authors, for example, pointed out that research universities have developed increasingly complex relationships with external agencies. These relationships require expertise and specialization on the part of university administrators. This expertise and specialization are not cheap.

Although all institutions of higher education are concerned with rising costs, of particular concern are those institutions that do not have the resources to absorb such an increase in their operating expenses. Indeed, it is easy to imagine that Harvard, Stanford, Yale, Johns Hopkins, and other prestigious research institutions have acquired the requisite prestige and clout to ensure that endowment coffers and overhead recovery portions of research grants can adequately

balance the potentially overwhelming increase in costs. Less able to manage the rapidly increasing costs associated with creating a research culture on campus are those institutions that tend to rely significantly on tuition. Such institutions must battle the need to reward faculty for aggressively participating in research and the need to ensure that classes, especially at the lower levels, are taught by qualified individuals. Such a conundrum creates an institutional dilemma that can easily interfere with any progress the institution has made in striving for greater prestige.

This dilemma is particularly interesting because it focuses on whether increased administrative costs are the "fault" of external constituencies or a function of the unique characteristics of higher education institutions. In an attempt to address this issue, this study attempted to examine the expenditure patterns of a specific group of universities—those moving from one Carnegie classification to a higher designation. Therefore, the goal here was to move beyond studies that have noted increased administrative costs and a subsequent reduction in other expenses to more of a causal explanation of these financial dynamics. Specifically, I attempted to determine whether striving institutions, as they made the transition from one classification to a higher level and maintained it, exhibited (a) different cost structures from their predecessors' and (b) similar cost structures to those of their new brethren.

Further, this study sought to investigate whether strivers of different types (i.e., those that strive to master's-level classification versus those that strive to DRU-level classification and those that strive to RU/H- or RU/VH-level demonstrate similar or different patterns of expenditures. A finding of different cost structures would serve to demonstrate that there are, indeed, separate types of strivers, with unique patterns of expenditures—and therefore unique requirements—in order to achieve the greater prestige that the institution is attempting to

capture. This study attempted to test these hypotheses by asking and answering the following research questions:

1. When controlling for Carnegie classification, what was the expenditure pattern of *nonstriving* institutions between 2002 and 2011?
2. When controlling for Carnegie classification, what was the expenditure pattern of *striving* institutions between 2002 and 2011?
3. How did expenditure patterns between 2002 and 2011 compare between *nonstriving* institutions and *striving* institutions?
4. In what respects were patterns of expenditures between 2002 and 2011 significantly different for *striving* institutions across Carnegie classifications?
5. How did final Carnegie classification affect *striving* institutions' overall rates of expenditure between 2002 and 2011?
6. What impact did final Carnegie classification have on *striving* institutions' rate of change in expenditures when controlling for institutional demographic factors?

Significance of Study

Higher education has become a highly competitive environment with increasing expenses related to this competition. Prestige is a generally accepted measurement of an institution's attractiveness to students, but prestige is also essentially a socially defined measure. Institutions do not have direct access to purchase prestige but instead participate in activities that make the institution look more like other prestigious competitors.

Higher education institutions are increasingly required to justify their requests for private and public support (Ehrenberg, 2003; Meredith, 2004). Quantifying the cost and benefits of striving for prestige would help institutions categorize expenses according to their stated

missions and organizational objectives. Further, completion of this study should further the understanding of financial strategies of institutions and how institutions maintain positions in competitive markets. Also, this study can help to develop a greater understanding of the different types of striving institutions undertake. Indeed, striving is not the same to every institution. Such varying positions, indeed, dictate different financial paths.

If gaining prestige is an operational objective of an institution, all involved in budget decision making should understand the costs involved in competing in the prestige market. Better understanding of the components of prestige would help striving colleges and universities invest strategically in areas they might actually have success in gaining prestige (Ehrenberg, 2003). Gaining prestige requires large investments of money and time because gains come from losses by a competitor. Institutions that have prestige are also increasing spending to maintain what they have (Brewer et al., 2005; Ehrenberg, 2002).

This study also sought to add to the current body of knowledge on the subject of striving. Although numerous studies have investigated this phenomenon, few have sought to apply a quantitative lens to this issue. Most research has utilized a case-study methodology to forward understanding of the behaviors and consequences of striving, creating a more conceptual model of prestige maximization. However, few have looked at the actual financial implications of such institutional decisions. Further, few studies have looked at striving across numerous types of striving institutions, as is proposed here. Indeed, Morphew and Baker (2004) looked at only one type of striver, namely institutions moving from research II to research I universities. This study sought to examine the patterns of spending for institutions that are striving at different levels of the higher education landscape. As such, increased understanding of prestige investments and

the results of this study might allow institutions to better reconcile prestige expenditures with their mission statement

Results of this study should also enhance the abilities of researchers to identify striving behaviors through easily attainable economic data. The availability of a quantitative measure of striving behaviors would allow researchers to quickly identify samples of striving institutions with specific institutional characteristics for further detailed study. Examining relationships between increased spending activities and changes in prestige outcomes may provide insight into how higher education operates in the various prestige markets. Results could be useful in determining future institutional spending priorities when seeking to maximize benefits from increased spending for prestige generation.

Chapter 2: Literature Review

Introduction

This chapter contains a review of the literature related to an institution of higher education's striving, or pursuit, for prestige and the resulting effect such behavior might have on the institution's practices and financial position. The initial section introduces a brief overview of the development of the consumer mentality that dominates today's higher education environment. Such a mentality, as discussed, drives much of an institution's action as it competes for more students and the monies that follow. Because students and society believe prestige matters, the following section of the chapter reviews studies related to the social aspects of prestige in higher education. This section recognizes the social stratification that exists within higher education and helps define aspects of prestige generation.

Continuing on, this chapter then examines research related to the maximization of prestige. Often referred to as striving, prestige maximization is increasingly viewed as a strategy necessary for an institution's survival. Because of this, studies related to the economic strategies universities might employ in efforts to strive for additional prestige are also included in this section, as well as studies that investigate the relationship between striving and institutional expenditures. The final section of this chapter discusses the history and research related to visible measurements of prestige, namely institutional rankings and the strategies that many institutions employ in order to maintain the level of prestige that these rankings indicate they have attained.

Consumerism of Higher Education

Higher education has drastically changed in the last 60 years. Only elites were enrolled in higher education before World War II because the cost and time constraints were prohibitive

for much of the population (Van Valley, 2001). This all changed after the war, however. The GI Bill of Rights allowed soldiers to attend college and learn work skills for the civilian world, while also ensuring they would not flood the labor market all at once. The soldiers were consumers of cultural capital, which they hoped to turn into economic capital upon entering the labor market. Soldiers used the GI Bill of Rights to provide a better future for themselves and their families. The program's utility created a mass appeal that resulted in the widespread use of its services.

In 1947, just a few years after the war, approximately 40% of students admitted to college were sponsored by the GI Bill of Rights, with over 7.8 million veterans using government-subsidized tuition by the mid-1950s (U.S. Department of Veterans Affairs, 2006). Access continually expanded to the nonelite population, resulting in an eightfold rise in the number of bachelor's degrees awarded between 1945 and 1965 alone (Aronowitz, 2001). Although the enrollment of White men (the traditional college students) certainly increased, other groups began enrolling as well. Women, racial minorities, ethnic minorities, and people of all socioeconomic backgrounds began to enroll in higher education in greater numbers, resulting in the "massification" of higher education (Hecht, 2000). In fact, today more than 50% of college students are women (U.S. Department of Education, 2011). The influx of students into higher education created a strong focus on credentials in the marketplace. As bachelor's degrees became more common, employers' expectations rose accordingly. Thus, today a college degree is frequently viewed as the necessary credential for entry-level professional jobs.

Assessing Accountability

A social contract has long existed between public institutions of higher education and U.S. society. University research and services have been molded by local and national needs,

while public and private funding has sustained a system of public higher education (Duderstadt, 1999). However, national attention to a number of controversial circumstances in the last quarter century offers the possibility that the social contract may be in jeopardy. The public's trust in higher education declined in the mid-1980s and the early-1990s, when the price of tuition began to soar and various scandals (e.g., scientific fraud and the misuse of federal funds) created negative publicity (Garland & Grace, 1993). The state of affairs showed a lack of accountability in higher education over such conduct.

Sykes's (1989) book, *Profscam: Professors and the Demise* of *Higher Education*, lamented that tenure created a system of nonaccountability for professors who were defended against sanctions due to poor teaching. In addition, Sykes criticized faculty for wasting public subsidies on trivial research projects (e.g., "Evolution of the Potholder: From Technology to Popular Art," "Submerged Sensuality: Technology and Perceptions of Bathing"). Such examples demonstrated that higher education was perceived to lack accountability to the public who paid the salaries of instructors through taxes and to the state governments who funded public institutions of higher education. As a result, greater governmental oversight of higher education was demanded from the public.

Even though the public wanted more supervision for higher education, such institutions had already been facing increasing accountability from governmental bodies. Around the 1970s and early 1980s, government money was followed by greater government interference (Geiger, 2004). Colleges and universities were required to hire new employees to deal with the statistical demands (e.g., graduation statistics, financial aid information, and diversity figures) of the federal government. This resulted in a growth in expenses and a decrease in institutional autonomy (Garland & Grace, 1993).

Complicating this situation was the drastic rise in inflation between 1978 and 1982, which made all of the goods and services that public institutions of higher education purchased more expensive (Geiger, 2004). Had higher education received the generous funding it enjoyed in the past, perhaps the institutions would have been able to operate without significant problems. However, the federal government shifted much of the funding away from academic institutions and redistributed it to new programs that would directly impact students. In 1972 the Higher Education Act of 1965 was amended, creating the Basic Equal Opportunity Grants (now recognized as Pell Grants) and financial aid assistance that gave students greater flexibility with their funds (Slaughter & Rhoades, 2004).

Facing the loss of governmental funding and the perils of inflation, public institutions of higher education created partnerships with private industry and raised tuition to offset the loss (Geiger, 2004). The high tuition was justified by the new view of higher education as a private, rather than a public, good (Leslie & Brinkman, 1988). Since it was demonstrated that college graduates would earn roughly double the annual earnings of high school graduates (U.S. Census Bureau, 2005), students were expected to bear the majority of their educational costs. This was in contrast to previous decades where large government subsidies had contributed to lower tuition. Such conditions remain the status quo in U.S. institutions of higher education today.

Today's public institutions of higher education demand a significant financial contribution from students and their parents. Although they are often thousands of dollars cheaper than private colleges and universities, public institutions are still difficult for many families to afford. Tuition and fees rose 162% at public universities between 1996 and 2012 (Jacob et al., 2013). Such high fees often cause students to incur a substantial amount of debt while they are enrolled in college. In fact, the average college graduate leaves with

approximately $12,000 to $19,000 in debt (Mutari & Lakew, 2003). Whereas community colleges offer a cheaper alternative for many student populations that have not traditionally gone to college in the past (Van Valley, 2001), students who begin their college education at these schools are less likely to complete a 4-year degree (Suro & Fry, 2005). Poor and minority students often attend community colleges, making them the populations that are least likely to experience upward mobility.

When describing the new social contract that society has with higher education, it becomes readily apparent that a new perspective of higher education started emerging in the 1970s and 1980s. This outlook reflected the rise of the neoliberal state, which focuses on privatization, a flexible workforce, and individual economic opportunity rather than group welfare (Slaughter & Rhoades, 2004). Each of these characteristics greatly impacted the relationship higher education had with government agencies and the public. The focus on privatization could be seen as (a) the transfer of federal aid from institutions to students, (b) the increased oversight of institutions by the federal government regarding returns on educational investment and the subsequent loss of autonomy, (c) the increased cost of higher education for students because of the view of higher education as a private good, and (d) the increased use of management techniques (e.g., responsibility-centered management) in higher education that were used in private industry. The focus on workforce flexibility is demonstrated by the decrease in tenured faculty and the rise of part-time instructors, whereas the focus on individual economic opportunity and a decrease in social welfare can be seen through the pursuit of bachelor's degrees for largely economic reasons. Those who can afford tuition often struggle to find the financial resources, whereas others are simply kept out by the inflated prices.

Each of the characteristics listed show higher education's rise in accountability (regarding either economic or cultural capital) to government agencies or the population at large. It is through this accountability and its relationship with the neoliberal state that we can understand the recent increase in student consumerism. With the hope of guaranteeing capital accumulation, the U.S. government renegotiated its social contract with higher education to ensure the money it was spending (subsidies) and the money its constituents, students, and parents were spending was being used in an "appropriate" manner. This reflects the increased oversight of higher education and its decrease in institutional autonomy.

After the change in governmental policy, students and their families renegotiated their social contract with higher education as well. Despite the scandals and criticisms that higher education has endured, students continue to attend colleges and universities in large numbers because they and their parents realize the necessity of a bachelor's degree. However, the price of tuition has increased higher education's accountability to the public, thus leading to student consumerism. Students expect higher education to be run more like a business wherein they will simply focus on the product (the degree) rather than learning, a process that is separate from their future economic potential. In order to receive their degree, students expect easy courses, high grades, and the "don't bother me and I won't bother you" mentality. As such, the new social contract that students have with higher education suggests that student consumerism is magnified because of the accountability that institutions have to their "paying customers" in this competitive market for students.

Striving for Prestige: Why and at What Cost?

Social aspects of prestige in higher education. In the article titled "Concepts and Measurement of Prestige," Wegener (1992) examined concepts of prestige from a sociological point of view and evaluated methods of measuring prestige in occupations. The concept of prestige has been used in two different ways when utilized in defining stratification. Prestige can be viewed as a consensus judgment within society, defining institutions with varying degrees of prestige. Some sociologists view prestige as an attribute of a socially closed group wherein individuals either have prestige or they never will. The consensus judgment approach seems to provide more hope in describing prestige in higher education.

Wegener (1992) emphasized that prestige is not based on individual judgment but is socially constructed as a consensus and primarily defined by those in society who are seen as already having prestige. Concepts of occupational prestige formed the initial foundation for much of the research related to prestige in society. Prestige in society was defined by a consensus judgment of a person's occupational power, earnings, and visibility. As higher education has become accepted as the path to better career opportunities, it seems logical that society would transfer these occupational concepts of prestige to the institutions preparing graduates for the career world. If a college degree leads to a better career, a more prestigious college degree should lead to a more prestigious career.

A number of researchers have published findings demonstrating added economic returns for students graduating from prestigious institutions based on human capital theory (Behrman, Kletzer, McPherson, & Schapiro, 1998; Berg, Dale, & Krueger, 2002; W. Bowman & Mehay, 2002; Brewer, Eide, & Ehrenberg, 1999; Fuller, Manski, & Wise, 1982; Hilmer, 2002; Loury & Garman, 1995; Pascarella, Smart, & Smylie, 1992). Social capital has also been used as a

theoretical framework by researchers to examine how social networking aspects work to create a market premium for those graduating from a prestigious institution (Kamens, 1974; Lang, 1987; McDonough, 1994). An additional group of more recent researchers have included both social capital and human capital aspects when examining the outcomes of attending a more prestigious institution (Brewer et al., 1999; Carter, Paulsen, & St. John. 2005; Davies & Guppy, 1997; James, Alsalam, Conaty, & To, 1989; Paulsen & St. John, 2002).

Toor (2001) offered some observations about student attendance at elite colleges when she shared her experiences as an admissions officer at Duke University. Consistent with the social consensus concept of prestige, Toor stated that attendance at prestigious institutions matters because people believe it matters. Her experience and conversations with faculty indicate that there are quality students at all levels of education, and selection to prestigious institutions is primarily an issue of social class. Toor also stated that based on her experience, the admissions process privileges those who are already privileged. Toor's comments reflect a closed system of stratification primarily controlled by those who have prestige.

However, competitive forces existing in today's higher education system indicate that there is a general belief that institutional prestige can be gained through certain "prestige-building" activities. Increased fund-raising, endowment campaigns, facilities expansions, faculty recruitment, competitive research environments, and desire to increase selectivity, even at public institutions, are all indications that these institutions believe they can improve their individual competitive position in the market for prestige. Further research needs to be conducted to determine if these institutional efforts are producing results in the battle for prestige.

The concept of prestige maximization. The prestige-maximizing perspective begins with the fact that almost all colleges and universities at the higher Carnegie classifications are nonprofit organizations. Nonprofit organizations, by nature, are not motivated by maximizing profits. Instead, nonprofit organizations have other motivations, and many colleges and universities are motivated by maximizing prestige (Melguizo & Strober, 2007). James (1990) suggested that the most critical objective of higher education institutions is "prestige maximization." Brewer et al.'s (2005) book, *In Pursuit of Prestige*, relates the importance of prestige to institutional priorities, and Garvin (1980) argued that prestige weighs heavily in the decisions that colleges and universities make.

In higher education, the desire to maximize prestige over profits can lead to institutional choices that may sometimes be viewed by people unfamiliar with this environment as irrational (Clotfelter, 1999; Melguizo & Strober, 2007; Rothschild & White, 1995; Winston, 1999), at least from a traditional economic viewpoint. Examples of such irrational choices include offering incentives to certain employees (high salaries and reduced teaching loads to specific faculty) and offering some customers significant discounts (grants and scholarships to certain students). Indeed, practically all colleges and universities do not charge enough tuition relative to the levels of human capital they provide, which means that practically all students receive some degree of subsidy from the institution, furthering the notion that the economics of higher education are irrational (Rothschild & White, 1995; Winston, 1999; Winston & Zimmerman, 2000).

One of the more unusual aspects of the higher education industry is that it operates under a "customer-input technology," meaning students educate students (Winston, 1999). For colleges and universities, an important input to production can only be bought from their customers. Winston (1997, 1999) used the term "peer effects" to describe the learning that

occurs via students interacting with other students. Other researchers acknowledge peer effects as being an important component to the educational process (Clotfelter, 1999; Goethals, Winston, & Zimmerman, 1999) and Pascarella and Terenzini (2005) acknowledged that peer interactions have significant positive gains for student learning. Rothschild and White (1995) suggested that better students may be thought of as better inputs, which then lead to better outputs. Winston (1999) stated that "both admissions offices and the rating organizations like U.S. News and World Report put great stake in the fact that student and institutional quality go hand-in-hand" (p. 18).

Thus, colleges and universities care to whom they sell their product. Because better students mean better outputs, many institutions are willing to give significant price discounts to some of their better customers. In order to get better students, the wealthier schools are able to subsidize their student inputs (through grants or "tuition discounting") to a greater extent than the less wealthy schools. Winston (1997) argued that this difference in ability to subsidize students is the "most fundamental element in the economics of higher education" (p. 35). Selectivity in admissions is not solely the concern of top-ranked institutions, however. Winston (1997, 1999) argued that even the least selective institutions still care about the quality of their inputs to the degree that they are able to.

Theoretically, the more selective an institution is in terms of admissions, the greater the demand for admission to that school is and thus the higher the price the school can charge for its product. Indeed, tuition is the price of the product in higher education, and schools that offer the most to their students and graduates are in the greatest demand; therefore they can charge the highest tuition (Zemsky, Shaman, & Iannozzi, 1997). To many students, a higher ranking in USNWR signals higher quality for their tuition dollars (Winston, 2001).

The importance of prestige pervades all aspects of higher education—not just student recruitment but faculty recruitment as well. Prestigious faculty can boost the prestige of an institution as a whole (Grunig, 1997; Massy & Zemsky, 1994; Melguizo & Strober, 2007). It is also true that faculty have increasingly become concerned about their own prestige (Kirp, 2003; Melguizo & Strober, 2007; Zemsky & Massy, 1990, 1995), which allows them to command both higher salaries and recognition in their field. Zemsky and Massy (1995) suggested that faculty, like students, may be viewed as inputs, and the valuing of inputs is not something seen in traditional for-profit businesses.

Faculty salaries may be viewed as a reward for maximizing institutional prestige (Melguizo & Strober, 2007). Indeed, nonprofit organizations determine value for their own sake, will often value the ability to increase prestige and those who can do that (faculty), and are not necessarily looking to minimize input costs (Zemsky & Massy, 1995). It is no secret in higher education that extrinsic faculty rewards (pay and promotion) tend to be based more on research than on teaching or service and have been for quite some time. Based on the literature, one can assume that relative increases in average faculty salaries will be related to increases in p. r assessment ratings; likewise relative decreases in average salary should be associated with decreases in ratings.

Massy and Zemsky (1994) referred to "output creep" in describing how faculty increasingly have moved away from undergraduates and more toward their own research. Zemsky and Massy (1990, 1995) labeled the shift of faculty allegiance from the goals of an institution to the goals of the individual faculty as "the ratchet." Likewise, Clotfelter (1999) acknowledged that some faculty have only a minimal attachment to their employer. Furthermore, Fairweather (1995) made the case that a reward structure based on prestige via

publishing is evident across all institutional types, not just research universities. Indeed, Volkwein and Sweitzer (2006), perhaps surprisingly, found that publications per faculty were statistically related to peer assessment (reputation) scores at liberal arts colleges to a greater extent than at research universities. Based on the literature, one would expect that relative increases in publications per faculty would be related to relative increases in peer assessment ratings, while decreases in publications should be associated with decreases in prestige.

Some researchers hypothesized that faculty research and scholarship exert a great influence on perceived faculty quality and academic reputation (Melguizo & Strober, 2007; Volkwein & Sweitzer, 2006). The push to recruit prestigious faculty across all types of institutions has created a truly "national market" for faculty (Fairweather, 1995). In a push to attract and/or retain quality faculty, institutions provide incentives to faculty, such as higher salaries and reduced teaching loads, which allows more time for research.

Offering reduced teaching loads requires institutions to hire more part-time or adjunct faculty to teach courses. Naturally, wealthier schools are better equipped to afford such incentives (Winston, 1999, 2000; Zemsky & Massy, 1995), which theoretically should increase research activity. Winston (1997) made the case that differences in wealth define the hierarchy in higher education, and different segments of the hierarchy do not compete against one another much at all. Schools primarily compete with schools in their band, or region, of the hierarchy. Zemsky et al. (1997) also discussed segments in higher education and suggested that schools should only be concerned about their peers within their segment. Winston (2000) suggested that institutions should be most concerned with the roughly 10 schools above them and the 10 schools below them in the hierarchy, and those schools directly below an institution are the ones that force action. A school does not want to be overtaken. Winston (2000) argued that a

school's access to quality (students and faculty) depends on its position relative to others. He suggested that for a given institution, all that matters is its relative position, not tuition or costs. It can increase tuition with no worries if everyone else does the same, and it maintains its position relative to others around it.

Zemsky et al. (1997) provided a taxonomy in order to explain how institutions make decisions and how resources are distributed. Like Winston, the authors stressed the importance of wealth and suggested that wealth is an important component of the taxonomy. They suggested that net revenues per student were much greater for the schools in the higher tiers, or segments, across all institutional types.

Winston (1997, 1999) not only stressed the importance of wealth but specifically stressed the importance of donative wealth. Hence, alumni contributions are critical to the sustained success of institutions, explaining the continuing pressure for increased donations (Winston, 1999). USNWR measures the percentage of alumni who donate, and this variable was included in the current study to examine its effect on changes in reputation, with the expectation that an increase in the percentage of alumni who donate would relate to an increase in peer assessment ratings. Winston also claimed that schools essentially bought their quality and position in the hierarchy, and he posited that the differences in wealth between schools are so great that the differences seem to "capture a good measure of institutional quality" (p. 21).

Zemsky et al.'s (1997) taxonomy includes several "benchmarks," which the authors indicate are important for understanding differences between institutions within their "segment." The benchmarks include tuition, faculty salary, percentage of part-time faculty, size of the student body, student-faculty ratio, and student retention. The authors indicated that institutions should use these benchmarks to compare themselves to their peer institutions within their

segment. All of these benchmarks are included as variables in the current study in order to examine their relationship to changes in reputation.

Among the Zemsky et al. (1997), size of the student body is the benchmark that other researchers identify most often (along with admissions selectivity) as relating to prestige ratings (Astin & Lee, 1972; Astin & Solomon, 1981; Grunig, 1997; Porter & Toutkoushian, 2002; Volkwein & Sweitzer, 2006). These researchers found that larger schools tended to be rated higher than smaller schools. The current study thus included measures of size as potential influences on reputation ratings.

Several researchers discussed the student-faculty ratio (Zemsky & Massy, 1995; Zemsky et al., 1997) as relating to reputation such that more prestigious institutions tended to have a lower ratio. A lower student-faculty ratio was assumed to be beneficial to student learning due to the presumption of more individualized faculty attention, and wealthier schools were more likely to be able to afford to hire more faculty in relation to the number of students. Along the same lines, some researchers discussed average class size as another measure of educational quality (Clotfelter, 1999; Winston, 1997), which is a measure that USNWR uses in its rankings. The presumption is that smaller class sizes are better, allowing for more individualized attention from faculty and allowing more opportunity for a given student to speak in class.

Zemsky et al. (1997) mentioned retention as being an important benchmark for institutional comparison. Other researchers over the years have examined student retention (Pascarella & Terenzini, 1991, 2005; Tinto, 1993); however few researchers discussed retention in terms of prestige or strategy. USNWR includes two measures of retention, or outcomes, in its methodology—freshmen retention rate and graduation rate. Both of these measures are included as variables in the current study to examine their potential influence on prestige ratings.

The many variables discussed above, which several authors have tied to prestige ratings, are related in more ways than one. For example, Blau (1994) provided evidence to suggest that talented faculty attract talented students. Therefore, recruiting quality faculty and recruiting quality students go hand in hand. Theoretically, higher-quality students are attracted to prestigious faculty, as measured by their scholarship. While students may not know of specific faculty publications per se, those who care may at least be aware of the schools that produce a large amount of research and are well regarded in their area of interest. It follows that faculty productivity combines with student productivity to produce student outcomes (e.g., number of degrees awarded and graduation rates).

Alumni outcomes follow in the form of success in the workplace, as well as donations to their alma maters. Winston (1997, 1999) categorized institutions of higher education as a mix between donative nonprofits (such as a church) and commercial nonprofits (such as a hospital); hence Winston called colleges and universities "donative commercial nonprofits." Several authors suggested a cyclical relationship among the many prestige variables or constructs (Szelest, 2004). Winston (1997) argued that there is a feedback loop: more student quality brings on more student demand, which brings on more student quality, and so on. Geiger (2004) also illustrated a feedback loop, suggesting that greater selectivity in admissions yields higher quality, which leads to both increased revenues and higher costs, which leads to greater prestige. The cycle then continues as increased prestige yields increased selectivity.

One could also argue that there is a sort of cyclical nature to the mimicking behavior that many institutions display in striving to reach their peers. Institutions' drive for prestige makes schools mimic other schools that are ranked higher (Fairweather, 1995; Melguizo & Strober, 2007). Although it has perhaps been magnified in recent years, the drive for prestige in higher

education is nothing new. In fact, Riesman (1956) and Jencks and Riesman (1968) argued that such mimicking behavior among institutions was apparent many decades ago.

To the degree that institutions do indeed mimic their peer institutions, they are mimicking those schools that they consider to be ahead of them in some type of hierarchy or ranking system. Although the accuracy of any given ranking system may be called into question, such hierarchies do at least provide some basis for evaluating institutions, which, in an industry such as higher education, may be enough justification for their existence. Winston (1999) suggested that there is an asymmetry of information with nonprofit organizations: education is investing in the future without knowing how it will turn out, and in such a situation the reputation of the product is the best source of information on which one can rely. Indeed, it is for just such a reason that reputation ratings in higher education are important.

Striving for prestige: Behaviors and their implications. Most definitions point to prestige as a reputation, or renown, based on brilliance of achievement, character, or standing within a given population (Meleguizo & Strober, 2007). The emerging economic theory of higher educational institutions argues that it is precisely this reputation and renown that institutions are seeking to maximize and that such institutions "weigh . . . considerations . . . of institutional prestige . . . heavily . . . in organizational decision making" (Garvin, 1980, p. 22). Indeed, striving institutions pattern themselves after the highly prestigious in hopes of replicating the mimicked institution's success. Social expectations have a normative effect that encourages higher education institutions to look and act in certain ways to provide a sense of legitimacy and stability (Birnbaum, 1988).

Evidence of this institutional desire to move "up" in ratings can be seen from continued upward academic drift in Carnegie classifications (Aldersley, 1995). Such aspirations to change

Carnegie classification by adding doctoral programs tend to disproportionately increase expenses for noninstructional administrative services at these institutions (Morphew & Baker, 2004). The focus on faculty research efforts as a method of achieving prestige has resulted in reduction of faculty loads and transfer of some traditional academic duties, such as advising, to administrative positions. This movement has resulted in the formation of an administrative lattice and academic ratchet, which further increase spending (Leslie & Rhoades, 1995; Zemsky, 1990). The primary outcome for institutions has become to maximize prestige by raising additional funds and spending those funds in ways to enhance the status of the institution.

In work related to academic drift in Carnegie classifications, Morphew (2002) studied reasons behind the trend of colleges changing their name from "college" to "university." Morphew stated that in the years between 1990 and 2002, nearly 5% of 4-year postsecondary institutions changed their names to "university." This study included analysis of this highly visible and symbolic name change based on institutional theory, resource dependence, and the possibility that the name change reflected an actual change in institutional mission to include a more comprehensive curriculum.

Institutional theory could provide motivation for institutions to change their name to university through a desire to gain legitimacy. External constituents view a university as having a different mission, organization, and status when compared to a college. Normative behaviors in higher education provide a template for these institutions to symbolically look like universities to internal and external constituents. Morphew (2002) also pointed out that "universities are becoming more alike in a competitive cycle, with increased prestige as the goal" (p. 211).

To test the hypothesis that colleges may change their names to "university" as a competitive strategy, Morphew (2002) examined the admissions selectivity of institutions that

had made the name change. Peterson's selectivity categories define an institution as being noncompetitive, minimally difficult, moderately difficult, very difficult, or most difficult. Results showed that none of the colleges listed in the two most selective categories changed to universities, whereas 61% of the colleges changing names were in the moderately difficult range for admissions selectivity. This result suggested that for this time period, less selective institutions were much more likely to change their names from "college" to "university" than more selective colleges.

Morphew (2002) also examined the name changing trend from the perspective of resource dependence. In this case, the name change from college to university reflected structural changes made to improve the institution's long-term ability to obtain financial resources. An institution's structure may be changed to better maximize the ability to obtain public funding, endowments, and research funding. Existing resources for endowment per student and instructional expenditures per student for each institution were calculated and used in the regression analysis.

A third possible reason brought forward by Morphew (2002) for an institution to change its name to "university" comes from changing societal demands and an increasing need for graduate-level credentials. In this case, the name change to "university" better reflects the institution's current mission, which has evolved to better meet the changing needs of students and career aspirations. The number of graduate students at each institution was used to examine this hypothesis.

Morphew (2002) found no statistical significance to support the hypothesis that resource-poor institutions were more likely to change their names to "university" than those with higher endowments and higher expenditures for instruction. This finding was surprising and further

research in this area of resources was suggested. The study did find growth in the graduate school at an institution was a significant factor in the decision to change the name to "university." This last finding supports the hypothesis that the name change better reflects the institution's mission as it has changed to meet societal demands.

Defining prestige "markets." In the book *In Pursuit of Prestige*, authors Brewer et al. (2005) performed a business and marketing study of a group of diverse higher education institutions. They examined higher education as an industry from a business and competitive perspective, which had traditionally been avoided. The resulting analysis revealed information in areas that often are not discussed in higher education research such as who are the customers of higher education and what revenue markets do colleges and universities compete in.

According to Brewer et al. (2005), the enumerated customers of higher education are "students, alumni, employees, corporations, governments, and private individuals" (p. 3). Colleges and universities use different strategies to meet the needs of these "customers." The strategy employed relates to the long-term goals of the institution and their relative position of strength or weakness in the revenue markets.

The categories of revenue markets in higher education utilized by Brewer et al. (2005) are student enrollments, research funding, public fiscal support, and private giving. Institutional strategies studied included certain types of institutions that avoid competition in some of these revenue markets to the other extreme where institutions are engaging in competition in every revenue market area.

Using the industry study approach with customers and revenue markets as defined above, Brewer et al. (2005) conducted site visits and interviews at 26 diverse institutions. The collected data were organized by mission and strategy of these institutions into emerging concepts of

reputation and prestige. Two transitional categories emerged for prestige seeking and hybrid institutions, which display distinct characteristics of both reputation and prestige most often through satellite campus facilities.

Brewer et al. (2005) stated that "information conveyed by reputation and prestige allows customers to evaluate better the extent to which the institution will be able to satisfy their demands" (p. 27). This preconceived outcome of education at each institution is important for students when they are considered a consumer who will not receive the "purchased" good until many years later. The institutional investments in prestige and reputation can be viewed in consumer terminology as a warranty for the tuition costs the student will pay.

According to Brewer et al. (2005), reputation is "directly related to an institution's ability to meet consistently some set of relatively specific customer demands" (p. 27). It is an institution's demonstrated ability to meet expectations and satisfy internal or external customer demands that builds reputation in higher education. Institutions relying on their reputation focus on high levels of student services and graduate placement and frequently change curriculum offerings to meet the needs of changing markets. Reputation at an institution can be obtained relatively quickly and cheaply, but it can also be lost easily.

Prestige institutions, as defined by Brewer et al. (2005), focus on internal needs and "looking right" when compared with other prestigious institutions (p. 47). Certain higher-education markets have been labeled as prestigious in part due to external ratings from external agencies such as Barron's, *US News and World Report*, or even the Carnegie classification criteria, which group institutions into a hierarchy for research purposes.

Prestige institutions are not competing with an unmoving standard for prestige but with an ever-increasing standard based on peer institutions. Based on the dynamic standard for

prestige, Brewer et al. (2005) referred to prestige as a "rival good" (p. 30). The rival good terminology emphasizes that when one institution gains in prestige, it is at the expense of another institution. There is only a fixed amount of prestige to be doled out by external ratings and the result is an "arms race" for prestige factors among institutions competing in these markets. Although prestige can be gained and lost, it is more difficult and expensive to change relative positions in prestige than in the reputation. Prestige is also not as fragile to maintain as reputation, which can be lost due to one publicized negative incident.

Brewer et al. (2005) defined a set of general "prestige generators" that institutions use to try to increase their stock in prestige. They determined that "student quality, research, and sports" were the primary areas where prestige was gained and lost (p. 29). Table 2 outlines some specific examples of how universities invest in these areas of prestige generation.

Table 2

Prestige-Generating Components

Prestige areas	Specific institutional investments
Students	Recruiting Costs Merit Scholarships Maintaining Classroom and Dorm facilities
Research	Faculty Salaries Reduced teaching loads-increased costs Maintenance laboratories and facilities Indirect research expenses
Athletics	Player Scholarships Coach and AD salaries Maintenance stadiums/arenas

Adapted from *In Pursuit of Prestige: Strategy and Competition in U.S. Higher Education,* by D. J. Brewer, S. Gates, and C. Goldman, 2005, New Brunswick, Canada: Transaction.

Student-related prestige is often measured through selectivity in the admissions process. An institution may be able to change characteristics of the freshmen class through policies and practices of universities used to select which students are admitted. The quality of students admitted to a university is used as a component in rankings by external agencies. Standardized test scores and high-school graduating class position are typically utilized to indicate the average "quality" of students entering the university system. Striving institutions may seek to increase selectivity in admissions standards to reflect higher prestige.

Research activities can generate acclaim for an institution, but research activities also require funding for space, faculty time, and administrative support. The majority of dollars for research in the university system have traditionally come from the federal government to support basic research without direct application to the market place. Additional funds are contributed by foundations and corporations working with universities on applied research to solve specific problems.

Brewer et al. (2005) pointed out that universities themselves often publish research-funding numbers as a claim to prestige. The perceived value of large research budgets can be attributed to the competitive nature of government distribution of funds. They noted that research success in a single campus department can spread prestige over the entire institution in what they call a "halo effect." Revenue-generating athletic programs are generally considered NCAA Division I–level football and men's basketball. Although universities compete in a variety of other sports for both men and women, success in football and men's basketball provide the best opportunity for national media exposure, which enhances the successful image of the institution.

Although highly visible success in athletics has become recognized as an important part of institutional prestige, expenditures and revenues related to athletics are often dealt with as an entity separate from the academic operations of the university. Dealing with the complexities of the separate accounting functions for this often entrepreneurial activity would be very interesting but goes beyond what can be accomplished in this study and must be left for future research.

Relationship Between Prestige and Institutional Expenditures

The pursuit of prestige has altered the behavior and expenditure patterns of public higher education institutions. As institutions have become more similar, competing for the same students, their expenditure patterns have also been altered. Morphew and Baker (2004) examined the expenditure pattern of institutions that recently reached the RU1 classification. Specifically, the study sought to determine if new RU1s' administrative costs increased. The authors selected the population (N = 88) based on several criteria: RU1s are the most organizationally complex higher education institutions, which they hypothesized would make them more likely to be susceptible to growth in their administrative costs. RU1s also represent the most prestigious institutions in higher education and therefore are likely to serve as models for institutions with aspirational goals. Finally, this group of institutions has experienced considerable growth.

Finance and enrollment data from the Integrated Postsecondary Education Data System for the years 1976, 1988, 1992, and 1996 were included in their analysis. The sample represented 88 institutions that were classified RU1s as of 1994, 18 of which were rising RU1s (institutions that were originally classified as research II institutions (RU2s) and were later reclassified as RU1s), and 37 institutions classified as RU2s as of 1994. The authors performed multiple analyses on the institutions' expenditures. They first examined whether these rising

universities spent significantly more on administrative costs as a portion of their expenditures in 1996 compared to 1998, when they were classified as RU2 institutions. Next, they determined whether the spending patterns of these new RU1s more closely followed the previously existing RU1s in 1996 compared to 1988. They hypothesized that rising RU1s increased their expenditures on administrative costs as a result of their aspirational behavior. The authors relied on Zemsky and Massey's (1990) theory of the administrative lattice to inform their study. Their independent variables in the analysis were the natural log of total revenues, the natural log of enrollment, the percentage of revenues that were restricted, a dummy-coded variable indicating the institution's 1994 classification, a dummy variable for institutional control, a dummy variable for year, and an interaction variable of (RU2 x 1996).

Results of the first analyses revealed that, in general, RU1s spent proportionally less on institutional instruction and support than did RU2s. There were also differences in spending on research as a percentage of institutional budgets. RU1s' proportion of spending on research increased almost 30% from 1976 to 1996. RU2s also saw increases in spending on research; however it occurred on a much smaller scale (10%). The results showed that a shift occurred at RU1s, with the institutions spending a greater percentage on research and less on instruction. The results also showed that RU2s spent a significantly ($p < .10$) larger percentage over time on instruction. They concluded that rising RU1s' expenditure patterns became more like continuing RU1s' over the 20-year period studied. As rising institutions sought to achieve the new RU1 classification, they spent proportionally less on instruction, becoming more like the continuing RU1s.

The authors' study and their findings have important ramifications for state policymakers. Specifically, their findings suggest that "institutions that seek out and achieve their goal of

becoming members of this most research-intensive group are prone to the same disease that afflicts other affluent research spending: increased spending on nonacademic staff rather than increased spending on academic-related services" (p. 379). In short, the pursuit of prestige affects institutional expenditure patterns, with proportionally less money being spent on instruction and more on research. The authors' findings provide support for Bowen's (1980) research on the revenue theory of costs. Bowen's theory of the costs of higher education offers insights into the implications of the previous theories on institutional behavior. Bowen suggested that the dominant goal of institutions is prestige, and there is virtually no limit to the amount of money an institution could spend to achieve this goal. The cumulative effect of Bowen's laws is ever-increasing institutional expenditures. These changes in institutional behavior do not occur within a vacuum. The pursuit of prestige leads to waste. Bowen noted that these ever-increasing expenditures add no value to the core production functions of higher education and "are basically moves in a zero sum game. Such moves force competitors to make similar expenditures with the result that all the players are worse off while their relative positions remain about unchanged" (p. 23).

In his study, which was based on his doctoral dissertation, Garvin (1980) sought to explain how universities actually behave. Garvin's research focused on change in institutional behavior during the 1960s (N = 101). The author tested several propositions. Employing a utility-maximizing model, Garvin identified institutional utility as the pursuit of prestige. Garvin, however, assumed that institutional prestige is a positive function of the combined prestige of individual departments, and the prestige of the departments is a positive function of the faculty quality and size of the faculty. An important explanation of this work for the current study was that the study was set in a market context, which allowed the study to emphasize the

role the competitive environment plays in shaping the behavior of institutions. The model developed in the study accounts for alternate costs and revenues.

Garvin's research provides evidence that the pursuit of prestige by universities has been occurring for almost three decades. His research showed that beginning in the 1960s, in the quest for prestige, public institutions started making gains on private institutions. Also, his findings showed that institutions at differing levels of prestige used different methods in an attempt to improve. Garvin (1980) correctly predicted that the market would lead to an "increasing split between institutions of high prestige and those of lesser renown. As many state universities gain in prestige, the lower quality private institutions—especially the large urban universities—will be forced to resort to a service strategy, responding largely to the manpower needs of their local communities in an effort to remain competitive" (p. 62).

McPherson and Shapiro (1999) studied the expenditure trends in higher education and the resulting implications for institutional quality. Specifically, the authors examined if the increases in higher education costs were being used efficiently to enhance the educational quality. The authors suggested that both families and state and federal governments have the right to be concerned that they are getting a fair return on their investment even though they may not make up a majority of the budget. The study merged three data sets for the analysis: the Higher Education General Information Survey (HEGIS), the Fiscal-Operations Report and Application to Participate (FISAP), and the HEGIS Enrollment Survey. The analysis examined the change in institutional expenditures from 1978 to 1986. The authors found that during the period, research spending grew more rapidly at public universities than at private universities. Private universities, however, were found to have spent more than their public counterparts on instructional support. The authors suggested that the combined trends of increased expenditures

on research and less support for instruction were concerning. The authors concluded, "the evidence reviewed here suggests that there may be more reason to worry about trends in quality at public colleges and universities than elsewhere" (p. 10).

Measuring and Maintaining Prestige

History of academic rankings. The very beginnings of any type of institutional rankings or ratings in higher education can be traced back as early as 1870, when John Eaton Jr., the commissioner of the United States Bureau of Education, published statistical data on institutions, including age, enrollment, tuition, and the number of library volumes. As the amount of data that were reported increased each successive year, some institutions were singled out by their inclusion in a small group that was listed separately. These lists were never explicitly intended to constitute a list of the best institutions; however the institutions on the list were described in the annual publications as "leading universities" and those having achieved "national distinction" (Webster, 1992). The Bureau of Education discontinued the practice of listing some institutions separately in 1890, but in 1910 the Association of American Universities encouraged the bureau to develop another classification. That year, Kendric Charles Babcock developed a scheme to classify colleges and universities, but its publication was suppressed by two U.S. presidents—William Taft and Woodrow Wilson (Webster, 1992).

Webster (1992) indicated that the reason for the suppression of the report is not entirely clear. But newspapers got word of the report after Babcock circulated it among a select group of deans for their comment, and it did not take long for the U.S. commissioner of education, P. P. Claxton, to receive a barrage of letters from college deans and presidents upset about their ranking. Webster speculated that President Taft suppressed the report's publication because it was simply near the end of his term, and incoming president Woodrow Wilson had previously

served as Princeton's president and would be better able to deal with such a controversy. Wilson, however, did not authorize the release of the report, despite being urged to do so by the Association of American Universities. Babcock's successor, Samuel Capen, would comment that, "The Bureau learned that there are no second and third and fourth class colleges; that it was an outrage and an infamy to so designate institutions whose sons had reflected honor on the state and the nation" (Webster, 1992, p. 39). Interestingly enough, many observers today, a century later, feel similarly about the notion of ranking institutions.

In 1906 a psychologist named James McKeen Cattell identified eminent scientists in the United States and the institutions from which they graduated or at which they currently worked. The publication was titled *American Men of Science* (Cattell, 1906). Cattell also calculated the ratio of eminent scientists to total faculty for each institution. Cattell (1933) updated this publication several times, with the last one published in 1933. Webster (1992) believed that Cattell's methodology for ranking institutions remained influential until the mid-1960s. The publication that is often mentioned as being the first ranking of institutions is Hughes's (1925) *A Study of the Graduate Schools in America*.

According to Bogue and Saunders (1992), Hughes obtained a list of raters from faculty at his own institution, including 36 institutions in 20 academic disciplines. The instructions and the scale available to the raters were similar to the instructions that USNWR currently gives to its survey respondents. Raters were to assign each discipline for each institution on the list a number from 1 to 5, with 5 being most prestigious. Hughes would eventually take the position of chair of the American Council on Education and chair of ACE's Committee on Graduate Instruction. Like Cattell, Hughes (1934) also updated his list by expanding the number of disciplines and institutions. Such an expansion is important because it is a likely indication that

the lists of rankings were popular. The number of individuals rating the institutions also increased.

In addition, the rating methodology changed, as the raters were asked to indicate which departments at each institution on the list were in the top 20% of the field (Webster, 1992). In the 1934 publication, institutions were simply listed alphabetically within each discipline. Institutions as a whole were not ranked. It is noteworthy that the practice of rating individual disciplines is similar to the highly regarded National Research Council (NRC) ratings that would first be released a half century later, in 1982.

With the exception of Hughes's updated work in 1934, there was little work done on institutional reputation rankings from 1925 until 1959 (Webster, 1992). However, this period was the first time that an individual from outside of academe constructed institutional rankings, and when the general public became aware of such rankings. A *Chicago Tribune* reporter named Chesly Manly reported on an unpublished internal study conducted by the Association of American Universities in 1946 that ranked member institutions (Stuart, 1995). In addition, Manly used consultants to construct six rankings: "10 Best Universities, Coeducational Colleges, Men's Colleges, Women's Colleges, Law Schools, and Engineering Schools" (Webster, 1992). At the time, little did anyone know the significant role that the media would eventually play in evaluating institutions of higher education.

In 1959 Hayward Keniston published a ranking of 25 universities, which was commissioned by his own institution, the University of Pennsylvania (Webster, 1992). Keniston only surveyed department chairs and no additional faculty. Keniston grouped the rankings into broad disciplinary categories, including groups for the humanities, social sciences, biological sciences, and physical sciences. He also used Hughes's (1925) data to compile institution-wide

rankings (Webster, 1992). What is noteworthy about Keniston's ranking is that his methodology is what is currently followed by USNWR in its annual ranking of graduate programs. The magazine rates graduate schools in broad disciplinary categories (business, law, education, medicine, and engineering) and asks deans and department chairs to rate them.

Cartter, in coordination with the American Council on Education, ranked graduate departments in 1966 in a report titled *An Assessment of Quality in Graduate Education* (Cartter, 1966). Departments from 106 institutions were included in the study, and faculty from those institutions rated their peer institutions on two separate criteria, including the quality of the graduate faculty and the effectiveness of the graduate program (Cartter, 1966). The study lists separate rankings in 29 different academic fields, and the rankings were compiled by averaging the ratings from all respondents in each separate discipline. In the publication, Cartter compared the rankings in each discipline with those from the Hughes (1925) study and the Keniston (1959) study. Importantly, in all of these studies, institutions are actually ranked in each discipline, even though respondents are asked to rate (not rank) the institutions on a given scale.

This study by Cartter (1966) had important implications for college rankings for several reasons. One such reason is that it ranked a greater number of institutions than any previous ranking. The study by Cartter was important also because it rated each program on the overall quality of the program, as well as the quality of the faculty. This would be similar to the well-regarded NRC ratings that would be released several years later. The Cartter study was also significant in that it actually ranked institutions in disciplines, unlike previous studies that did not go so far. Finally, the study was influential because this time period was one of massive infusion of federal dollars into graduate education, especially in the sciences, and reputation mattered in securing that money.

In 1970 ACE coordinated a follow-up study to Carter's work, conducted by Roose and Anderson (1970), which included rankings of graduate programs from 130 institutions. In the report, the authors "attempted to minimize the importance of an absolute rank order of the 130 institutions studied" (Stuart, 1995, p. 15). There seemed to still exist a notion that institutions should not be ranked. Professional schools were first ranked by Blau and Margulies (Blau & Margulies, 1974), and the rankings were based on a survey of deans. A noteworthy finding is the low correlation they found between the reputation of the professional schools and that of the institution as a whole, based on Roose and Anderson's institutional rankings (Webster, 1992). What is noteworthy about the low correlation is that it contradicts later studies that would show high correlations between graduate programs rankings and undergraduate rankings, such as those by Grunig (1997) and Volkwein and Grunig (2005).

Blau and Margulies were the first to compare rankings of graduate education with undergraduate rankings. The Blau and Margulies studies were followed by another ranking of professional schools conducted by Cartter and Solmon in 1977, which included faculty as raters (Stuart, 1995). Employing faculty as raters is a practice that would continue to be followed in the landmark NRC ratings of 1982, 1995, and 2008, and it is also a practice that USNWR has used from the inception of its ratings. USNWR indicated that such a practice lent credence to the ratings because faculty should be better informed than anyone in terms of the quality of peer programs.

The first comprehensive study of graduate programs was sponsored by the National Research Council and was conducted by Jones, Lindzey, and Coggeshall (1982), which was a continuation of the studies by Cartter (1966) and Roose and Anderson (1970). A total of 228 institutions were included in the study of 32 academic disciplines. A separate rating of

institutions was listed for each academic discipline. The study was not intended to be a ranking of the overall programs, but it did rank programs on several characteristics. The study's intention was simply to provide useful information on the various programs (Stuart, 1995). However, the study became a de facto ranking of graduate education in America. The study consisted of peer ratings of the academic quality of the faculty in each disciplinary program.

The 1982 NRC study was a landmark study in higher education. Its sheer size is noteworthy, including the number of institutions and the number of disciplines that were evaluated. Likewise, the number and variety of faculty that were employed as raters is noteworthy, giving the publication credence. What also gave the study instant recognition was its sponsorship by the NRC. People, especially many academics, were still skeptical of institutional rankings or ratings to this point. With the NRC's sponsorship, ratings of educational institutions gained credibility. It is no coincidence that USNWR came out with its first ranking of institutions in 1983, 1 year after the publication of the first NRC list. The NRC has since sponsored two follow-up studies, published in 1995 and, subsequently, in 2008 and 2010.

Maintaining your gains. Indeed, college rankings have a pervasive influence on the higher education landscape. In 1995 over 40% of entering college freshmen reported that national college rankings were either somewhat important or very important in choosing which college to attend (McDonough et al., 1998). But over the past decade, the influence of college rankings has intensified. Since 1995 the proportion of students who describe the ratings as being very important in their college choice process has increased by more than 50% (Reback & Alter, 2014). Moreover, the America's Best Colleges section of the USNWR website now records millions of page views every month (Marklein, 2007). This growing attention has led to both an increasing backlash from many colleges (Thacker, 2005) and a number of recent empirical

studies on the various effects of undergraduate and graduate school rankings (Griffith & Rask, 2007; Martins, 2005; Meredith, 2004; Pike, 2004; Rindova, Williamson, Petkova, & Sever, 2005;Volkwein & Sweitzer, 2006).

Ehrenberg (2002) recognized maximizing prestige as the primary institutional goal for selective colleges and universities. Ehrenberg pointed out that spending competition has expanded beyond academics to include all aspects of the campus environment students will experience. This expansion of competition increases other expense categories such as residence halls, campus facilities, and athletic programs. Prestige represents the relative value of the institution the way a financial statement indicates the value of a for-profit enterprise. Additional funding for these prestige-generating activities may be required from private sources. Private giving refers to funds provided from sources other than government support to operate and expand the university. Universities engage in fund-raising campaigns to solicit money from private donors, often alumni, to add facilities or faculty for specific research purposes.

University foundations have been formed as separate entities to handle the large sum of money and continuous effort needed to garner large donations from alumni and corporate research sponsors. Large campaigns and individual donations may be used to build endowment funds for the university. Money donated to endowment funds is not spent immediately but held in perpetuity, and the interest income is used for funding operating expenses or projects on campus. These endowment funds have grown to over a billion dollars at many prestigious universities and are often used as a measurement of institutional prestige when comparing with competitors.

Ehrenberg (2002) later stated that the USNWR ranking process "exacerbates the competitiveness among American higher education institutions" (p. 146). The high visibility of

the USNWR annual rankings has increased the pressure for higher education institutions to compete and also has defined the criteria for success in the rankings race. Ehrenberg went on to discuss how institutions may alter their behaviors and spending to improve their rankings.

Admissions policies are one of the areas institutions may utilize to alter the student body characteristics. According to Ehrenberg (2002), early admissions policies are popular at least in part because the institution has better control over resulting acceptance rates, which are a component of the USNWR ranking. Ehrenberg went on to list additional examples of strategic planning tied to the components of the USNWR rankings. Strategic enrollment practices such as early admission and including class rank as an entrance requirement could be linked to institutional strategies to improve external rankings. Ehrenberg cited the practice of institutions admitting a less selective group of freshmen in January because the USNWR selectivity component included only the fall group of incoming students as one example of how institutional policy was altered by the ranking process. This practice allows universities to grow enrollment through more open admissions policies, without having a negative influence on their ranking.

Spending for faculty salaries and expenditures per student is another area of institutional strategic spending noted by Ehrenberg (2002) to potentially be influenced by the ranking criteria. While private institutions may strategically increase faculty salaries to improve USNWR rankings, public universities may be more bound to statewide faculty agreements, which are not easily changed. However, the rankings also include a factor that effectively rewards institutions for increasing expenditures per student. Because of limited flexibility to adjust faculty salaries at public institutions, the ranking methodology provides additional incentive for public institutions to increase their expenditures per student.

Monks and Ehrenberg (1999) analyzed data from 1987 to 1997 for 30 private colleges and universities, almost all of which were ranked in the *U.S. News* top 25 for national universities or liberal arts colleges. Although the sample was small, the results showed a consistent effect of rankings on admissions outcomes. Specifically, they found that a one-unit increase in *U.S. News* ranking corresponded to a 0.4% decrease in acceptance rate, a 0.2% increase in yield, and a 2.8-point increase in average SAT score. Indeed, the study showed that improved USNWR rankings improved yield rates and admittance rates in the year following the change.

Monks and Ehrenberg (1999) also found that institutions that dropped in rankings experienced decreases in admit and yield rates. These "declining" institutions would need to reduce selectivity to build a freshman class. The initial reduction in ranking and subsequent institutional reactions may result in a further reduction in ranking in the following years unless the USNWR ranking methodology changes. Changes in the USNWR methodology may cause significant changes in rankings, which ultimately affect institutional admissions for years following the change.

Monks and Ehrenberg (1999) pointed out that rankings for Bryn Mawr changed from fifth in 1989 to 23rd the following year. They indicated that changes in the USNWR ranking methodology contributed to this large change in a single year much more than any actual changes in quality at Bryn Mawr. The California Institute of Technology experienced a change in the opposite direction with a rise from ninth in 1998 to first in 1999 due to a similar change in methodology. USNWR includes comments warning readers to not make comparisons between year-to-year rankings, but the general population selecting a college rarely considers the effects of these changes in methodology.

In a subsequent study, Meredith (2004) used a larger sample that included private and public universities (though no liberal arts colleges) from all *U.S. News* tier levels in 1990–1999. Some of the effects were quite consistent with the findings of Monks and Ehrenberg (1999). Among all institutions, appearing in Tiers 2–4 (relative to the bottom half of the more prestigious Tier 1) resulted in higher acceptance rates and lower proportions of students in the top 10% of their high school class. In addition, moving up in the rankings within the top universities (ranked 1st–25th) was positively associated with the proportion of high school students in the top 10%.

Meredith (2004) confirmed the findings of Monks and Ehrenberg that admissions outcomes are affected by the previous year's USNWR rankings. Meredith found the effect to be stronger for schools moving from the top quartile to the second quartile than for schools changing rank within the top 25 list. Meredith's results also indicated previous years' rankings had a stronger effect on admissions outcomes for public universities than private institutions. Meredith's study also searched for the effect changes in USNWR rank had on the following year's private gifts, grants, and contracts. Meredith used the natural log of these private sources of funding as the dependent variable to evaluate percentage change related to change in ranking quartiles. Meredith found no significant coefficients in this regression case but suggested the dependent variable was too broad because corporate support and research grants were included. An isolated variable for alumni donations only was suggested as a better indicator of changes in private donations that might be influenced by changes in rankings.

However, some of the results of the Meredith study were inconsistent with expectations. For example, there were no significant effects of tier level or ranking on average SAT scores. Furthermore, in subgroup analyses, the effects of college ranking on all variables were generally much larger for public schools than for private schools; in fact, for private universities, appearing

in less prestigious tiers (particularly Tier 4) was associated with having higher average SAT scores. Finally, the variance explained in the subgroup analyses varied drastically across samples and indicators, ranging from 5% to 59%, with no discernible pattern in these results (i.e., the models were not consistently better for particular indicators or types of institutions). The variability in these findings can, in part, be attributed to several changes in the format of the rankings and the information used for calculating the rankings. For instance, over the 10-year period of the study, the number of schools included on the front page of the rankings increased substantially, and SAT math and verbal scores were recentered; therefore consistent information was only available for part of the period investigated.

Volkwein and Sweitzer (2006) completed a study examining which institutional characteristics and financial practices were related to prestige as determined by external ranking institutions. One important finding of their research indicated that the significant "shapers of prestige" for research universities were different from the prestige-related factors for liberal arts colleges. They also found that measuring per-student expenditures was a more robust indicator of prestige than focusing on the revenues. They separated expenditures into categories for instruction, academic support, student services, and institutional support. They developed a separate variable for research expenditures per full-time faculty member as an additional predictor of prestige.

Using the USNWR as the dependent variable and a set of institutional characteristics as independent variables, they evaluated the significance of each group of characteristics in predicting prestige for a single year of data. For the public research institutions that are the focus of this study, Volkwein and Sweitzer (2006) found the age of the institution, total enrollment, expenditures per student, student/faculty ratio, faculty salaries, percentage of full-time faculty,

and median SAT scores were significant in the model including structural characteristics, faculty, and students.

Conclusion

This literature review revealed studies related to institutional striving for prestige, descriptions of markets for prestige competition, and resulting benefits to institutions for achieving and maintaining prestige. While striving for prestige is a common practice in higher education and has been studied through individual case studies and implications for students, there is little information regarding the competitive finance markets for prestige in higher education. Results of this study provide additional information relating economic striving activities with changes in prestige measurements by examining relationships between real IPEDS expenditures and changes in Carnegie classifications over a specified period. Results of this analysis provide examples of how resource theory, institutional theory, and concepts of prestige interact in prestige markets over an 11-year period, which allows for changes in rankings to be observed. These relationships between expenses and dynamic changes in ranking enhance the researcher's understanding of how prestige changes over time. The methods developed to examine expense levels based on ranking and measure institutional commitment to prestige generation as a percentage of total operating expenses could also prove beneficial for future research in this area.

Chapter 3: Methodology

The purpose of this study is to examine the assumption that engaging in striving behavior—that is, action undertaken by the organization to increase institutional prestige—will have a direct effect on an institution's level and distribution of expenditures, as measured by the percentage share of the total expenditures of the organization. A review of the literature suggests that in an attempt to increase their prestige, institutions are altering their behavior (Bok, 2006; Bowen, 1980; Morphew & Baker, 2004; O'Meara, 2007; Pusser, 2002; Weerts & Ronca, 2006). An underlying assumption supporting this aspiring behavior is that institutions displaying striving behaviors will increase the level of their spending on administrative support for the university, as well as increased costs for research-related activities, thereby decreasing the proportion of monies spent on teaching-related activities. This study tested this assumption by addressing the following question: How does engaging in striving behaviors affect an institution's pattern of expenditures?

This chapter begins with a discussion of the theories that address the relationship between the search for prestige and institutional behavior. The theories are drawn from multiple sources in the literature, including the organizational theory and management literature. Following the theoretical framework is an overview of the Carnegie classifications, which this study used to operationally define "striving," in that institutions that increase their respective Carnegie classifications over the period studied here are identified as striving (e.g., to move up in the rankings). Next, the study's research questions are presented, followed by a presentation of the study's hypotheses and an explanation of how they are connected to the review of the existing literature and theory, followed by an explanation of the study's data sources and data collection.

Finally, the chapter concludes with a discussion of the data analysis strategies that will be employed by the study.

Theoretical Foundations

In order to understand the relationship between the pursuit of prestige and institutional costs, this study attempted to draw upon several different theoretical lenses: resource dependency theory, strategic balance theory, isomorphism, and Perrow's theory of organizational prestige. Resource dependency theory (Pfeffer & Salancik, 1978) explains that organizations are inescapably bound to the conditions within their environment. Hasbrouck (1997) noted that Pfeffer and Salancik viewed organizations as being involved in a constant struggle for autonomy. Organizational survival, an organization's key objective, depends on the organization's ability to maintain and acquire resources from the environment. Institutions of higher education are open systems interacting with their environment.

Pfeffer and Salancik (1978) explained, "it is the fact of the organization's dependence on the environment that makes the external constraint and control of organizational behavior both possible and almost inevitable" (p. 43). For higher education institutions, this increased dependence leads to conflict because institutions are constantly pursuing autonomy. Additionally, problems may also arise because the organization's environment is undependable. Organization's environments change. Other organizations enter and exit the environment and affect the supply of available resources. Resources can become more or less scarce, and the organization's survival is contingent on its ability to adapt in response to these environmental changes (Pfeffer & Salancik, 2005).

Over the last three decades, public higher education's environment has changed dramatically. Between 1970 and 2005, spending on higher education grew from 2% of GDP to

over 2.5% (Lingenfelter, 2008). The influx of money from the federal government, private giving, tuition, and academic entrepreneurial sources allowed public research universities to become less dependent on the state. Additionally, the entry of external comparative institutional rankings, such as the National Research Council (NRC) rankings and those published by USNWR, increased public institutional market dependency by providing a ladder with delineated rungs on which institutions can compete. O'Meara (2007) noted that although there has always been a pecking order in higher education, rankings have increased competition.

The theory of strategic balance provides perspectives on how the introduction of rankings and external validators may have informed the behavior of institutions. Strategic balance theory (Deephouse, 1999) examines the relationship between being different and being the same. The theory states that firms benefit from being different because they face less competition but also benefit from being the same because they are recognized as being more legitimate. Strategic balance theory suggests that institutions may view rankings as an opportunity to differentiate themselves from their competition.

As institutions become aware of the academic and financial implications of moving up or falling in the rankings, they became more strategic in trying to influence their ranking (Griffith & Rask, 2007; Jin & Whalley, 2007; Monks & Ehrenberg, 1999). The benefits of improving their rank have led some institutions to manipulate or omit data that impact institutional rank (Ehrenberg, 2002). Institutions may see gaining prestige as a way to differentiate themselves from their peer institutions. Firms are forced to balance the benefits of differentiation (reduced competition) against the costs of not being the same (reduced legitimacy). Strategic balance theory suggests that firms seeking a competitive advantage should be as different as legitimately possible. In short, Deephouse (1999) explained that a firm will achieve maximum performance,

often referred to as the "Competitive Cusp" (Porac, Thomas, & Baden-Fuller, 1989, p. 414) when "the gains from reduced competition are equal to the costs of legitimacy challenges" (p. 154).

The theory of isomorphism provides perspectives on organizational pursuit of prestige and legitimacy. Indeed, isomorphism explains the process of organizations becoming homogenous. DiMaggio and Powell (1983) theorized that this occurs by three mechanisms: coercive, mimetic, and normative. The coercive mechanism occurs when outside organizations apply formal and informal pressures. These pressures occur because the organization is dependent upon outside organizations. The mimetic process results from uncertainty and ambiguity. Organizational goals are often ambiguous, as is the case with public research universities, and these organizations may attempt to mimic other organizations in their field that have been deemed successful or legitimate. Finally, normative pressures can lead to isomorphism.

Highly technical organizations rely on professionalization of their labor force to establish their legitimization and to gain autonomy. DiMaggio and Powell (1983) pointed out that professionalization is achieved through the legitimization of formal education and through the "growth and elaboration of professional networks that span organizations" (p. 152). DiMaggio and Powell (1983) noted that organizations that rely on a professional labor force "will be driven primarily by status competition. Organizational prestige and resources are key elements in attracting professionals. The process encourages homogenization as organizations seek to ensure that they can provide the same benefits and services as their competitors" (p. 154).

Perrow's (1961) theory of organizational prestige makes two major claims: "that an organization may control its dependency upon the environment by acquiring prestige," and the

emphasis upon indirect indexes (i.e., prestige) may actually "subvert quality, since the indexes become more important and valuable to the organization than the quality they are supposed to suggest" (p. 338). According to Perrow's theory, prestige can be based on either intrinsic (preferred) or extrinsic characteristics of quality. For higher education as an industry, prestige is not reflective of the actual quality of the goods or services but rather is contingent on the judgment of the external validating groups who are viewed as capable of indirectly evaluating the product. Perrow (1961) noted, "external characteristics are not essential to maintaining production standards, though they may be vital in insuring acceptance of standards" (p. 336).

In cases where the quality of a product cannot be determined by its own intrinsic nature, its association with another organization, measure, or product may determine its quality. Core to the success of external validation is the assumption that "the image based on extrinsic referents will promote public favor and even be a substitute for an image based on intrinsic referents" (Perrow, 1961, p. 336), despite an ineffective and rudimentary ability to actually measure this assumption. For institutions, this is key because the marketing of a product is based upon its intrinsic quality. The endorsement of external organizations (for example, USNWR) may allow for marginal differentiation, which is crucial for organizational survival when trying to compete in a competitive market.

Perrow's (1961) theory was developed as a part of his study of hospitals. He recognized that highly technical or specialized organizations tend to utilize indirect measures of quality. For example, Perrow cited the "reputation of the personnel, the specialized equipment, the number of research projects in operation" (p. 337) as some examples of common measures used in evaluating hospitals. The external validating agencies acknowledgement of quality becomes even more important in a highly competitive environment. In this kind of environment,

institutions emphasize their extrinsic endorsements to gain a competitive advantage. Perrow (1961) noted, "patients are incompetent to judge the care they receive from the hospital: they are unable to gain the information required to make a judgment, and they lack the knowledge to interpret correctly what they do experience" (p. 339). According to Perrow (1961), in a highly competitive environment, hospitals increase their focus on producing the superficial items that patients are able to evaluate and then use their public relations arm to promote them aggressively.

Perrow (1961) suggested that organizations that promote outside agencies' validations of their organization's quality may lead to the development of internal problems for the organization. Individuals, both internal and external to the organization, raise concerns that valuable resources are being diverted from the organization's core purposes to nonessential programs or activities. As the focus moves toward external validation, Perrow pointed out that an unintended result of this behavior may be the attraction of a consumer that continually demands more of these services. However, this comes at the expense of addressing the core activities. As organizations become dependent upon a number of agencies within their environment, this becomes even more complex. Perrow summarized the challenges of external validation as measures of quality,

> the production of indirect indexes of intrinsic quality may take precedence over maintaining the quality of goods and services. Resources may be diverted from activities supporting official goals to those which produce and market extrinsic characteristics. (p. 341)

In summary, these theories combined provide a theoretical framework for understanding the relationship between the pursuit of prestige and institutional behavior. Being perceived as legitimate is crucial for institutional survival for highly technical organizations where the quality of the product cannot be reliably assessed by the lay public. As a result, institutions began to

mimic one another, and higher education began to become increasingly homogenous. At the same time, they increasingly direct organizational resources to promoting "external" indicators of quality. Eventually, the costs of not being considered legitimate may have forced institutions to pursue prestige in order to survive.

Population and Sample

This study focused on 1,215 institutions that were classified into two broad categories: nonstrivers and strivers. Nonstrivers were defined as those institutions that were classified in one of seven Carnegie classifications (Bachelor's, Master's/S, Master's/M, Master's/L, DRU, RU/H, and RU/VH) by Carnegie in 2005 and did not change classification by 2010. Alternately, striving institutions were those institutions classified in one of seven Carnegie classifications (Bachelor's, Master's/S, Master's/M, Master's/L, DRU, RU/H, and RU/VH) in 2005 but changed classification by 2010. More specifically, striving institutions received a 2010 Carnegie classification that was at least one level higher than their 2005 classification.

These two categories resulted in a group of 1,013 institutions categorized as nonstrivers and 203 institutions categorized as strivers. However, in an effort to better understand the effect that striving has upon an institution's expenditures, each category (nonstrivers and strivers) was further disaggregated. Nonstrivers were divided into seven discrete groups, representing each of the seven Carnegie classifications that each nonstriver was placed in. Striving institutions were categorized based upon their 2010 Carnegie classification. Such groupings, it was hoped, would allow the study to examine changes in expenditure patterns for homogenous groups of institutions, as spending patterns undoubtedly differ depending upon the Carnegie classification.

Table 3 summarizes the categories and the number of schools within each subcategory. For nonstrivers, bachelor's institutions represented just under half of the group, with large

Table 3

Sample Institutions by Striving Code and Carnegie Classification

Group categories	*N*	Group %	% of all inst (*N* = 1215)
	Nonstrivers[a]		
RU/VH	88	8.7	7.2
RU/H	69	6.8	5.7
DRU	51	5.0	4.2
Master's/L	256	25.3	21.1
Master's/M	76	7.5	6.3
Master's/S	34	3.4	2.8
Bachelor's[b]	439	43.3	36.1
Total	1,013		83.3
	Strivers[c]		
RU/VH	12	5.9	1.0
RU/H	11	5.4	0.9
DRU	16	8.4	1.4
Master's/L	82	40.4	6.7
Master's/M	47	23.2	3.9
Master's/S	34	16.7	2.8
Total	202		16.7

[a]Nonstriving institutions are institutions whose Carnegie classification did not change between 2005 and 2010. The variable names indicate the level at which those institutions were classified.

[b]Institutions in the bachelor's category represent the combination of two classifications (bachelor's: arts & sciences and bachelor's: diverse fields)

[c]Striving institutions are institutions whose 2010 Carnegie classification was at least one step higher than its 2005 classification. The specific variable indicates the classification of the institution as of the 2010 classification.

master's programs accounting for the next-largest percentage (24.3%). Likewise, for strivers, large master's programs had the largest number of striving universities with almost 40% of the group. In fact, master's universities, in total, accounted for more than 80% of all strivers.

Further, Table 3 reinforces Morphew and Baker's (2004) point that universities aspire to greater status because of the prestige accorded these institutions. However, to reach a higher classification, they need to find ways of increasing the amount of funding they receive for research and therefore increase the costs associated with greater research funding. Indeed, this sentiment underlines a major assumption underlying this analysis: that an increase in an institution's classification reflects a deliberate strategic decision by the institution.

The Carnegie Foundation for the Advancement of Teaching classifies institutions according to mission. According to the Carnegie Foundation (2009), the purpose of the classification was to identify "categories of colleges and universities that would be homogeneous with respect to the functions of the institutions and characteristics of students and faculty members" (p. vii). Historically, Carnegie divided its research universities into RU1s and RU2s based on federal research expenditures and the number of doctorates awarded in a year. An institution's classification was determined by the amount of federal research expenditures and the number of doctoral degrees awarded in a single year. An unintended use of the institutional classifications by the Carnegie Foundation has been its use as a measure of institutional prestige.

O'Meara (2007) noted that, historically, institutions have wanted to "move to what institutional leaders consider more prestigious Carnegie classification categories" (p. 125). In fact, in response to the widespread use of the classification system to measure prestige, the Carnegie Foundation revised the rankings in 2000 and 2005 into a less hierarchical structure. Despite this reality, Morphew and Baker (2004) pointed out that the classification "has served as

a prestige barometer for many institutions because it classifies institutions using variables linked to normative models of prestige and stature" (p. 367).

The new classification methodology remained quite similar from past years for bachelor's- and master's-level colleges or universities. For this study, bachelor's-level institutions were included in these categories if bachelor's degrees accounted for at least 10% of all undergraduate degrees and they awarded fewer than 50 master's degrees (2008-9 degree conferrals). Among institutions where bachelor's degrees represented at least half of all undergraduate degrees, those with at least half of bachelor's degree majors in arts and sciences fields were included in the arts and sciences group, while the remaining institutions were included in the diverse fields group.

Classification as a master's college or university requires that institutions award at least 50 master's degrees annually but fewer than 20 research doctorates. Program size is based upon the overall number of master's degrees awarded per year. For example, master's colleges and universities: larger programs (Master's/L) require that an institution award at least 200 master's degrees annually. It is important to note that at this level of Carnegie classification, a stepwise move (e.g., from Master's/S to Master's/M) may not be the actual goal of an institution's strategic behavior. Indeed, these institutions may have developed strategic plans to achieve classifications much higher than the initial increase within this study might indicate.

A cursory investigation of these institutions' websites may illustrate doctoral-level ambitions. In fact, Felician College, a striving Master's/S institution, purported its desire to increase program offerings and develop its campus into a regional leader in teaching and research. Also, Endicott College, a Master's/S institution as well, discussed its newly minted doctoral program and made it clear that it intended to develop numerous doctoral programs and

enhance its research footprint. Indeed, these are two examples of institutions that are intending to continue to strive beyond what is captured within this study.

In order to be classified as a DRU in 2010, an institution had to annually award at least 20 doctoral degrees and be assigned to the lowest category of research activity. Research activity was determined by examining certain correlates of research activity, including research and development (R&D) expenditures in science and engineering; R&D expenditures in non-S&E fields; S&E research staff (postdoctoral appointees and other nonfaculty research staff with doctorates); and doctoral conferrals in humanities fields, in social science fields, in science, technology, engineering, and mathematics (STEM) fields, and in other fields (e.g., business, education, public policy, and social work). These data were statistically combined by Carnegie using principal components analysis to create two indices of research activity reflecting the total variation across these measures (based on the first principal component in each analysis). Institutions that did not receive a "high" or "very high" score on either index were categorized as a DRU.

Research Question and Hypotheses

The study's overarching research questions is, what effect does striving, or the pursuit of prestige, has on an institution's expenditure patterns? Striving behavior could be operationalized by a variety of indicators; however this study adopted Morphew and Baker's (2004) use of change in Carnegie classification to operationalize intentional efforts to increase institutional prestige. An institution's expenditure patterns refer to an institution's various lines of costs and how they combine to determine an institution's total expenditures. Specifically, this study was concerned with what effect striving behavior has upon the percentage change in specific expenditure lines as a proportion of an institution's total expenditure profile.

As a result, the overarching research question addressed in this study was divided into six separate research subquestions:

1. When controlling for Carnegie classification, what was the expenditure pattern of *nonstriving* institutions between 2002 and 2011?
2. When controlling for Carnegie classification, what was the expenditure pattern of *striving* institutions between 2002 and 2011?
3. How did expenditure patterns between 2002 and 2011 compare between *nonstriving* institutions and *striving* institutions?
4. In what respects were patterns of expenditures between 2002 and 2011 significantly different for *striving* institutions across Carnegie classifications?
5. How did final Carnegie classification affect *striving* institutions' overall rates of expenditure between 2002 and 2011?
6. What impact did final Carnegie classification have on *striving* institutions' rate of change in expenditures when controlling for institutional demographic factors?

These research questions capture the intention of striving institutions to increase their prestige and differentiate themselves from their competition, which reflects Deephouse's (1999) theory of strategic balance. That is, rising institutions, which have less prestige than their aspirational peers, do not initially require as great a level as expenditures in extrinsic characteristics as the institutions that strivers aspire to be like. Further, these hypotheses reflect Perrow's (1961) theory of organizational prestige, that organizations divert resources from activities supporting official goals, such as student instruction, to those which produce and market extrinsic characteristics, such as institutional support activities. Also, Perrow suggested that differentiation related to increases in prestige will open them to new external markets. As

such, these new markets allow rising institutions to differentiate themselves from their former peer group.

Variables and Data Sources

Dependent variables. This study utilized eight dependent variables. Seven variables focused on a specific expenditure category—namely, institutional support, research, instruction, academic support, student support services, public service, and scholarships and fellowships. The eighth variable represented an institution's total expenditures. However, one must recognize that the institutions discussed here all may differ greatly with respect to student enrollments, full-time-equivalent staff, campus size, and therefore total expenditures. To that end, and in an attempt to standardize these measures, the eight expenditures that served as the dependent variables were reported as an expenditure per full-time-equivalent (FTE) student enrollment. This value was calculated by taking total expenditures for each category listed and dividing by the number of FTE undergraduate and graduate students, resulting in a normalizing value that allowed one to compare institutions with large enrollment differences.

Further, it must be recognized that when dealing with monetary figures, as was the case here, the need to control for the effect of inflation may be warranted. For purposes of this study, the author wished to compare institutions' spending over time. To that end, I believe that it may prove more useful to ensure that all dollar figures are adjusted for inflation. By using the U.S. Bureau of Labor's consumer price index, all expenditures will be converted to 2011 dollars, allowing for more standardized comparisons across time and institutions.

For the purposes of this study, the eight dependent variables were defined as they were for the IPEDS survey, discussed later in this chapter, from which the values were obtained. Each variable was reported for each year, starting in 2002 through 2011.

Instructional expenditures included expenditures for all colleges, schools, departments and other instructional divisions of the institution's credit and noncredit activities, public service, and research that were not separately budgeted for. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Research expenditures included all 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. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Institutional support expenditures included all expenditures for the day-to-day operational support of the institution, excluding expenditures for physical plant operations. Included within this category were general administrative services, executive planning, legal and fiscal operations, and public relations/development. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Academic support services included expenses for support services that were an integral part of the institution's primary mission of instruction, research, or public service and that were not charged directly to these primary programs. Within this category were expenses for libraries, museums, galleries, audio/visual services, academic development, academic computing support, course and curriculum development, and academic administration. This variable was reported for each year, 2002 through 2010, as expenditure per FTE student.

Student support services expenditures included expenses for admissions, registrar activities, and activities whose primary purpose was 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. Possible examples are career guidance, counseling,

financial aid administration, student records, athletics, and student health services. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Public service expenditures include expenses for activities established primarily to provide noninstructional services beneficial to individuals and groups external to the institution. Examples are conferences, institutes, general advisory service, reference bureaus, and similar services provided to particular sectors of the community. This function included expenses for community services, cooperative extension services, and public broadcasting services. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Scholarships and fellowships represented an institution's expenses on only scholarships and fellowships recognized as expenses in a school's general financial statement. This expenditure line did not include federal work study expenses, student awards that were made from contributed funds or grant funds that were under the control of the institution, or scholarships and fellowships in the form of allowances applied to tuition and fees. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

Total core expenditures represented the sum of the seven lines of expenditures listed above. This variable was reported for each year, 2002 through 2011, as expenditure per FTE student.

It is important to note that total core expenditures did not represent an institution's total expenses, which would include the total core expenditures, as well as capital expenditures and investment loss or gains. However, I believe that the inclusion of these two expenses would not add to the discussion of trends in expenditures as these expense lines are typically volatile and can vary greatly from year to year. Further, accounting standards allow for these expenses to be

allocated in different ways, providing a possible issue with the longitudinal data being compiled for this study.

These specific dependent variables, or lines of institutional expenditures, included were drawn from research that has shown that these specific spending behaviors may accurately reflect an institution's desire to strive. As discussed in Chapter 2, O'Meara (2007) and others suggested numerous characteristics within five distinct areas of institutional operations that can be identified as striving behavior. Although not all characteristics are easily measured, the specific expenditures selected above serve as quantifiable measures for many of these characteristics.

Independent variables. The predictor of interest in the study, striving, was operationalized as an institution that demonstrated an increase in its Carnegie classification from 2005 to 2010. It is important to note that this definition of striving was indicative of a post hoc classification of striving. Indeed, this study was not prognosticating an institution's future or current striving pattern but instead looked at the past movements in Carnegie classification an institution has demonstrated.

Morphew and Baker (2004) used the same method to operationalize change in prestige. O'Meara (2007) also pointed out that institutions have used Carnegie classification as a measure of prestige. Although Carnegie did not intend for its classification system to be used as a measure of prestige, the literature is clear that institutions have used it as a prestige barometer and have attempted to move up to higher classification in an attempt to increase their prestige (Morphew & Baker, 2004; O'Meara, 2007).

As such, this variable was coded at two levels. First, each institution was coded according to type of institution. Nonstrivers were coded as zero, whereas striving institutions

were coded as one. Next, each institution received a category code that indicated their respective Carnegie classification. A summary of this two-level coding is depicted in Table 4.

Table 4

Carnegie Classification Categories and Associated Category Codes

Type of institution	Carnegie classification code
Nonstrivers[a] (Dummy Coded as 0)	
RU/VH	6
RU/H	5
DRU	4
Masters/L	3
Masters/M	2
Masters/S	1
Bachelors[b]	0
Strivers[c] (Dummy coded as 1)	
RU/VH	5
RU/H	4
DRU	3
Masters/L	2
Masters/M	1
Masters/S	0

[a]Nonstriving institutions are institutions whose Carnegie classification did not change between 2005 and 2010. The variable names indicate the level at which those institutions were classified.

[b]Institutions in the Bachelor's category represent the combination of two classifications (Bachelors: Arts & Sciences and Bachelors: Diverse fields)

[c]Striving institutions are institutions whose 2010 Carnegie classification was at least 1 step higher than its 2005 classification. The specific variable indicates the classification of the institution as of the 2010 classification.

Carnegie classifies institutions according to mission, as informed by their behavior (Carnegie Foundation, 2009). According to the Carnegie Foundation (2009), the purpose of the classification was to identify "categories of colleges and universities that would be homogeneous with respect to the functions of the institutions and characteristics of students and faculty members" (p. vii). During the period examined in this study (2000–2011), Carnegie published three new classifications: 2000, 2005, and 2010.

The sample for the study was limited to institutions that were classified in one of seven classification types: bachelor's programs, master's colleges and universities: small programs, master's colleges and universities: medium programs, master's colleges and universities: larger programs, doctoral research universities, research universities: high research level, and research universities: very high research level. The master's college and university subcategories were determined based upon number of total master's degree awarded by the school. Bachelor's programs were divided into three program areas, determined by the scope of distribution of disciplines in which bachelor's degrees are awarded by the institution.

For this study, bachelor's: arts and sciences and bachelor's: diverse fields were combined, as these classification were based on type of degree not quantity or any other measurable effect. Bachelor/associate colleges were not considered within the scope of this study. Both 2005 and 2010 classifications were utilized in this study. The 2005 classification—coded 0 through 6, with 0 representing the reference group, bachelors' institutions, and 6 representing RU/VH institutions—served to inform the researcher as to what effect initial classification level may have had on an institution's expenditure patterns. Further, 2010 Carnegie classification—coded 0 through 5, with 0 representing the reference group, Master's/S institutions, and 5 representing RU/VH schools—was used. This variable, it was hoped, would

demonstrate what the impact of striving for higher Carnegie levels has upon how a university or college spends it limited resources.

Although, normally, categorical variables tend to be dichotomous in nature, numerous research studies have discussed the use of categorical variables, such as 2005 and 2010 Carnegie classification, with more than two groups in HLM models (Newman & Newman, 2012; Woltman et al., 2012). Generally, research has shown that the use of categorical variables, with three or more categories, as predictors can be successfully utilized in HLM models as long as the coding reflects an *N*–1 value. That is, the number of coded possibilities must be one less than the actual number of categories. Further, since the variables here are ordered, the predictors can be viewed as parallel-ordered variables, such as Likert scales and age groupings. Procedurally, the omitted group serves as the reference group to which the other coded groups are compared.

With the intention of controlling for covariates that might influence resource allocation patterns among the nonstriving and striving institutions, other independent variables included an institution's total revenues per FTE as reported for 2011 and a dummy variable indicating institutional control (public = 0, private = 1). Research on determinants of resource allocation included scale and the overall availability of resources as primary influences on resource allocation. In general, larger institutions spend smaller shares of their budgets on central administration, whereas institutions with more available unrestricted revenues spend larger shares on central administration (Baker, 2003). As such, this study included as a covariate an institution's total revenues. Further, the study included an indicator of an institution's level of ownership (coded as public institution = 0 and private institution = 1) because administrative functions, in particular, may be different in public and private institutions. For example, there was reason to believe that public institutions, with their relatively great reliance upon state

funding, would spend a greater share of their revenues on administrative offices that interface with the state office providing these revenue streams (Leslie & Rhoades, 1995).

Data sources. The primary sources of data were the nine annual interrelated surveys that constitute the U.S. Federal Integrated Postsecondary Education Data System (IPEDS). IPEDS is an annual nationally representative data set of information from every institution that participates in federal student aid programs authorized by the Patsy T. Mink Equal Opportunity in Education Act (Title IV) (NCES, 2008). Participation is required and mandated by the Higher Education Act of 1965. The purpose of IPEDS is to collect longitudinal postsecondary institutional data in order to analyze postsecondary trends and make the data available to the public. There are 6,800 public and private, not-for-profit institutions included in the survey sample. Participation is mandatory, so response rates for all IPEDS survey components are above 99%. The surveys are distributed to all institutions, and as a result, there is no sampling error. They are, however, subject to nonsampling error, the sources of which vary across survey instruments.

The nine interrelated surveys are collected annually over three periods, with the exception of the fall staff section, which is part of the human resources component; it is collected biennially in odd years (NCES, 2008). In the fall, the following components are collected: institutional characteristics, completions, and 12-month enrollment. The institutional characteristics survey gathers information related to institutional demographics, admissions requirements, and student charges. The completions survey contains information about degree completion by race, gender, award, and program, whereas the 12-month enrollment component provides information about student headcounts.

Although IPEDS has collected data since 1986, definitional changes throughout the years, as well as some major changes in financial reporting standards mandated by accounting

standards boards, often make comparisons over time difficult. To facilitate long-term trend analyses, the Delta Project on Postsecondary Education Costs, Productivity, and Accountability (i.e., "The Delta Cost Project") commissioned the development of a secondary database to mitigate many of the problems with conducting trend analyses with IPEDS. Adjustments have been made to harmonize and standardize the data as much as possible to account for changes over time in accounting standards and IPEDS reporting formats. These adjustments ensure reasonable consistency in the patterns over time and allow broad comparisons between public and private institutions.

The Delta Cost Project commissioned Human Capital Research Corporation (HCRC) to construct the initial database, which included data from 1987 to 2005. HCRC provided subsequent annual updates for 2006, 2007, and 2008. Staff at the Delta Cost Project assumed full responsibility for the database thereafter and performed the 2009 and 2010 updates. One of the complications of performing cost trend analyses over a multiyear period comes from changes in financial accounting conventions that have affected the IPEDS expenditure and revenue categories. Since 1987 there have been four 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 "common form" (or "old form"), with public institutions continuing to use the common form through the early 2000s. In 1997 private institutions began reporting under the Financial Accounting Standards Board (FASB) reporting standards. Public institutions were also affected by changes in Governmental Accounting Standards Board (GASB) standards, which IPEDS phased in between 2002 and 2004. Most public institutions were using GASB reporting standards in 2002, but some continued to use the common form through 2003. All institutions were required to report using GASB standards by 2004.

Beginning in 2008, a new "aligned form" was phased in for both FASB- and GASB-reporting institutions that improved comparability in reporting but maintained some differences. The aligned form became mandatory for all institutions in 2010. The changes in accounting standards between all these different formats affected reporting of revenues, expenses/expenditures, and scholarships and fellowships.

The Delta database was designed to overcome, as best as possible, differences in reporting standards that occurred between 1987 and 2009. 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, often times made it impossible to compare expenditures pre and post 2002 for public institutions.

This study used data from the Delta Cost Project IPEDS database. While the Delta Cost Project contains data for years 2002 through 2010, 2011 was, as of this study, not updated to the database. As such, I constructed the 2011 data for the required expenditure/revenue lines by utilizing the Delta Costs Project's data-mapping file. In all, data were compiled on (a) 1,013 institutions that were categorized as nonstrivers and (b) data on 203 institutions that were classified as striving institutions. Data were also collected on these institutions from 2002 to 2011. Data from multiple years were utilized in order to understand spending patterns for each institution over an extended time frame, understanding that differentiation of financial data might require several years for trends to be readily noticeable. Also, this range of historical data allowed the study to include all of the data that the Carnegie classification process utilizes. Prior to a classification year, Carnegie utilized data from the 3 years preceding the classification year. For example, for the 2005 classification, Carnegie used institutional data from 2002 to 2005.

The data collected for this study were guided by the review of the literature and theoretical framework. Using the list of institutions reported by the Carnegie Foundation classifications for 4-year institutions as the raw sample, the institutions selected for final inclusion in the study were dictated by certain exclusion criteria as dictated by the availability and appropriateness of the data through the Delta Cost Project. Institutions were required to have reported all required financial information for all 10 years included in this study. Also, financial data had to be available for each specific campus as indicated in the Carnegie classification. Indeed, some institutions reported data in an aggregated form, without separate lines for each specific, distinct campus.

After following the above exclusion criteria, there was an attrition rate of 8% (N = 106). A review of the institutions omitted from the study indicated that no selection bias was indicated, as excluded institutions represented multiple levels of the Carnegie classifications, as well as multiple geographical regions and differing organizational controls. All of the variables met the criteria of being available and readily quantifiable. There were no missing data in the sample over the period studied. Additionally, there were several advantages for utilizing these data sources. First, all of the data were obtained from nationally representative samples that survey annually. Secondly, with the exception of two of the variables included in the analysis, all of the variables were derived from IPEDS. Third, the data were cross-sectional, time-structured, and balanced, having all been measured on the same occasions and having the same number of measurements (Singer & Willet, 2003). Fourth, all of the data collected were derived from instruments with high response rates.

Data Analysis

The goal of this analysis was threefold. First, through descriptive statistics, the study evaluated, compared, and contrasted the university spending over time of nonstriving and striving institutions, as well as between the two groups. Second, it evaluated, compared, and contrasted university spending for striving institutions based upon their final (i.e., 2010) Carnegie classification. Finally, the study used multilevel regression models to determine how Carnegie classification and other indicated demographic factors impact the spending patterns of striving universities over time. These three goals paralleled the six research questions outlined above and also the three stages of the analysis that I now outline.

Descriptive statistics. The first two goals were descriptive in nature. The intent here was to establish the nature of the variation in university spending across groups and over time. Doing this prior to evaluating the relationship between the two accomplished two goals. First, it allowed one to showcase the significant variation that is present between striving and nonstriving institutions and the extent to which these differences are widening or converging during this period in both of these aspects. Second, by establishing the nature of this variation one can develop and evaluate more informed models of the relationship between the two.

The first four research questions posed above were answered through descriptive, statistical methods. The study utilized a combination of descriptive statistics and difference in mean *t* tests for independent groups with unequal variances to evaluate how the spending patterns of striving and nonstriving universities differed and changed over time. The use of line graphs and descriptive statistics (e.g., means and standard deviations) allows one to establish the basic differences in groups and the trends over time in the key expenditure categories. It is important to note that some consideration was given to using median values as a way to lessen

the impact any outliers may have had upon the data set. In order to address this concern, trend lines were created and analyzed in order to ascertain if any differences in spending patterns existed, thereby indicating the need to further investigate the use of median values instead of mean values. However, after analyzing the median expenditures for each year, results indicated that the overall trends were not qualitatively different from the mean values.

The use of the ANOVA statistical model enables one to evaluate if the difference in the means for the striving and nonstriving universities and the specific Carnegie classification for striving institutions were significantly different or if those differences were due to random variation (Warner, 2008). Indeed, this would indicate whether or not the difference in institutional support spending, for example, was actually significantly different for striving and nonstriving universities or for Master's/L striving institutions and DRU striving institutions or if the observed difference was simply due to chance. It is important to note that this test does not involve any assessment of causality in this case. It is only utilized descriptively to evaluate the significance of the differences in the spending behaviors of these two groups.

Multilevel modeling. The remaining two research questions require a more robust analysis. As such, the study utilized multilevel modeling as an efficient way to describe a causal relationship between the variables over time. Data that have a hierarchical structure, with lower-level observations nested in higher-level units, are very common in the social and behavioral sciences. Traditional general linear models are not suitable for the analysis of such data because of the violation of the assumption of independence when data are clustered. Multilevel modeling is specifically designed for the analysis of such nonindependent or clustered data and can incorporate predictors at the individual and group levels, as well as individual by group interactions. Multilevel models take into account the variability associated with each level of

nesting, thus avoiding many methodological errors that may lead to false conclusions when this hierarchy is ignored (Kreft, 1996; Snijders & Bosker, 1999).

Multilevel linear models are often also referred to as hierarchical linear models, mixed-effects models, random-effects models, random-coefficient models, and covariance component models (Raudenbush & Bryk, 2002). Raudenbush and Bryk (2002) stated that there were three general purposes for this type of modeling: (a) improved estimation of effects within individual units, (b) the formulation and testing of hypothesis on cross-level effects, and (c) the partitioning of variance and covariance components among levels.

More specifically, this study used HLM for analysis of the longitudinal data as the basis of this study. Due to the nested nature of the data that were being used to evaluate the research question (i.e., multiple observations over time nested within individual universities), it was necessary to use a statistical technique that could account for variation over time and also across schools. If standard OLS regression models were used to evaluate these data, a number of the assumptions would be violated (e.g., one would have high colinearity among longitudinal independent variables, autocorrelation, and probably some level of heteroskedasticity due to the two levels of variation in the data) (Raudenbush & Bryk, 2002; Singer & Willett, 2003).

HLM, by accounting for both levels of variation (across schools and within schools over time in this case), provide three benefits over OLS regression analysis. First, HLM provides improved estimation of Level 1 effects over time due to the inclusion of a random error term at the level of the school (Level 2). Second, HLM allows researchers to model cross-level interaction effects. For this analysis, that means one can evaluate how school-level characteristics (e.g., type of institution and Carnegie classification) affect the trajectory of spending over time. Finally, these models allow for the separation or decomposition of the

variance component of the outcome. In other words, they allow one to estimate how much of the variation in outcome is due to variation across schools and how much is due to variation within schools over time.

In order to evaluate the impact of Carnegie classification upon striving institutions on spending behaviors, this study will evaluate a series of HLM models that have eight different spending categories (all reported as $ per FTE) as the dependent variables as discussed above: institutional support spending, instructional spending, research spending, academic support services spending, student support service spending, public service spending, scholarships and fellowships, and total expenditures. The equations below outline the basic model for the analysis:

$$Y_{ij} = \beta_{0j} + \beta_{1j}(time) + e_{ij} \quad (1)$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(final\ Carnegie\ classification) + y_{02}(Organizational\ Control) + y_{03}(Total\ Revenues\ per\ FTE) + u_{0jB} \quad (2)$$

$$\beta_{0j} = \gamma_{10} + \gamma_{11}(final\ Carnegie\ classification) + y_{12}(Organizational\ Control) + y_{13}(Total\ Revenues\ per\ FTE) + u_{0jB} \quad (3)$$

For simplicity these are expressed as the distinct equations for the two levels of the model, where Equation 1 captures the variation over time within schools (Level 1) and Equation 2 captures variation across schools (Level 2). Equation 1 models the impact of time on the outcome variable. This equation also takes into account that there will be random error in the spending behaviors of these institutions over time even after these variables are accounted for. Equation 2 models the school-level factors that influence the mean structure of the spending behavior—or, in other words, the factors that influenced the intercept or starting value in 2002. So, in this case, the equation models the impact of final Carnegie classification, institutional

control, and total revenues on the starting point of the spending behaviors. This equation also specifies a random error term, which allows for random variation around the intercepts specified by the equation. Further, Equation 3 models the factors that impact the over-time trajectories of the spending behaviors. This specification asserts that the trajectories of spending behaviors vary by institutional control and by the level of total revenues. This equation also includes a random error term, which allows for random variation to occur in the linear trajectories of university spending.

One strength of multilevel growth modeling is that it allows time to be treated as random and nested within the upper-level units. Another strength is that time can be regarded as continuous and the outcome that has been repeatedly measured can be modeled over time as a continuous curve. Other benefits are that time points need not be evenly spaced. They may be variably spaced for different individuals, and the number of time points may vary for different individuals (Raudenbush & Bryk, 2002). In other words, this method is flexible in handling missing data that are missing at random (MAR).

Thus, the HLM approach to model longitudinal data has several advantages over traditional repeated measures approaches such as MANOVA, as well as latent curve modeling, especially when it comes to the relaxation of the "time-structured" data requirements of the other methods. HLM has the power to accommodate a wide variety of data structures and Level 1 models and allows Level 1 predictors to have different distributions across individuals (Raudenbush & Bryk, 2002).

Chapter 4: Analysis and Results

Introduction

This chapter consists of two broad sections. The first section reports the results of descriptive statistics that were computed for both nonstriving and striving institutions. More specifically, this section addresses the first three research questions posed in Chapter 3. Pursuant to those research questions, spending patterns of nonstriving institutions, including overall expenditures and individual line items of spending, are examined. Second, the spending behavior of striving institutions is described both as a whole and through specific line items of spending. Finally, striving and nonstriving institutions are compared in order to determine if any distinctiveness emerges in the spending pattern of either group.

The statistical significance of any differences in spending patterns between nonstriving and striving institutions was tested as an indicator that the organizations were behaving differently based upon their strategic choices. While the dollars per FTE reported are quite different, due to the generally larger overall size (as measured by enrollment and revenue) for nonstrivers, the study instead utilized the percentage change in 2011 dollars for spending line items as a way to better understand overall trends for each institution type. By using this "lens," the researcher is able to better compare nonstrivers to strivers, providing a better foundation with which to compare and contrast. Further, when looking at the differences in spending per FTE between nonstrivers and strivers, as discussed in Research Question 3, the researcher introduced one other metric in order to highlight the actual contrast in spending per FTE between them: percentage difference. This value, calculated to report the percentage difference in the rate of change for expenditure lines between nonstrivers and strivers, aimed to demonstrate the rather large differences that existed between the groups.

The second phase of this analysis focused on the final three research questions. For this phase, both an ANOVA analysis and an HLM analysis were undertaken. The ANOVA model was utilized in order to determine if mean differences in expenditures per FTE existed between institutions within the same Carnegie classification, as well as between Carnegie classifications. Such an analysis allowed the researcher to compare and contrast spending patterns for each Carnegie level. Much like the comparison between nonstrivers and strivers in Research Question 3, percentage change in 2011 dollars for expenditure lines was utilized in the fourth research question.

For Questions 5 and 6, HLM analysis was undertaken in order to better examine the effect that time has had upon an institution's spending behaviors. In the HLM growth curve models utilized here, intrainstitutional factors (Level 1 factors) are the occasions of measurement (Year 1, Year 2, etc.) nested within the specific institutions. Interinstitutional factors (Level 2) are demographic variables for each institution (Raudenbush & Bryk, 2002). At Level 1 in the current research, an institution's lines of expenditures were included at 10 specific years (2001–2010), as well as a linear component with initial status at Year 0 (2002) as the intercept. At the interinstitutional level (Level 2), demographic factors, institutional control, revenue per FTE, and 2005 Carnegie classification were entered to explain differences in institutional spending and rates of intrainsitutional change in organizational spending from 2002 to 2010. The linear factor describes the linear growth in each specific line of expenditure. The growth models were estimated separately for each named line of expenditures using full ML estimation in HLM. In total, four models were run for each outcome variable (line of expenditure). The first two models, the unconditional means model and the unconditional growth model, were used to

answer the fourth research question, whereas the first three models were utilized to inform Research Question 5, with all four models providing the analysis for Question 6.

When Controlling for Carnegie Classification, What Was the Expenditure Pattern of Nonstriving Institutions Between 2002 and 2011?

In order to provide an accurate picture of spending for nonstriving institutions, the mean for each of the eight line items of expenditures was calculated. Along with their respective standard deviation and minimum and maximum values, the mean dollars spent per FTE in 2002 and 2011 are reported in Table 5. Further, each expenditure line item's relative percentage of an institution's total expenditures was calculated as an alternative way to describe an institution's spending behavior. All monetary data were adjusted for inflation. Therefore, all dollar amounts were reported in 2011 dollars, allowing for an "apples to apples" comparison. It is hoped that such an aggregated view of these institutions' spending behavior can serve as a baseline for understanding behaviors of those institutions that make a strategic choice to attempt to raise their Carnegie classification. As such, we must understand how nonstriving organizations choose to spend in various areas.

An examination of Table 5 demonstrates that total inflation-adjusted core expenditures grew, on average, for nonstriving organizations, from $13,146 per FTE in 2002 (the baseline year) to $14,176 per FTE in 2011, representing a 7.8% increase. However, when focusing on specific line items of expenditures, two spending threads actually decreased between 2002 and 2011. Spending on scholarships and fellowships decreased by approximately 2%, from 2002 ($542 per FTE) to 2011 ($529 per FTE), while spending on public service remained relatively stable, decreasing by just less than 1% from 2002 to 2011, from $695 per FTE to $690 per FTE, respectively.

Table 5

*Mean Expenditures (in $ per FTE) for Nonstriving Institutions (*N *= 1,013) for 2002 and 2011*

Expenditure stream ($ per FTE student)	Mean	Standard deviation	Minimum	Maximum	% of total core exp	% difference in mean expenditures
Instructional expenditures						
2002	$5,538	$12,013	$18	$180,745	42.1	
2011	$5,869	$11,982	$43	$124,658	41.4	6.0
Research expenditures						
2002	$2,392	$8,336	$0	$92,633	18.2	
2011	$2,723	$9,149	$0	$88,904	19.2	13.8
Public service expenditures						
2002	$695	$2,521	$0	$30,409	5.3	
2011	$690	$2,614	$0	$37,270	4.9	-0.7
Academic support						
2002	$1,401	$3,472	$0	$53,589	10.7	
2011	$1,563	$3,729	$0	$52,399	11.0	11.6
Student services expenditures						
2002	$920	$1,408	$0	$21,994	7.0	
2011	$1,068	$1,408	$14	$17,763	7.5	16.1
Institutional support expenditures						
2002	$1,659	$2,981	$12	$38,894	12.6	
2011	$1,734	$2,912	$16	$34,354	12.2	4.5
Scholarships and fellowships expenditures						
2002	$541	$1,408	$0	$18,253	4.1	
2011	$529	$1,209	$0	$9,133	3.7	-2.2
Total core expenditures						
2002	$13,146	$28,957	$53	$390,539		
2011	$14,176	$29,327	$135	$211,868		7.8

Adapted from U.S. Department of Education, IPEDS, 2002-2011.

The five remaining line of expenditures showed an overall increase in spending per FTE between 2002 and 2011. Instructional expenditures grew by 6% to $5,869 per FTE in 2011 from $5,538 per FTE in 2002. Further, one can see that institutional expenses grew to an average of $1,734 per FTE, representing an increase of over 4%. Although these growth rates showed continued increase in the mean amount of dollars spent per FTE, three specific line items of expenditures showed a dramatic increase over the investigated time span. Academic support expenses, research expenses, and student services expenses each recorded growth rates in excess of 10%. Growing to $1,563 per FTE in 2011, academic expenses showed an 11.6% increase, whereas research expenses and student services expenses grew by 13.8% and 16.1%, respectively.

Clearly, the data demonstrated that three specific types of spending were areas of strategic focus for nonstriving institutions. With spending levels that have approximately doubled in growth when compared to the other lines of spending, academic support, research, and student services expenditures seemed to indicate that nonstriving institutions made a strategic decision to focus upon these areas of spending. Interestingly, it seemed that although institutions have sought to maintain their baseline position in the Carnegie "standings" by investing heavily in research, academic support resources, and student services, actual spending on student scholarships and fellowships, as well as public service, fell, even amid a noticeable increase in total core spending.

Examining the trajectories of these line-item expenses and total core expenses for nonstrivers, Figure 1 visually displays spending trends over time for nonstriving institutions.

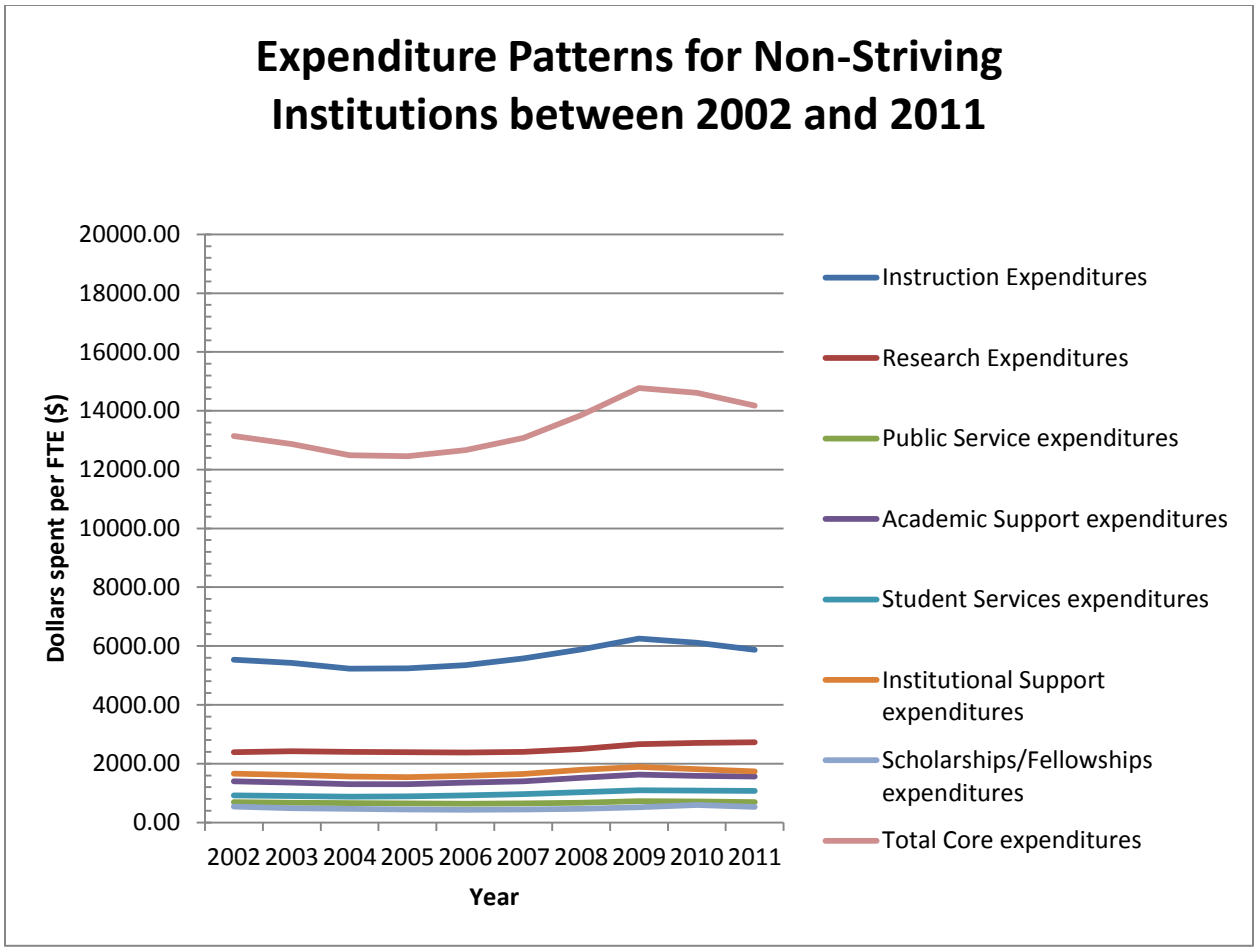

Figure 1. Expenditure patterns for nonstriving institutions between 2002 and 2011.

Figure 1 shows that, over time, total core expenses saw a decrease for the first few years and a steady increase until 2009, when they began to decrease slightly. Instruction costs seemed to mirror total core expenditures in terms of longitudinal patter. However, the other specific core expense lines seemed to demonstrate a more stable, less volatile spending pattern. Indeed, the trend lines indicated that specific line item core costs did not parallel total university core expenses. As discussed above, many expenses, namely research, student services, institutional, and academic support expenditures had a net increase. Further, the trend lines showed that those

increases seemed to be on the same scale that was reflected in the overall increase in total core spending.

Regardless of an increase or decrease in dollars per FTE spent, if one focuses on the percentage each specific line of expenditure represents for an institution's total core spending, a decidedly clear picture of spending behavior for nonstrivers appears. Table 5 summarizes these findings by reporting that for 2002, on average, instructional expenses accounted for approximately 42% of an institution's total core expenses. This figure represented, by far, the most expensive component of a college or university's overall core expenses. Next most expensive is research expenditures at 18.2%, followed by 12.6% for institutional expenses, 10.7% for academic support expenditures, 5.3% for public service expenditures, and 7.0% and 4.1%, respectively, for student services and scholarships and fellowships.

When examining the final year of the study, 2011, it is important to note that, though the data showed that schools increased their spending in almost all of the studied areas, if one looks at the percentage each line represents in an institution's total core expenditures, one can see a different picture. As discussed, for example, instructional expenditures increased over the 10-year span. However, as a percentage of total core spending, as Table 5 shows, instructional expenditures actually decreased, from 42.1% of total core spending in 2002 to 41.4% in 2011. Similarly, institutional support expenses, while increasing in mean dollars per FTE, actually decreased in share of total core expenses, from 12.6% to 12.2%. Conversely, three lines of expenditures actually increased their share of total core expenses. Research expenditures increased by 1%, academic support increased slightly, and student services expenditures increased by half of a point.

When Controlling for Carnegie Classification, What Was the Expenditure Pattern of Striving Institutions Between 2002 and 2011?

While understanding the spending behaviors of nonstriving institutions provides a baseline, the group of interest, at least within the scope of this study, was those institutions that made a strategic choice to invest resources necessary to climb the ladder of their respective Carnegie classifications between 2005 and 2010 (i.e., the strivers). Table 6 reported the mean inflation adjusted dollars per FTE that striving institutions spent during the period of interest. Total core expenditures increased from $5,612 per FTE in 2002 to $6,983 per FTE in 2011, representing a growth of 24.4%. That positive growth trend was mirrored by all of the seven individual expenditure streams investigated in this study. As the table notes, instructional expenses grew by 20%, increasing from $2,535 to $3,041, while research expenses grew at almost 20%, as well. Academic support expenses increased from $596 to $810 between 2002 and 2011, indicating a dramatic 35.9% increase. Student services and institutional costs also demonstrated significant growth. With a 34% growth rate, student services increased from $532 to $713 per FTE, while costs for institutional support showed a greater than 27% growth with costs rising from $854 to $1,086 per FTE. Finally, scholarship and fellowship costs demonstrated the largest growth between 2002 and 2011, increasing from $245 per FTE in 2002 to $343 in 2011, at 40%.

Figure 2 reveals that the trajectories of striving institutions' relative spending behaviors tend to mirror those patterns illustrated in their nonstriving peer institutions. Total core expenses, while decreasing initially, increased steadily from 2004 to 2009 with a small decrease in 2010, followed by an increase in spending in 2011. Like nonstrivers, strivers saw a decrease in

Table 6

Mean Expenditures (in $ per FTE) for Striving Institutions (N = 202)

Expenditure Stream ($ per FTE student)	Mean	Standard Deviation	Minimum	Maximum	% of Total Core Exp	*% Difference in Mean Expenditures*
			Instructional Expenditures			
2002	$2,535	$3,768	$0	$24,319	45.2	20.0
2011	$3,041	$4,314	$0	$25,611	43.5	
			Research Expenditures			
2002	$547	$1,939	$0	$15,008	9.7	19.9
2011	$656	$2,152	$0	$12,459	9.4	
			Public Service Expenditures			
2002	$302	$920	$0	$6,558	5.4	10.9
2011	$335	$1,044	$0	$6,791	4.8	
			Academic Support Expenditures			
2002	$596	$965	$1	$6,665	10.6	35.9
2011	$810	$1,445	$7	$10,623	11.6	
			Student Services Expenditures			
2002	$532	$633	$0	$7,430	9.5	34.0
2011	$713	$641	$17	$5,843	10.2	
			Institutional Support Expenditures			
2002	$854	$913	$0	$6,796	15.2	27.1
2011	$1,086	$1,210	$54	$8,794	15.6	
			Scholarships and Fellowships Expenditures			
2002	$245	$490	$0	$3,417	4.4	40.0
2011	$343	$774	$0	$6,524	4.9	
			Total Core Expenditures			
2002	$5,612	$8,560	$19	$56,492		24.4
2011	$6,983	$10,308	$112	$61,090		

Adapted from U.S. Department of Education, IPEDS, 2002-2011.

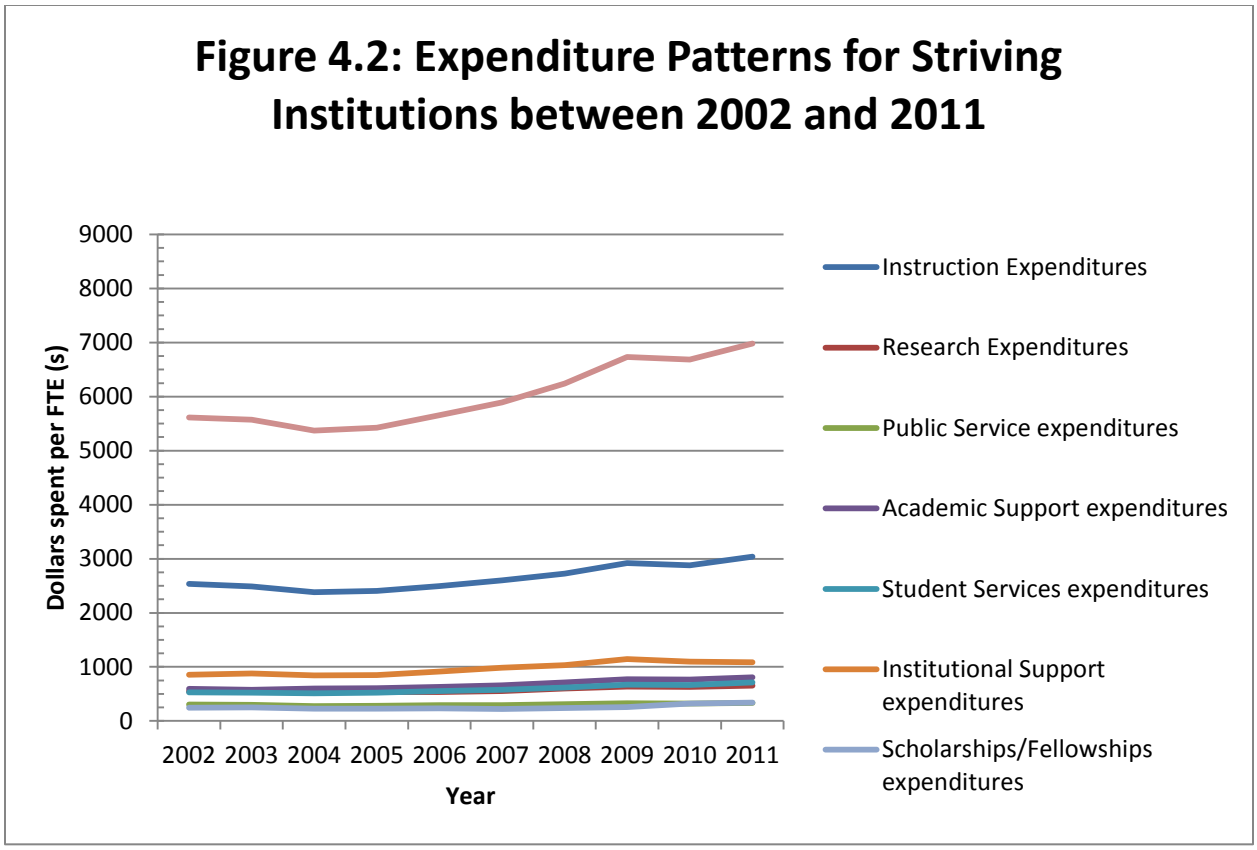

Figure 2. Expenditure patterns for striving institutions between 2002 and 2011.

instructional expenditures until 2004, and then began a steady climb in instructional costs until 2009, when they appear to level out at just about $3,000 per FTE.

One also finds that academic support, research, student services, and scholarships and fellowship expenses followed a relatively less volatile trajectory. Although slight increases or decreases in spending can be identified, over time the trend line indicated that the movement was not nearly as volatile as total expenses or even instructional costs. However, the relative levels of institutional support spending and public service spending showed a marked change in particular years. After a gradual increase between 2002 and 2008, 2009 brought a decline in institutional costs. Similarly, public service costs maintained a relatively stable, if not slight growth, until 2010, when one can see a distinct drop in expenditures through 2011. These stable growth trends seemed to mirror the growth rates that were demonstrated by the nonstrivers.

Looking again at the percentage each category constitutes of total core expenditures, one can develop a relatively clearer profile of the spending behaviors for striving institutions between 2002 and 2011. Table 6 illustrates this by reporting that for 2002, on average, instructional expenses accounted for approximately 45% of an institution's total expenses over the reported 10-year span. Much like nonstrivers, this figure represented, by far, the most expensive component of a striving college or university's overall expenses. The next-most expensive component of an organization's total expenses was institutional support expenditures at 15.2%. Academic support, research, and student services costs represented the next three largest contributors to an institution's total expenses.

For 2011 instructional expenses remained the highest proportion of total core expenditures at 43.5%, with institutional support at 15.6%, academic support at 11.6%, and student services at 10.2%, representing the next three largest portions of total core expenses. Research expenses, public service expenses, and scholarships/fellowships rounded out the final three at, respectively, 9.4%, 4.8%, and 4.9%.

Although the data showed that most expense line items increased in mean dollars per FTE spent over the 10-year period, Table 6 indicated that, if one looks at the relative percentage of total expenditures, most spending lines stayed relatively stable over the same period. Indeed, while many of line items realized either decreases or increases in mean dollars spent per FTE, the overall difference between 2002 and 2011 for each line remained relatively small. Indeed, for 2011, instructional expenditures, research expenditures, and public service expenditures saw a decrease in the proportion of total core expenses they were responsible for. The other four lines saw slight increases their percentage of total core expenses. The largest increase was

demonstrated by academic support, with a 1-point increase. Instructional costs saw the largest decrease of 1.7 points.

How Did Expenditure Patterns Between 2002 and 2011 Compare Between Nonstriving Institutions and Striving Institutions?

While looking at spending patterns for nonstriving and striving institutions separately, noticeable trends were found. For example, nonstriving institutions showed that their spending on student services, research, and academic support showed the largest growth rates. Indeed, overall core expenditures showed a growth rate of 7.8%. Indeed, striving institutions demonstrated a larger growth rate in total core expenditures, at more than 24%. Further, spending for striving institutions illustrated that scholarships, academic support, and student services represented the three largest specific areas of spending growth. However, the more direct discussion may be how spending patterns compared to each other.

Preparatory to such an analysis, however, the mean differences between nonstrivers and strivers for each expenditure line must be determined to be statistically significant. Without such significance, the differences that existed could have occurred due to chance. In order to determine if the mean differences for each year between nonstriving and striving institutions were statistically significant, an ANOVA statistical model was run for each expenditure line item for each year. The analysis, presented in Table 7, showed that for all years statistically significant differences on all spending line items emerged between strivers and nonstrivers. Therefore, we can infer that the differences that were found between nonstriving and striving universities in their respective spending behavior reflected something other than chance.

Table 7

Results of ANOVA Model for Differences Between Nonstrivers and Strivers by Year and Expenditures, 2002-2011

	Line of Expenditure															
	Instruction		Research		Public Service		Academic Support		Student Services		Institutional Support		Scholarships/Fellowships		Total Core Expenses	
Year	F	sig.	F	sig.	F	sig.	F	sig.	F	sig.	F	sig.	F	sig.	F	sig.
2002	12.37	0.000	9.78	0.002	4.76	0.029	10.68	0.001	14.79	0.000	14.44	0.000	8.67	0.003	13.61	0.000
2003	12.03	0.001	9.95	0.002	4.77	0.029	10.84	0.001	15.46	0.000	12.35	0.000	5.98	0.015	13.11	0.000
2004	12.24	0.000	10.21	0.001	5.40	0.020	9.82	0.002	15.67	0.000	13.17	0.000	6.16	0.013	13.44	0.000
2005	11.41	0.001	10.11	0.002	4.98	0.026	9.77	0.002	14.75	0.000	12.06	0.001	5.42	0.020	12.84	0.000
2006	11.13	0.001	9.93	0.002	4.35	0.037	9.81	0.002	14.38	0.000	10.73	0.001	4.82	0.028	12.34	0.000
2007	10.94	0.001	9.89	0.002	4.53	0.034	9.65	0.002	14.08	0.000	9.85	0.002	5.27	0.022	12.33	0.000
2008	11.07	0.001	9.40	0.002	4.36	0.037	9.16	0.003	13.78	0.000	10.23	0.001	5.47	0.020	12.22	0.000
2009	10.66	0.001	9.61	0.002	4.05	0.044	8.54	0.004	13.03	0.000	8.16	0.004	5.76	0.017	11.56	0.001
2010	10.06	0.002	9.75	0.002	4.08	0.044	8.20	0.004	11.87	0.001	8.32	0.004	4.75	0.030	11.24	0.001
2011	10.97	0.001	10.20	0.001	3.59	0.058	8.00	0.005	12.36	0.000	9.68	0.002	4.40	0.036	11.91	0.001

In order to most effectively discuss differences in spending between nonstrivers and strivers, this study used percentage difference in growth rates as a way to standardize metrics across both groups. In this study, nonstrivers tended to be larger institutions in terms of total enrollment and total revenue. The size differences using expenditure growth rates allowed the researcher to compare and contrast relative growth rates without concern for institutional size Indeed, by removing the approximate 2-to-1 advantage in dollars spent per FTE that nonstriving institutions reported for all expenditure lines, this study presented a clearer analysis of the true differences that existed.

When differences in growth rates were compared, the data indicated that striving institutions grew at a faster rate than their nonstriving counterparts in all eight areas. Table 8 shows that, with an overall growth rate of 24.4%, striving institutions' total core spending grew 212.8% more over the 10-year period than those institutions that were identified as nonstriving.

With nonstrivers having a considerably larger student population, such a result seems even more significant—as, in general, more students would require more spending, especially in areas that were not necessarily subjects of this study, such as dining and housing costs and the maintenance required for them. As such, one would expect nonstrivers' growth in total core expenses to be greater over time. Likewise, results showed that the growth in spending by striving institutions on public service and research expenditures surpassed nonstriving institutions' expenditure growth. In fact, strivers' growth in spending on public services was 15 times greater than nonstrivers'. Similarly, strivers, the data indicated, increased their research expenditures by 43% over nonstrivers during the 10-year span.

Table 8

Change in Spending ($ per FTE) Between Nonstriving and Striving Institutions and Relative Difference, 2002-2011

	Change in spending between 2002 and 2011		
	Nonstriving institutions (*N* = 1013)	Striving institutions (*N* = 202)	% Diff
Instructional Expenditures	6.0	20.0	234.1
Research Expenditures	13.8	19.9	43.8
Public Service Expenditures	-0.7	10.9	1,574.8
Academic Support Expenditures	11.6	35.9	209.4
Student Services Expenditures	16.1	34.0	111.7
Institutional Support Expenditures	4.5	27.1	500.8
Scholarships and Fellowships Expenditures	-2.2	40.0	1,891.6
Total Core Expenditures	7.8	24.4	212.8

Adapted from U.S. Department of Education, IPEDS, 2002-2011.

Such an advantage in growth in research spending by the strivers seems to support the behavior that would be expected of a striving university. Indeed, as noted by O'Meara (2007), research is a central component to increasing an institution's prestige—and therefore its Carnegie classification—and has been theorized to be an indicator of striving behavior. Much like research spending, two areas that were also theorized to be an indicator of striving were increase in scholarships and fellowships, for both faculty and students, and institutional support. The data in Table 8 show that striving institutions' rate of spending on scholarships and fellowships grew at a dramatically faster rate than nonstrivers'. Indeed, the growth of strivers' spending was more than 18 times that of nonstrivers.

Such a difference in growth rates surely indicated a strategic choice to, over time, elevate the level and quality of student an organization attracts by providing greater institutional awards for highly qualified potential students. Further, such an increase in funds illustrates striving institutions' desire to provide greater grants, awards, and fellowships to faculty. Indeed, increased awards for faculty, coupled with an increase in the funds available for research, would undoubtedly improve faculty recruitment and retention and provide an incentive for distinguished work.

Two additional indicators of striving behavior were supported by the data. It was postulated that striving institutions would demonstrate increased spending on academic infrastructure, as well as greater spending on student services. Comparing the differences in growth rates between strivers and nonstrivers, the results illustrated that strivers' spending on academic support expenditures and student services was more than 200% and 111% higher than nonstrivers', respectively. Both academic support and student services focus on numerous areas that fall under the umbrella of organizational infrastructure, including academic administration,

libraries, academic development, counseling services, financial aid administration, student records, and health services. As such, the substantial growth that strivers have demonstrated over their nonstriving counterparts show that these institutions have decided to invest in these select areas at a greater rate than those institutions that have not sought to increase their Carnegie classification.

Finally, increased spending on institutional support has been shown to be an important indicator of striving behavior. Indeed, Morphew and Baker (2004) demonstrated that institutions that increase their Carnegie classification have recorded growth in their spending on operational support services at a higher rate than nonstriving organizations. It would seem that the results served to confirm these findings. This study's data indicated that for striving institutions, spending on institutional support, which included all of an organization's expenditures for the day-to-day operation of the institution, such as administrative services, public relations, executive planning, finance, and legal operations, outpaced nonstrivers by over 500%. A growth rate five times higher than that of nonstrivers points, again, to a strategic choice that organizational leadership made to invest in certain areas more heavily than others.

The data and preceding analysis suggested that the study's initial premise might have been grounded not only in theory but in practice as well. Institutions that made the choice to strive—or, as operationalized here, increase their Carnegie classification—demonstrated greater growth in spending for all of the studied areas—instructional, research, public service, academic support, student services, institutional support, and scholarship/fellowship—than those organizations that have chosen not to increase their classification. Such a dramatic boost in spending demonstrated that those organizations that have increased their Carnegie classification made heavy investments in their school's research capabilities, infrastructure, administrative

support, and scholarships and grants. Although these results seemed to suggest that a school wanting to increase its Carnegie classification should, while increasing spending overall, pay particular attention to many of the indicators discussed, care should be taken in inferring any causal connection. Indeed, the next few sections attempt to assess any direct impact specific expenditures have on an institution's striving behavior.

In What Respects Were Patterns of Expenditures Between 2002 and 2011 Significantly Different for Striving Institutions Across Carnegie Classifications?

While the preceding three questions focused on comparing nonstrivers and strivers, the final three research questions focused on the 202 striving institutions. Moreover, these final research questions utilized various strategies to begin to investigate differences that existed within the specific Carnegie classification for each organization. In order to determine if significant differences in levels of spending per FTE existed between Carnegie classifications among striving institutions, an ANOVA statistical model was run for each outcome variable or line of expenditure (instruction, research, institution support, academic support, student services, public service, scholarships and fellowships, and total core expenditures). Results from this ANOVA model are presented in Table 9.

These results indicate striving institutions' eight lines of expenditures differed significantly between Carnegie classifications. This allows one to conclude that both intrainstitutional and interinstitutional expenses were significantly different from each other. Drawing one's attention to the lines of expenditures, it is possible to gain a better understanding of the differences in spending for each Carnegie classification. By graphing the mean spending for each Carnegie classification for each year, as well as by determining the overall change in spending levels, one can begin to illustrate how different subgroups of striving institutions

Table 9

Analysis of Variance for Striving Institutions by Carnegie Classification and Line of Expenditure

		F	*df*	Mean square	Sig.
Instruction Expenditures	Between Groups	559.11	5	4979816319	0.000
	Within Groups		2024	8906613	
Research Expenditures	Between Groups	476.98	5	1552710669	0.000
	Within Groups		2024	3255278	
Public Services Expenditures	Between Groups	94.70	5	330811702	0.000
	Within Groups		2024	3493271	
Academic Support Expenditures	Between Groups	496.21	5	379711551	0.000
	Within Groups		2024	765228	
Student Services Expenditures	Between Groups	208.71	5	69358634	0.000
	Within Groups		2024	332328	
Institutional Support Expenditures	Between Groups	281.85	5	375318545	0.000
	Within Groups		2024	1331613	
Scholarship/Fellowship Expenditures	Between Groups	334.05	5	62041597	0.000
	Within Groups		2024	185724	
Total Core Expenditures	Between Groups	1602.24	5	26034542067	0.000
	Within Groups		2024	16248830	

defined by Carnegie classification behave differently. Figures 3 through 10 illustrate the spending patterns for institutions ($ per FTE) by Carnegie classification from 2002 to 2011 for the seven statistically significant lines of expenditures.

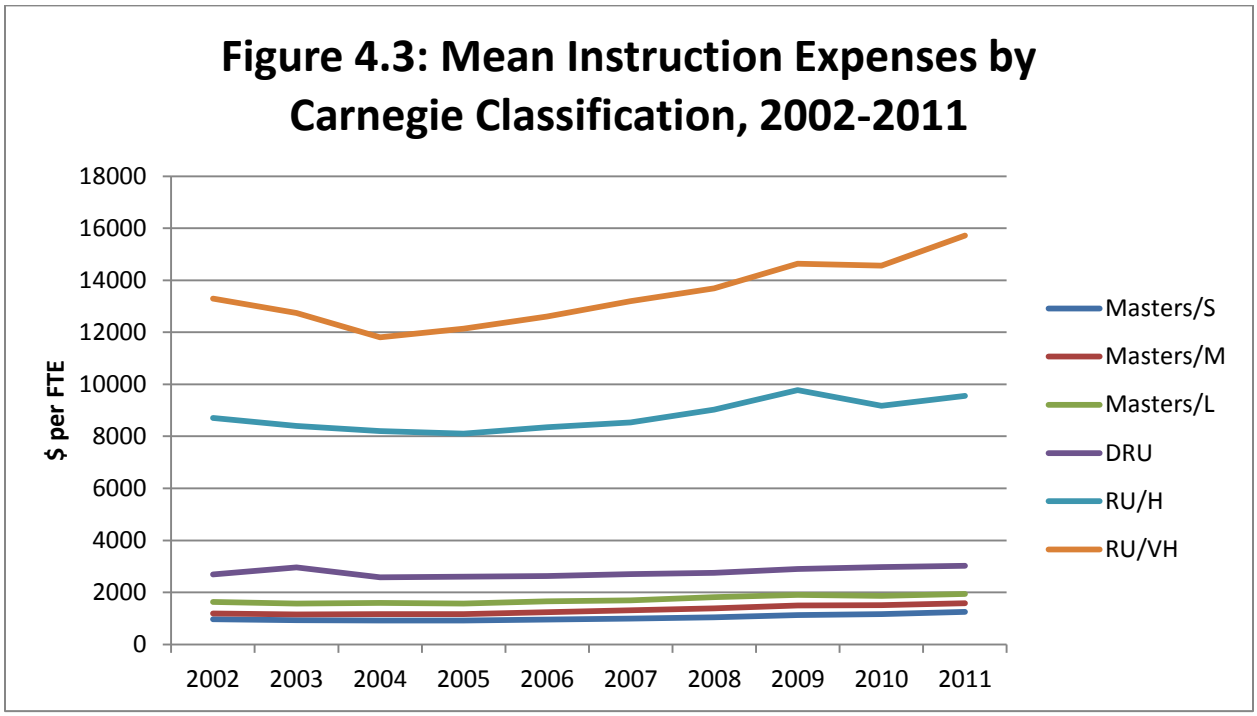

Figure 3. Mean instruction expenses by Carnegie classification, 2002–2011.

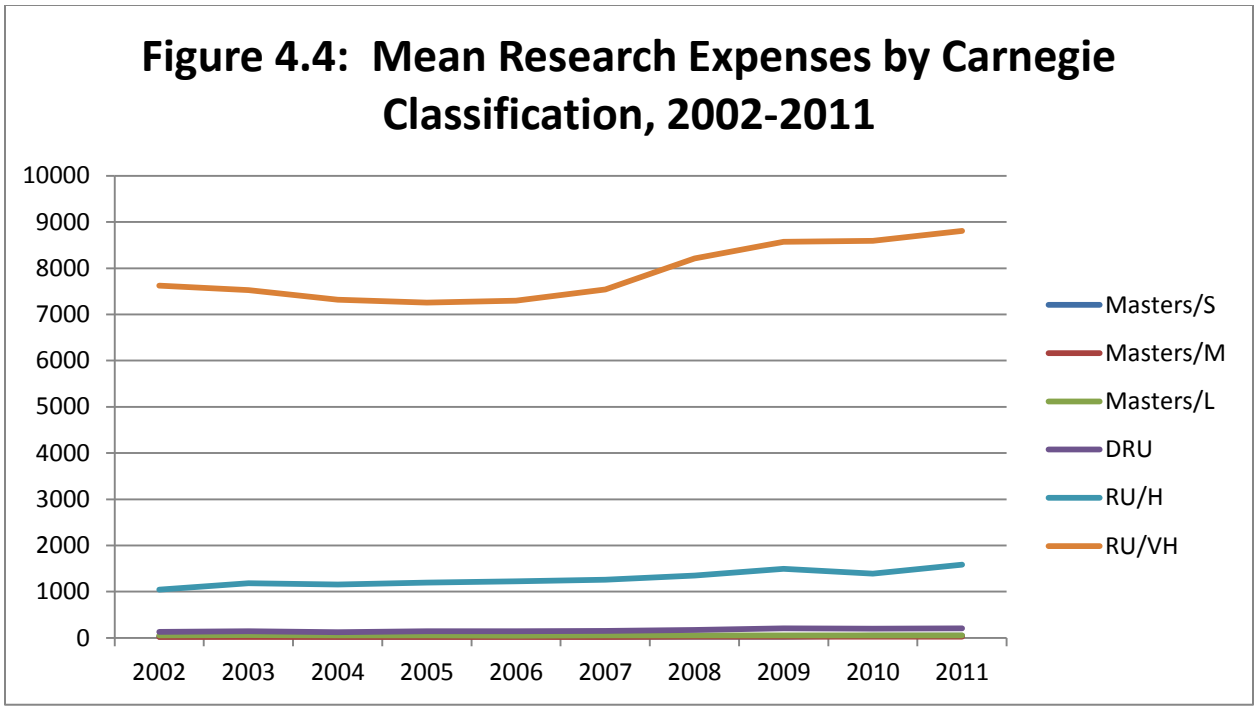

Figure 4. Mean research expenses by Carnegie classification, 2002–2011.

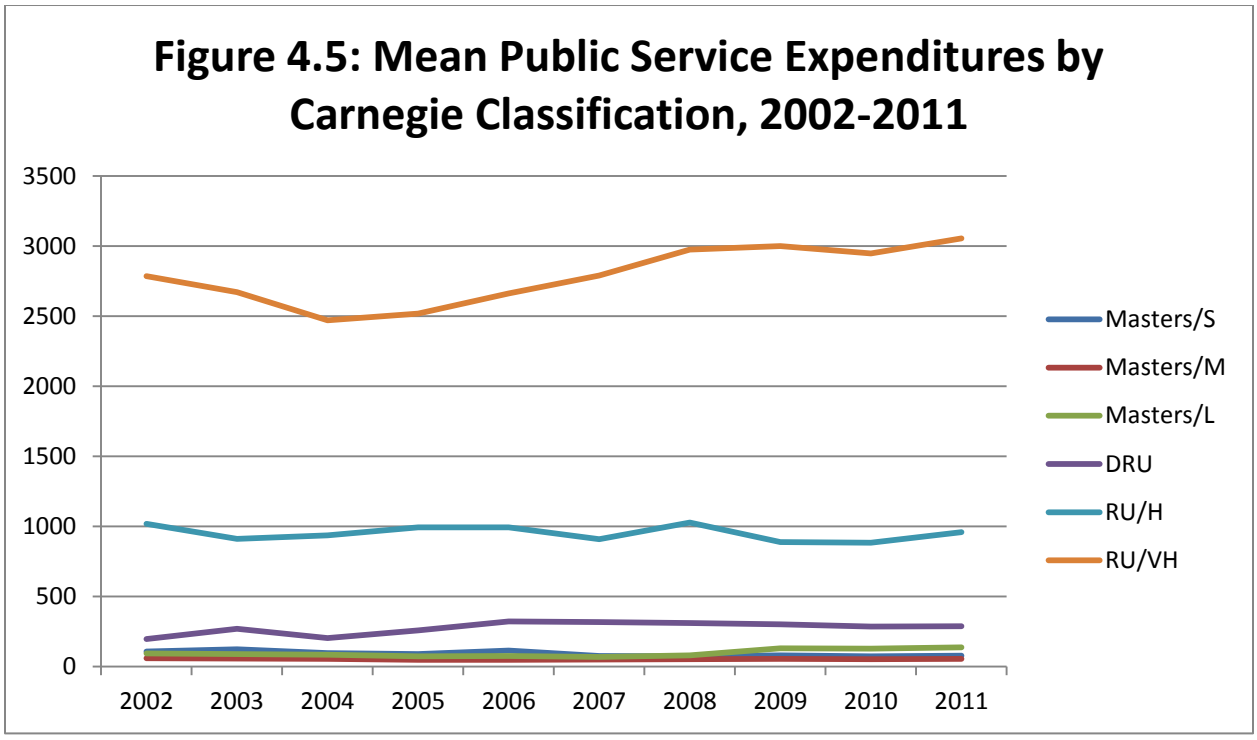

Figure 5. Mean public service expenditures by Carnegie classification, 2002–2011.

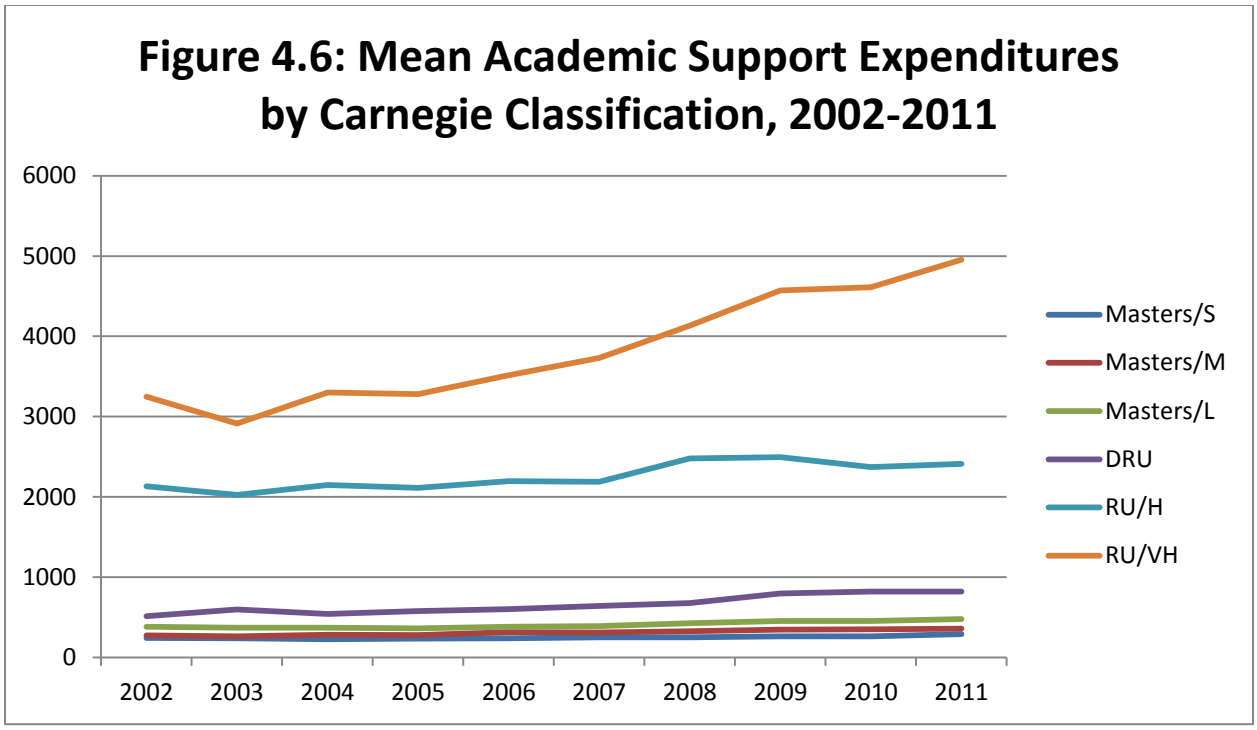

Figure 6. Mean academic support expenditures by Carnegie classification, 2002–2011.

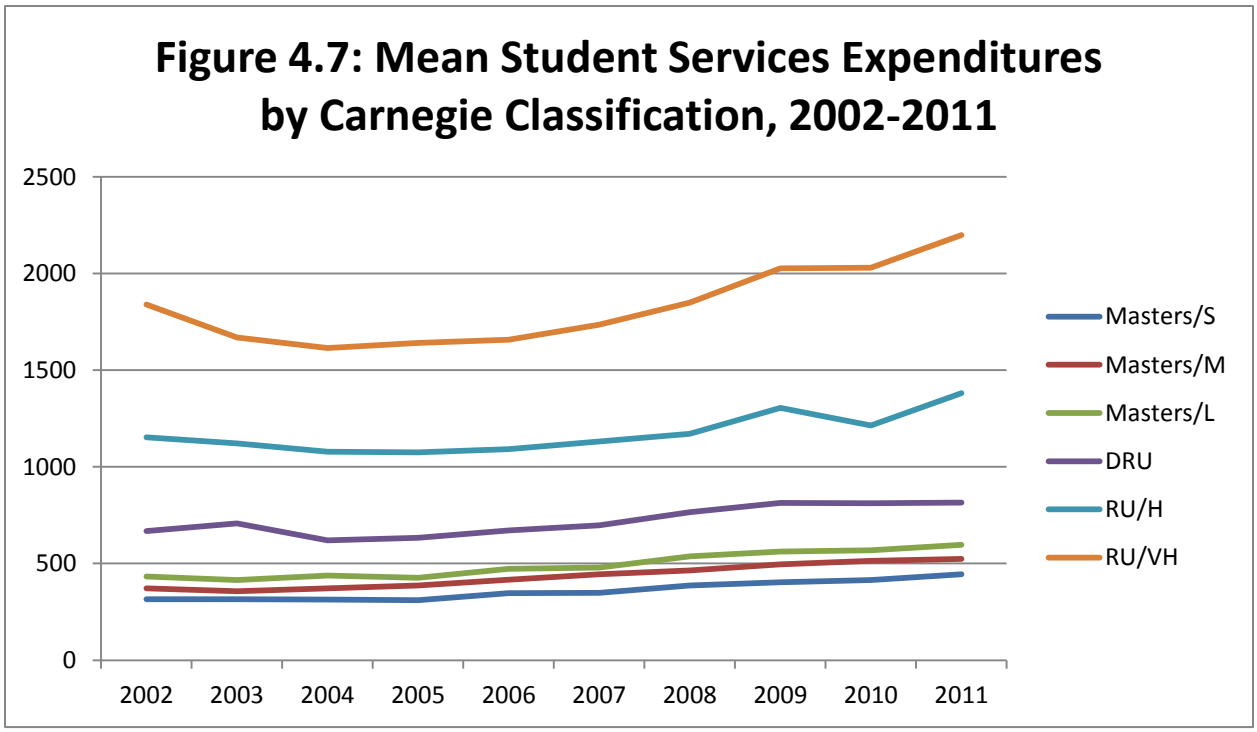

Figure 7. Mean student services expenditures by Carnegie classification, 2002–2011.

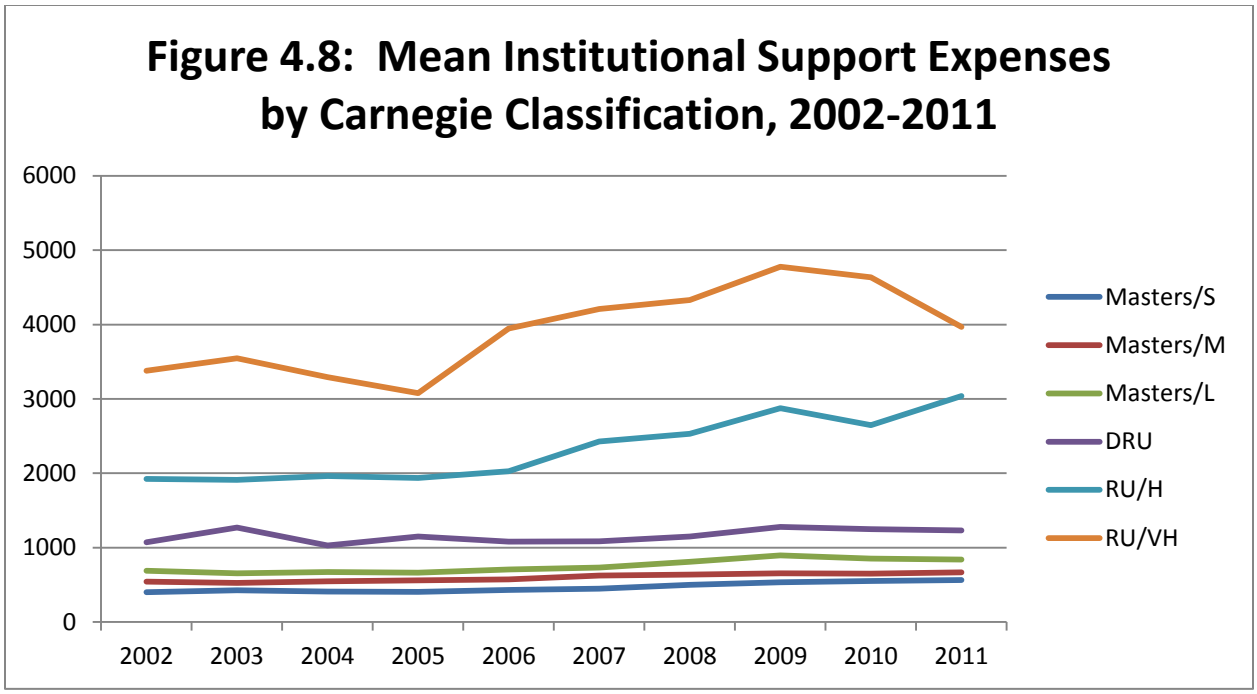

Figure 8. Mean institutional support expenses by Carnegie classification, 2002–2011.

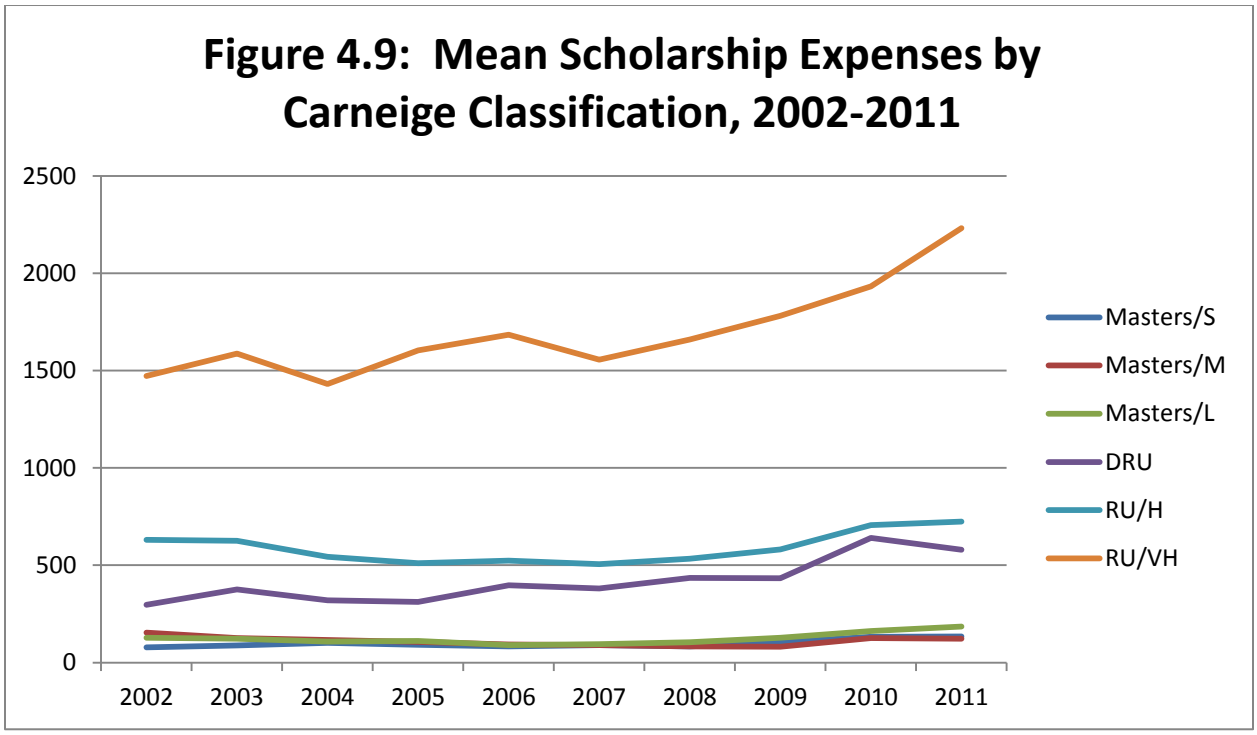

Figure 9. Mean scholarship expenses by Carnegie classification, 2002–2011.

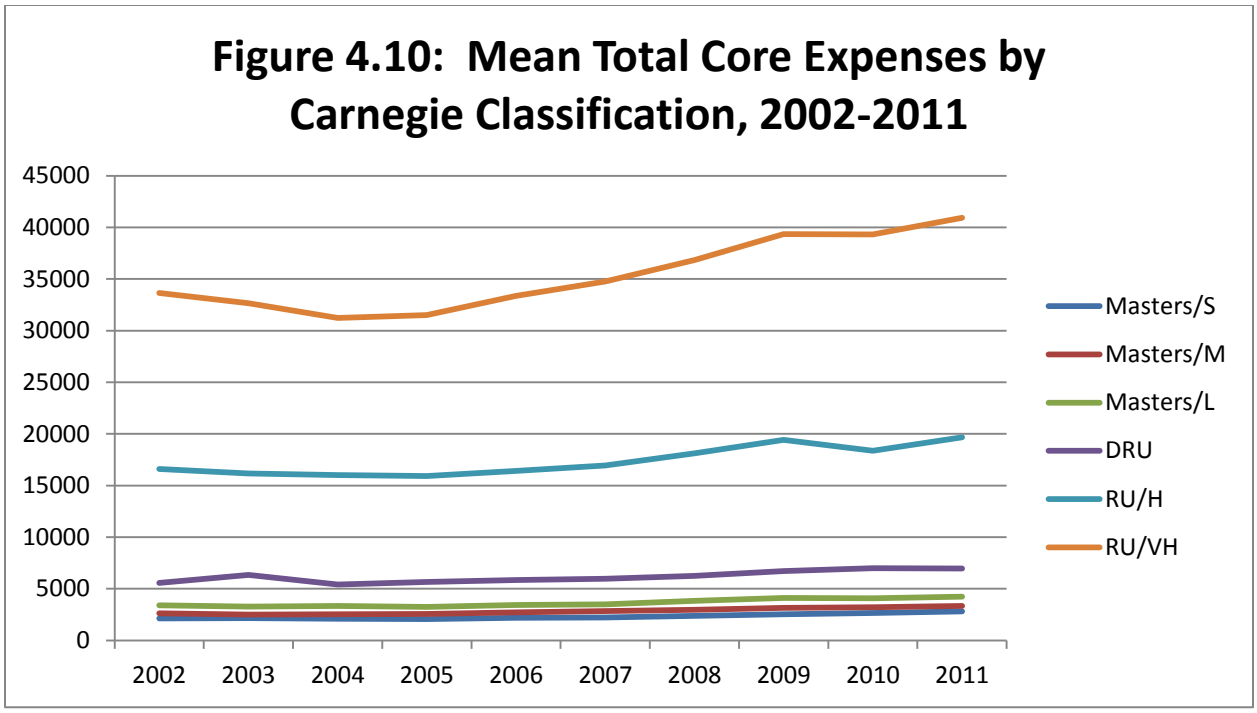

Figure 10. Mean total core expenses by Carnegie classification, 2002–2011.

The figures seem to suggest that overall trends in the rate of expenditures for institutions designated as master's small, medium, and large demonstrated a relatively stable growth pattern, especially in light of the more volatile pattern of expenditures demonstrated by research universities/high and research universities/very high and, to a lesser extent, doctoral research universities. Further, the graphs seem to indicate that RU/VH institutions spend considerably more per FTE than any other Carnegie classification for all of the expenditure lines studied, with RU/H and DRU institutions representing the second- and third-greatest investment per FTE. While not surprising, it affirmed the greater investment that must be made as an institution increases its prestige, in this case by raising its respective Carnegie classification. Such a trend echoes the findings of Ehrenber (2003), Morphew and Baker (2004), and O'Meara (2007).

Although general trends are useful and provide a helpful first glance at the data represented, a comparison of the rates of change between each Carnegie classification by expense line allows the researcher to better pinpoint significant findings. Table 9 reports the percentage change in dollars per FTE between 2001 and 2011 for all significantly different expense lines for each Carnegie classification. For example, the results indicated that for instructional expenses, institutions that had attained master's/medium status during the period studied had the greatest change in spending, with a relative increase of more than 32%. Continuing, one finds that master's/small and master's/large represented the next-largest increases in instructional spending, with 28.7% and 19.1%, respectively. Similarly, master's/S, master's/M, and master's/L represented the three largest rates of change, albeit in a different order, for student services.

Interestingly, master's-level institutions represented the highest, or second-highest, rates of change for all expenditure lines, with the exception of academic support spending. Such a rapid rate of change may suggest the extent to which smaller institutions (in terms of student enrollment and, typically, program areas) may have to invest resources across all of the main areas in order to keep pace with the postsecondary market. While increasing their spending across the board, these institutions paid particular attention to increasing their research expenses, student services, and—with the exception of master's/M—their scholarships/fellowships. Indeed, these institutions may be discovering how expensive it is to compete with the larger research institutions, in addition to competing with their peer group. The results may also point to a strategic decision in which spending for all areas increases significantly, which these institutions are making as they perhaps prepare to climb the ladder in hopes of obtaining the greater prestige that a research university moniker brings with it.

Table 9

Overall Percentage Rate of Change (in $ per FTE) from 2002-2011 by Carnegie Classification and Specific Line of Expenditure

	Instruction	Research	Public Service	Institu-tional Support	Academic Support	Student Services	Scholar-ships/ Fellowships	Total Core
Master's/ S (*N* = 34)	28.7	104.7	-28.5	41	19.1	41.3	71.5	31.9
Master's/ M (*N* = 47)	32.4	74	-9.4	22.5	31.4	41.2	-19.9	30.6
Master's/ L	19.1	-7.5	48.3	22.4	25.9	37.9	45.4	27.3
DRU (*N* = 17)	12.3	57.2	47.4	14.8	60.1	22.1	95.6	25.1
RU/H (*N* = 11)	9.8	52	-5.8	57.7	13.1	19.8	14.8	18.4
RU/VH (*N* = 12)	18.1	15.6	9.7	17.5	52.4	19.5	51.5	21.6

For the research institutions, Table 9 reports that at least one research classification (DRU, RU/H, or RU/VH) was in the top three greatest rates of change for research, institutional support, academic support, and scholarships/fellowships. Differing from master's-level institutions, the data for research universities may begin to point to a more targeted strategic focus for those institutions eying a higher rung on the Carnegie ladder. Indeed, institutions that achieved DRU status spent considerably more of their resources over time on research, academic support, and scholarships/fellowships, while maintaining consistent growth in the other areas of spending. This trend seemed to be paralleled by RU/VH institutions. Institutions that achieved the highest level of Carnegie classification seemed to, while maintaining solid growth in all areas, focus on spending more monies on academic support and scholarships/fellowships.

Again, the spending data reported in Table 9 seems to support the theory that certain spending behaviors serve as indicators of striving. Consequently, it may be suggested that these

indicators are more universal across all strivers and not specific to the level an institution is attempting to climb toward. Indeed, it seemed that all progression up the Carnegie classification might be possible by focusing on certain spending indicators. Going forward, the study takes a more detailed look at what effect the Carnegie classification a given institution wishes to attain has upon the institution's growth in expenditures.

How Did Final Carnegie Classification Affect Striving Institutions' Overall Rates of Expenditure Between 2002 and 2011?

The previous discussions centered on comparing and contrasting the levels, or rates, of expenditures for nonstriving and striving institutions, as well as the different levels of striving institutions based upon Carnegie classification. Such discussions serve an important purpose in helping to understand how different types of institutions allocate resources as part of their strategic decision-making process, especially among striving institutions, the sample of interest for this study. The remaining two research questions served to take that discussion one step further and begin to address how certain institutional factors affected the actual behavior itself—namely spending.

Of most interest is the effect that Carnegie classification may have on an institution's rate of spending over time. As such, this study employed a multilevel modeling approach. As discussed in Chapter 3, three models were run for this particular question. Model A, called the unconditional means model, contains only the specified outcome variable with no predictor variables. This model allowed the researcher to determine the intraclass correlation coefficient (ICC), which estimated the proportion of total variation in the outcome variable that lay between institutions. The intraclass correlation coefficient was calculated by dividing the variance of within-institutions (Level 1) by the sum of within-institution (Level 1) and initial status (Level 2)

variance. Model B allowed the researcher to determine what role time played within the model by reporting the intercept at initial status (time = 0), rate of change, and the proportion of outcome variance. Finally, Model C included time and the predictor variable, final Carnegie classification. Table 10 reports the results for Models B and C for each of the eight outcome variables studied. Also, included for each outcome variable was the calculated ICC from Model A (Model A results are located in Appendix D).

Table 10

Results of Unconditional Growth Model (Model B) and Conditional Growth Model (Model C)

	Outcome Variable					
	Instruction		Research		Public Service	
	Model B	Model C	Model B	Model C	Model B	Model C
Fixed Effects						
Intercept	2647.16***	2647.16***	578.02***	578.02***	303.24***	303.24***
CC_2010		2022.33***		981.46***		377.29***
Rate of Change						
Intercept	64.94***	64.94***	13.71***	13.71***	4.95	4.95
CC_2010		38.94***		22.26***		7.24
Variance components						
Level 1						
Within person	130035***	130035***	39031.16***	39031.16***	18663.69***	18663.67***
Level 2						
Initial status	14242887***	7373888***	3809357***	2191508***	832044***	592963***
Rate of change	10896.49***	8349.33***	2094.98***	1262.57***	2270.97***	2182.99***
ICC	0.981		0.984		0.954	
R^2_e	0.516	0.516	0.349	0.349	0.530	0.530
R^2_0		0.482		0.425		0.287
R^2_1		0.234		0.397		0.039

*$p < .05$. **$p < .01$. ***$p < .001$.

(*table continues*)

Table 10 (continued)

	Outcome Variable					
	Academic Support		Student Services		Institutional Support	
	Model B	Model C	Model B	Model C	Model B	Model C
Fixed Effects						
Intercept	673.55***	2647.16***	578.02***	578.02***	303.24***	303.24***
CC_2010		2022.33***		981.46***		377.29***
Rate of Change						
Intercept	27.27***	64.94***	13.71***	13.71***	4.95	4.95
CC_2010		38.94***		22.26***		7.24
Variance components						
Level 1						
Within person	20722.89***	130035***	39031.16***	39031.16***	18663.69***	18663.67***
Level 2						
Initial status	1264303***	7373888***	3809357***	2191508***	832044***	592963***
Rate of change	6130.04***	8349.33***	2094.98***	1262.57***	2270.97***	2182.99***
ICC			0.984		0.954	
R^2_e	0.938	0.516	0.349	0.349	0.530	0.530
R^2_0	0.752	0.482		0.425		0.287
R^2_1		0.234		0.397		0.039

*p < .05. **p < .01. ***p < .001.

(*table continues*)

Table 10 (continued)

	Scholarships/Fellowships		Total Core Expenses	
	Model B	Model C	Model B	Model C
Fixed Effects				
Intercept	256.77***	256.77***	6016.66***	6016.66***
CC_2010		232.18***		4969.42***
Rate of Change				
Intercept	9.41*	9.41*	177.51***	177.51***
CC_2010		9.91		134.09***
Variance components				
Level 1 Within person	16100.48***	16100.46***	579923***	579923***
Level 2 Initial status	277469***	186932***	79055299***	37578866***
Rate of change	3150.81***	2985.91***	90926***	60726***
ICC				
R^2_e	0.857		0.979	
R^2_0	0.648	0.648	0.659	0.659
R^2_1		0.326		0.525

*p < .05. **p < .01. ***p < .001.

Instruction expenditures. Table 10 reports an ICC of .981, indicating that 98% of the total variation in instructional spending may be attributed to differences that exist between striving institutions. Model B results suggested that average initial status for instructional costs was $2647.16 per FTE, with an average rate of change of almost $65 per year. Further, the table shows that approximately 51% of the within institutions variation in instructional expenditures may be associated with time. Finally, Model B illustrates that with significant variation in both initial status (p < .001) and rate of change (p < .001), it may prove worthwhile to explore the inclusion of substantive predictors.

With the addition of Carnegie classification at both initial status and rate of change for Level 2 of Model C, the results indicated that the starting value for an institution's instruction expenditures might be, on average, about $2,022.33 ($p$ < .001) higher for institutions with

research classifications. Additionally, an institution's rate of change in instruction expenditures increases by about $39 ($p < .001$) as it gets closer to the highest Carnegie level. The variance components from Model C revealed that, as expected, the within-institution variance was unchanged, due to no predictors being added to Level 1. Initial status declined from Model B, indicating that final Carnegie classification explained 48% of the variation in initial status. Likewise, the variance for rate of change declined from Model B to Model C, illustrating that approximately 23% of the variation in rate of change could be explained by final Carnegie classification.

Research expenditures. Calculating the ICC for research expenditures showed that 98% of the total variation in research spending could be attributed to between-institution differences. Continuing on, model B results suggested that average initial status for research spending was $578.02 per FTE, with an average rate of change of $13.71 per year. Also, Table 11 shows that 34.9% of the within-institution variation in research expenditures could be associated with time. Like instructional spending, research spending showed significant variation in both initial status ($p < .001$) and rate of change ($p < .001$), indicating the need to explore the inclusion of substantive predictors.

By adding the predictor of final Carnegie classification at both initial status and rate of change for Level 2 of Model C, results illustrated that the starting value for an institution's research expenditures were, on average, about $981 ($p < .001$) higher for institutions with research classifications, though the initial starting level of expenditure remained stable at $578.02 ($p < .001$). Additionally, an institution's rate of change in research costs over the initial increased by about $22.26 ($p < .001$) as it achieved higher research classification levels. Further, Table 11

Results of Conditional Growth Models

	Outcome Variable					
	Instruction		Research		Public Service	
	Model C	Model D	Model C	Model D	Model C	Model D
Fixed Effects						
Intercept	2647.16***	2647.15***	578.02***	578.03***	303.24***	303.24***
CC_2010	2022.33***	1808.29***	981.46***	873.72***	377.29***	294.77***
Inst. Control		-1595.05***		-718.94***		-488.43***
Rev_FTE		0.03		0.02		0.02**
Rate of Change						
Intercept	64.94***	64.94***	13.71***	13.70***	4.95	4.95
CC_2010	38.94***	28.87**	22.26***	20.57***	7.24	1.71
Inst. Control		-58.29***		-19.44***		-7.52
Rev_FTE		0.001*		0.000		0.002
Variance Components						
Level 1						
Within Person	130035***	130035***	39031.16***	39030.98***	18663.67***	18663.65***
Level 2						
Initial Status	7373888***	6766208***	2191508***	2052078***	592963***	515809***
Rate of Change	8349.33***	7208.99***	1262.57***	1181.01***	2182.99***	1627.75***
R^2_e	0.516	0.516	0.349	0.349	0.530	0.530
R^2_0	0.482	0.525	0.425	0.461	0.287	0.380
R^2_1	0.234	0.339	0.397	0.436	0.039	0.283

*p < .05. **p < .01. ***p < .001.

(*table continues*)

Table 11 (continued)

	Outcome Variable					
	Academic Support		Student Services		Institutional Support	
	Model C	Model D	Model C	Model D	Model C	Model D
Fixed Effects						
Intercept	673.55***	673.56***	588.69***	588.69***	969.25***	969.26***
CC_2010	562.39***	503.49***	239.50***	223.42***	554.28***	510.79***
Inst. Control		-364.38**		-88.21		-164.14
Rev_FTE		0.011		0.003		0.012
Rate of Change						
Intercept	27.27***	27.27***	22.34***	22.33***	34.89***	34.89***
CC_2010	28.73***	25.41**	4.81**	3.73	22.19*	17.35
Inst. Control		-14.28		-6.73		-12.78
Rev_FTE		0.001		0.000		0.002*
Variance Components						
Level 1						
Within Person	20722.88***	20722.87***	10416.64***	10416.62***	131072***	131073***
Level 2						
Initial Status	733103***	693174***	202434***	199546***	609561***	586493***
Rate of Change	4742.95***	4614.09***	722.74***	709.44***	7082.82***	6746.65***
R^2_e	0.752	0.752	0.526	0.526	0.390	0.390
R^2_0	0.420	0.451	0.322	0.332	0.458	0.479
R^2_1	0.226	0.247	0.051	0.069	0.105	0.147

*p < .05. **p < .01. ***p < .001.

(*table continues*)

Table 11 (continued)

	Outcome Variable			
	Scholarships/Fellowships		Total Core	
	Model C	Model D	Model C	Model D
Fixed Effects				
Intercept	256.77***	256.77***	6016.66***	6016.66***
CC_2010	232.18***	185.96***	4969.42***	4400.45***
Inst. Control		-523.06***		-3942.27***
Rev_FTE		-0.0005		0.09*
Rate of Change				
Intercept	9.41*	9.41*	177.51***	177.51***
CC_2010	9.91	9.35	134.09***	106.99***
Inst. Control		-26.27**		-145.31***
Rev_FTE		-0.0007*		0.006**
Variance Components				
Level 1				
Within Person	16100.46***	16100.44***	579923***	579923***
Level 2				
Initial Status	186932***	128015***	37578866***	33576132***
Rate of Change	2985.91***	2736.53***	60726.12***	52541.71***
R^2_e	0.648	0.648	0.659	0.659
R^2_0	0.326	0.539	0.525	0.575
R^2_1	0.052	0.131	0.332	0.422

*p < .05. **p < .01. ***p < .001.

the variance components from Model C indicated an unchanged within-institution variance. However, initial status declined from Model B, indicating that final Carnegie classification explained 42.5% of the variation in initial status. Likewise, the variance for rate of change declined from Model B to Model C, illustrating that almost 40% of the variation in rate of change in research expenditures could be explained by final Carnegie classification.

Public service expenditures. When analyzing the results in the three models for public service expenditures, results indicated that, with an ICC of .954, approximately 95% of the variation in public service spending could be explained by differences between the institutions. Further, Table 10 specifies an initial spending level of $303.24 per FTE for a school's public service costs. However, the calculated rate of change was found to not be statistically significant, indicating that the change in spending by institutions may be due to chance. Interestingly, the variance components for public service expenditures were found to be significant, showing that 53% of the variation in public service spending can be explained by time. Similar to Model B, Model C results showed that initial spending for research-level classification was $377.29 higher than institutions with lower classification. Unfortunately, the rate of change differential for Carnegie classification was found to be not statistically significant. However, variance components were statistically significant and indicated that 28% of the variation in initial status could be explained by final Carnegie classification, whereas almost 4% of the variation in rate of change was attributable to final Carnegie level.

Academic support expenditures. The computed ICC for academic support found that 93.8% of the total variation in spending for academic support could be explained by differences between institutions. Further, results from Model B showed that the average initial status for academic support expenditures was $673.55 per FTE with an average rate of change of $27.27

per year. Also, Table 10 shows that over 75% of the within-institution variation in academic support spending may be associated with time. Also, significant variation in both initial status ($p < .001$) and rate of change ($p < .001$) indicated the need to include at least one predictor in the next model.

After adding the predictor of final Carnegie classification for Level 2 of Model C, results showed that the initial level of expenditure for an institution was $562.39 ($p < .001$) higher for institutions with research classifications, though the initial starting level of expenditure remained stable at $673.55 ($p < .001$). Additionally, an institution's rate of change in academic support costs over the initial level increases by about $28.73 per FTE ($p < .001$) as they are awarded classification at the higher research levels. Also, the variance components from Model C indicated, due to no predictors being added at this level, an unchanged within-institution variance. However, initial status declined from Model B, indicating that final Carnegie classification explained 42% of the variation in initial status. Likewise, the variance for rate of change declined from Model B to Model C, indicating that 22.6% of the variation in rate of change in academic support expenditures could be explained by final Carnegie classification.

Student services expenditures. Continuing on with student services expenditures, Table 10 reports an ICC of .931, indicating that 93% of the total variation in spending can be attributed to differences that exist between striving institutions. Model B results suggested that average initial status for student services costs was $588.69 per FTE with an average rate of change of $22.34 per year. Also, the results showed that approximately 52.6% of the within-institution variation in student services expenditures might be associated with time. Finally, Table 11 reported significant variation in both initial status ($p < .001$) and rate of change ($p < .001$), indicating the need for a Level 2 predictor.

Model C, which includes final Carnegie classification as a Level 2 predictor, provided results that indicated the starting value for an institution's student services expenditures increased by $239.50 ($p < .001$) for institutions with research classifications. Additionally, an institution's rate of change in instruction expenditures increased by about $4.81 ($p = .01$) as it approached the higher research classification levels. The variance components from Model C revealed that the within-institution variance was unchanged. Additionally, initial status declined from Model B to Model C, indicating that final Carnegie classification explained 32.2% of the variation in initial status. Likewise, the variance for rate of change declined from Model B to Model C, illustrating that approximately 5% of the variation in rate of change could be explained by final Carnegie classification.

Institutional support expenditures. Calculating the ICC for institutional support expenditures showed that almost 84% of the total variation in spending could be attributed to between-institution differences. Also, Model B results suggested that average initial status for spending on institutional support was $969.25 per FTE with an average rate of change of $34.89 per year. Also, the results from Table 11 showed that 39% of the within-institution variation in institutional support expenditures might be associated with time. Like all of the preceding expenditures, institutional support spending showed significant variation in both initial status ($p < .001$) and rate of change ($p < .001$), indicating the need to explore the inclusion of substantive predictors.

By adding the predictor of final Carnegie classification at both initial status and rate of change for Level 2 of Model C, results indicated that the starting value for an institution's research expenditures was, on average, about $554.28 per FTE ($p < .001$) higher for institutions with research classifications, though the initial starting level of expenditure remained stable at

$969.25 ($p < .001$). Moreover, an institution's rate of change in institutional support costs over its initial status increased by about $22.19 ($p < .05$) as it achieved higher research classification levels. As expected, the variance components from Model C indicated an unchanged within-institution variance. However, initial status declined from Model B, indicating that final Carnegie classification explained 45.8% of the variation in initial status. Similarly, the variance for rate of change declined from Model B to Model C, and 10.5% of the variation in the rate of change in institutional support expenditures can be explained by on organization's final Carnegie classification.

Scholarship/fellowship expenditures. When analyzing the results in the three models for scholarship/fellowship expenditures, results indicated that with an ICC of .857, approximately 86% of the variation in spending on scholarships and fellowships could be explained by differences between the institutions. Further, Table 11 specifies an initial spending level of $256.77 per FTE. The calculated rate of change was found to be statistically significant ($p = .05$), indicating that the change in spending by institutions was approximately $9.41 per FTE. Also, the variance components for scholarship/fellowship expenditures were found to be significant. With a Level 1 variance of 16,100.48 ($p < .001$), a Level 2 initial status variance of 277,469.43 ($p < .001$), and a Level 2 rate of change variance of 3,150.81 ($p<.001$), computed R squares showed that 64.8% of the variation in scholarship/fellowship spending could be explained by time.

In addition to Model B, Model C results showed that initial spending for research-level classification was $232.18 higher than institutions with lower classification. Further, while the initial rate of change of $9.41 per FTE was statistically significant ($p = .05$), the rate of change differential for Carnegie classification was found to be not statistically significant. Interestingly,

variance components were statistically significant and indicated that 32.6% of the variation in initial status could be explained by final Carnegie classification, whereas 5.2% of the variation in rate of change was attributable to final Carnegie level.

Total core expenditures. Finally, results from the HLM models showed that with an ICC of .979, almost 98% of the total variation in spending could be attributed to differences that existed between striving institutions. Model B results suggested that average initial status for an institution's total core expenses was $6,016.66 per FTE with an average rate of change of $177.51 per year. Also, the results showed that approximately 65.9% of the within-institution variation in their total core expenditures might have been associated with time. Further, Table 10 reports significant variation in both initial status ($p < .001$) and rate of change ($p < .001$), indicating the need for a Level 2 predictor.

Model C, which includes final Carnegie classification as a Level 2 predictor, provided results that indicated the starting value for an institution's total core spending was $4,969.42 ($p < .001$) higher for each level an institution moved closer to research/very high classifications. Additionally, an institution's initial rate of change in total core expenditures was $177.51 per FTE higher as final Carnegie classification increased, while the differential in rate of change between lower-level classification and higher, more research-oriented, classifications was, on average, $134.09 per FTE. The variance components from Model C revealed that the within-institution variance was unchanged. Additionally, initial status declined from Model B to Model C, indicating that final Carnegie classification explained 52.5% of the variation in initial status. Likewise, the variance for rate of change declined from Model B to Model C, illustrating that approximately 33.2% of the variation in rate of change for total core expenditures could be explained by final Carnegie classification.

Indeed, the analysis presented above demonstrates that final Carnegie classification does have a significant impact upon all eight lines of an institution's expenditures. Although the magnitude of the impact varies, one can begin to see that the act of striving does have an influence upon both the initial level of spending an institution can realize, as well as the growth over time an institution can expect as it attempts to increase its Carnegie classification. Although the data seem to confirm that, when utilized as the lone predictor variable, final Carnegie classification had a significant impact, one must finally analyze and discuss the impact final Carnegie classification had upon spending when other institutional factor were included within the statistical model.

What Impact Did Final Carnegie Classification Have on Striving Institutions' Rate of Change in Expenditures When Controlling for Institutional Demographic Factors?

Addressing this final question required the utilization of a fourth and final model in HLM. Previously, two unconditional models—means and growth—were run in order to develop baselines from which to calculate the ICC and determine initial levels for calculating variation explained. The researcher then ran a third model wherein the dependent variable CC_2010 was included. This variable represented the final Carnegie classification for each striving institution and was coded from 0 to 5 with Master's/S institutions representing the reference category.

For the fourth model, Model D, two other independent, or predictor, variables were included in order to determine if the effect that final Carnegie classification had upon the outcome variables was mitigated in some way. Added was a variable for institutional control coded 0 for public institutions and 1 for private institutions. Also, a variable for revenue was included in the model. This predictor, based upon previous research (Baker, 2003; Morphew &

Baker, 2004), was included to control for the wide range of revenues received by institutions. To further standardize this measure, values were reported per FTE.

Instruction expenditures. Looking at Table 11, which presents the results for the two conditional models run in HLM, one can see that the initial spending level remained the same as from Model C. This result was not surprising given the fact that no additional predictors were added to Level 1. Interestingly, the effect of final Carnegie classification was diminished at the initial stage. With a significant finding ($p < .001$), instruction costs seemed to start $1,808.29 per FTE higher for each level above the Master's/S classification that an institution was. Further, Table 11 shows that an organization's institutional control could impact initial spending level. Indeed, public institutions' initial level of instructional spending was $1,595.05 higher than their private counterparts'.

Turning to the rate of change in an institution's instructional spending, one finds that the initial rate of change was unchanged, as expected. However, the impact of final Carnegie classification was reduced, indicating a change in the rate of expenditures of $28.87 per FTE for each level increase in final Carnegie classification. Further, institutional control had a significant effect ($p < .001$) by increasing the rate of spending for public institutions by $58.29 per FTE. Finally, though statistically significant, total revenue per FTE increased the rate of instructional spending but, admittedly, by a minuscule amount.

Drawing attention to the variance components, the results showed that while within-person variation remained stable at 51.6%, the percentage of variation in initial status increased by approximately 1% to 52.5%. Likewise, the variation in rate of change for instruction costs explained by this model increased from Model C to 33.9%.

Research expenditures. Compared to Model C, the addition of two predictor variables seemed to significantly alter the effect of final Carnegie classification both in initial status and rate of change. For initial level of spending, each classification level of an institution above Master's/S, instruction costs seemed to increase spending by $873.72 ($p < .001$). Further, the significant institutional control predictor ($p < .001$) raised spending for public institutions by $718.94.

Similar to initial status, rates of change for research spending also showed significant results. Initial rate of change of $13.70 was statistically significant ($p < .001$), as was final Carnegie classification ($p < .01$), suggesting that research expenses increased by $20.57 per FTE for each level above the Mater's/S classification. Finally, although revenue per FTE was not statistically significant, institutional control ($p < .001$) demonstrated a rate of change $19.44 per FTE higher for public institutions. Looking at the variance components for Model D, reported results showed that this model explained 46.1% of the variation in initial status while accounting for less than 50% (43.6%) of the variation in rate of change.

Public service expenditures. Model D indicated that an institution's expenditures on public service had a statistically significant ($p < .001$) initial status of $303.24 per FTE, unchanged from Model C. However, the impact final Carnegie classification had upon public service expenditures was significant ($p < .001$) and raised costs per FTE by $294.77 for each increase in final Carnegie classification above Master's/S. Institutional control significantly ($p < .001$) raised public institutions' public service initial spending per FTE level by $488.43. Further, revenue per FTE provided a significant ($p < .01$), albeit slight, increase of 2 cents as revenue per FTE rose.

When analyzing the results for rate of change of public service spending, Table 11 indicated that none of the predictor variables were statistically significant. Interestingly, the variance components were found to be significant, with a Level 2 initial status and rate of change at $p < .001$. Such a result further indicated that 38% of initial status in public service spending could be explained by the model, whereas 28.3% of the rate of change in public service spending could be explained by the predictors within this model.

Academic support expenditures. Table 11 indicated that final Carnegie classification impacted an institution's academic support expenditures. Statistically significant, final Carnegie classification ($p < .0015$) increased initial expenditures for universities by $503.49 per FTE for each increase in Carnegie level. Also, institutional control helped to predict academic support spending by significantly ($p < .01$) increasing initial level of spending for public institutions by $364.38 per FTE.

However, as rate of change was analyzed, all predictors except for final Carnegie classification were found to be not significant. With the only significant impact ($p < .01$), final classification level suggested that for every level increase in an institution's classification, its rate of change in costs increased by $25.41 per year. Finally, much like public service expenditures, whereas most of the Level 2 predictors were not statistically significant, the variance components were found to be significant ($p < .001$, $p < .001$, $p < .001$, respectively). Such values dictate that within-institution variation remained stable at 75.2% of the variation explained by the model. As for Level 2, Model D explained 45.1% of the variation in initial status and 24.7% of the variation in rate of change.

Student services expenditures. Continuing with student services expenditures, the data showed that for an institution's initial level of spending, the only predictor variable found to be statistically significant ($p < .01$) was final Carnegie classification. According to Table 11, initial costs for an institution rose by $223.42 per FTE for each level increase in final Carnegie classification level. Unfortunately, when rate of change was examined, the data showed that none of the predictors included in Model D were statistically significant, other than the intercept ($p < .001$), which indicated that an institution's rate of change was approximately $22.33 per FTE per year.

However, unlike rate of change for student services expenditures, the variance components for this model were significant. Indeed, 52.6% of the variation in within-institution spending could be explained by this model. Likewise, 33.2% of the variation in initial spending could be explained by Model D, whereas 6.9% of the variation in student services' rate of change in spending could be explained by the predictor variables included within this model.

Institutional support expenditures. Table 11 shows that an institution's initial level of spending was significant ($p < .001$) at $969.26 per FTE. Further, only one predictor variable had a statistically significant impact upon an institution's initial institutional support expenditures. Final Carnegie classification ($p < .001$) increased an institution's initial level of spending by approximately $510.79 per FTE for every level increase in Carnegie classification.

Unlike initial status, rate of change for institutional support spending found no statistically significant predictor variables. Only the intercept, or the basic rate of change, was significant, indicating that, in general, an institution's institutional support expenses grew by approximately $34.89 per FTE per year. However, variance components for this model were statistically significant, indicating that 47.9% of the variation in initial status for institutional

support expenditures could be explained by Model D, whereas 14.7% of the variation in rate of change for institutional support spending could be explained by the predictor variables included in this analysis.

Scholarship/fellowship expenditures. Compared to Model C, the addition of all but one predictor variable, revenue per FTE, seemed to significantly alter the effect of final Carnegie classification both in initial status and rate of change upon an institution's scholarships and fellowship expenditures. For initial level of spending ($p < .001$), institutions spend $256.77 per FTE. With the addition of final Carnegie classification ($p < .001$), institutions spend $185.96 per FTE more for each level of Carnegie classification above a Master's/S level. Further, the significant institutional control predictor ($p < .001$) raised spending for public institutions by $523.06.

Similar to initial status, rates of change for scholarship/fellowship spending also showed significant results. Initial rate of change of $9.41 was statistically significant ($p < .05$), as was institutional control ($p < .001$), suggesting that scholarship and fellowship expenses increased by $26.27 per FTE for each level above the Mater's/S classification. Finally, revenue per FTE demonstrated a significant impact ($p < .05$) on scholarship/fellowship expenditures, though the impact was negative and quite small, suggesting a slight decrease in rate of change in spending as an institution realized higher revenues per FTE. Looking at the variance components for Model D, reported results showed that this model explained 53.9% of the variation in initial status while accounting for 13.1% of the variation in rate of change.

Total core expenditures. Finally, Table 11 presents the results of Model D for total core expenditures. Looking at Table 11, one can see that the initial spending level remained the same as in Model C. This result was not surprising given the fact that no additional predictors were added to Level 1. Interestingly, the effect of final Carnegie classification was diminished at the initial stage. With a significant finding ($p < .001$), total core spending levels seemed to increase by $4,400.45 per FTE higher for each level above the Master's/S classification that an institution was. Further, Table 11 shows that an organization's institutional control had an impact upon initial spending level. Indeed, public institutions' initial level of total spending was $3,942.27 higher than their private counterparts'. Finally, revenue per FTE was also significant ($p < .05$), indicating a 9 cent increase in initial spending levels as revenue per FTE for an institution increased.

Turning to the rate of change in an institution's total expenditures, one finds that the initial rate of change was unchanged, as expected. However, the impact of final Carnegie classification, while still significant ($p < .001$), was reduced, indicating a change in the rate of expenditures to an increase of $106.99 per FTE for each level increase in final Carnegie classification above the Master's/S level. Further, institutional control had a significant effect ($p < .001$), increasing the rate of spending for public institutions by $145.31 per FTE. Finally, though statistically significant ($p < .01$), total revenue per FTE increased the rate of total expenses, albeit by only fractions of a cent.

Drawing attention to the variance components, the results showed that while within-person variation remained stable at 65.9%, the percentage of variation in initial status increased to approximately 57.5%. Likewise, the variation in rate of change for total expenditures explained by this model increased from Model C to 42.2%.

Chapter 5: Conclusions and Implications

Summary of Purpose and Methods

The purpose of this study was to examine the effect that striving behavior had upon an institution's expenditures. Although not the first study to examine such effects, it was the first to look across a multitude of institution types, spanning seven levels of Carnegie classifications and encompassing public and private not-for profit bachelors-granting schools to public and private research institutions. Further, this study looked at spending lines comprehensively in the sense that seven individual lines of spending were investigated, as well as total spending, and not, like most other studies, one or two specific lines.

Two separate analyses were conducted in this study. The first utilized descriptive statistics and ANOVA models to determine mean differences between groups, whereas the second utilized descriptive statistics and multilevel modeling—specifically HLM. The first analysis was conducted for 1,215 not-for profit institutions that awarded bachelor's degrees and higher. This group was divided into striving institutions, defined as institutions whose 2010 Carnegie classification was at least one level higher on Carnegie's classification scale than their respective 2005 Carnegie classification and those institutions whose Carnegie classification remained the same over the course of the studied period. The second analysis utilized the group of striving institutions from the first analysis. For this portion of the study, these 203 institutions were divided into six separate groups, defined by their final Carnegie classification.

Summary of Results

It was clear from the results of this study that institutional expenditures for striving colleges and universities were significantly different from those of institutions that did not see a change in their Carnegie classification. Indeed, nonstriving institutions made a concerted effort

to increase their levels of spending in an attempt to keep pace with their "competition." In fact, nonstrivers increased their spending across all but two of the expenditure lines investigated—public service and scholarships/fellowships. When looking at the areas of highest increased spending for nonstrivers, student services, research, and academic support expenditures all increased at a rate of between 11% and 16% over the study's 10-year span. Strivers, however, provided a compelling picture that increases in Carnegie classification could be associated with higher expenditure growth rates focused on different functional areas. When looking at the data, expenses incurred per FTE by strivers were markedly higher in terms of growth rates over the 10-year span. Such a ratcheting up of expenses might, indeed, have served as a signal of these institutions' lofty goals. Somewhat different than the nonstriving schools, the three expense lines with the highest levels of growth were scholarships/fellowships, academic support, and student services expenditures.

Comparing growth rates in spending between nonstrivers and strivers, interesting differences were found. Spending by strivers was consistently higher when compared to that of nonstrivers. Percentage differences between the two demonstrated that, for example, institutional support spending for striving institutions grew more than five times faster than for nonstrivers. Growth in student support services for strivers was more than double that of nonstrivers. In fact, all lines of expenditures for strivers showed at least a 43% advantage in growth of spending compared to their nonstriving counterparts.

Further, looking at the strivers in terms of specific Carnegie classification, interesting patterns were found. Striving Master's/S and Master's/M institutions, usually representing the smallest schools in terms of enrollment and overall expenditures, both increased their spending dramatically on research, institutional support, students services, and overall core expenses. In

fact, the growth rates for these institutions, in those four areas, were some of the highest growth rates across all Carnegie classification studied. It is possible that this might suggest a group of institutions preparing themselves for a long-term strategic plan of achieving multiple level increases, along with making investments in areas that would contribute to higher revenues. Certainly, these institutional groups would require much greater funding for their subsequent growth as they begin to differentiate themselves from their competitors.

Spending growth for Master's/L institutions also provided a detailed profile of how subsequent increases in Carnegie classification could be achieved. Master's/L schools demonstrated significant increases in public service, student services, and scholarships and fellowships. Increases in these areas seemed to suggest that these institutions were taking a more aggressive approach with their public relations strategies and with their increased desire to attract higher quality students and faculty. Public service and scholarships and fellowships also seemed to be an area of focus for DRUs. With increases in spending growth over 50%, DRUs seem to be continuing what they started as large master's institutions. However, unlike for their master's counterparts, growth in research costs for DRUs grew at a much faster pace. Rising research costs were also demonstrated for RU/H schools. Coupled with a dramatic increase in institutional support spending, it seemed clear that institutions striving to the RU/H classification focused on their research output and the infrastructure that could help drive this output.

Finally, universities at the very highest level, RU/VH, showed that although research and institutional support costs were increased over the 10-year span, monies were directed more to increased spending on academic support and scholarships and fellowships. Perhaps such a change in spending behavior indicated the desire of these institutions to solidify their ability to attract and retain the highest-quality students.

The final stage of the analysis was the utilization of an HLM model for statistical analysis. Results from the models run indicated that most of the spending growth institutions realized, as well as the initial level of spending institutions had at 2002, could, at least to some extent, be contributing to striving behavior. That is, increases in final Carnegie classification had a statistically significant impact upon an institution's spending on most lines of expenditures. Such an impact, while varied in magnitude, decreased when other institutional variables were controlled for. Of these other variables, institutional control seemed to have the greatest impact. Interestingly, for some expenditure lines, the addition of these other institutional descriptors negated the effect striving behavior had upon an institution's spending.

Implications for Theory and Practice

In Chapters 2 and 3, multiple theoretical approaches were presented in order to frame the problem and provide the foundation for the study. The findings and conclusions of the study built on the current literature and offered additional insights into these perspectives. These perspectives are reintroduced and combined with the study's findings and conclusions to provide a better understanding of the relationship between prestige and institutions' patterns of expenditures.

Resource dependency theory shows that institutions do not act in a vacuum, but their survival and the success is dependent on their ability to maintain resources from an unstable environment. Pfeffer and Salancik (1978) noted that an institution's dependency "makes the external constraint and control of organization behavior both possible and inevitable" (p. 43). Pfeffer and Salancik viewed organizations as involved in a constant struggle for autonomy. These views were reinforced in the theoretical framework. The environment, however, is always changing, and as a result new actors enter and exit. For higher education, one possible entry into

the environment that would have a lasting impact is the entry of external validating organizations, such as *U.S. News & World Report* and, as is the focus if study here, the Carnegie classifications

Initially, this new entry represented an opportunity for institutions to manipulate their individual levels of expenditures by increasing particular areas while reducing others, in an attempt to proceed up the inherent hierarchy that these validating organizations had established. Indeed, external validating agencies became key to this process, as their stamp of approval signified legitimacy. The analyses confirm that institutions attempted to increase the proportion of expenditures for certain lines, including research, institutional support, and student support services at a greater rate than other lines, such as instructional costs. Over the 10-year period studied, all lines of expenditures showed significant growth; however spending for striving institutions had increases greater than their nonstriving counterparts'. Further, as institutions moved higher up the Carnegie classifications, their rate of spending and the rate of change over time for those expenditures increased.

The theory of strategic balance (Deephouse, 1999) explains how institutions respond to these new actors in the environment. Deephouse's (1999) theory of strategic balance says that organizations benefit from being different because they face less competition, but firms also benefit from being the same because they are seen as being more legitimate. Initially, institutions may have seen the increased expenditures and validating agencies as an opportunity to differentiate themselves from their competitors, thereby increasing their survival and success.

Over time however, as these external validating organizations garnered increased attention, they also became a source of legitimization. The cost of not being seen as the same, and therefore not legitimate, may have forced institutions to pursue prestige in order to survive.

The study's findings showed that the differences in the rate of growth in the level of expenditures between striving and nonstriving institutions was statistically significant, indicating that strivers' growth in expenditures over the 10-year span was higher than nonstrivers'. The results suggested that institutions were behaving differently in order to differentiate themselves. Certainly, it appeared that these institutions as a group were attempting to increase their prestige by increasing the monies spent on specific costs that lent themselves to an increase in prestige, which did not seem to include instruction costs.

The theory of isomorphism suggests the role that legitimacy plays in informing institutional behavior. Isomorphism describes how institutions become homogenous. DiMaggio and Powell (1983) theorized that this occurs by three mechanisms: coercive, mimetic, and normative. External validating agencies apply formal and informal pressures because organizations are dependent upon their endorsement. Institutions also become more similar due to the ambiguity of their missions. Mission ambiguity has led to the duplication of programs and to reduction in the diversity of institutions (Morphew, 2002). Increased competition has led to institutions' attempting to mimic other organizations in their field that have been deemed successful or legitimate, resulting in isomorphism. Morphew and Baker's study (2004) showed that as research institutions increased in prestige, their expenditure patterns (priorities) became less like those of the institutions they were initially trying to mimic. The present analysis hypothesized and seemingly validated that the same would be true of all Carnegie classifications of bachelor's and above.

Perrow's (1961) theory of prestige supplements the previous theories. Perrow noted that highly technical organizations tend to utilize indirect measures of quality, and because the quality of the product cannot be measured, these external agencies' acknowledgement of quality

becomes even more important in a highly competitive environment. This is certainly true for higher education institutions, where the quality of the output is almost universally measured by inputs rather than by value added. For institutions, these acknowledgements of quality and their associated legitimacy are key to survival in a highly competitive environment.

Perrow's (1961) theory would suggest that like patients at a hospital, the public is unable to judge the quality of benefits they receive from higher education and instead focuses on extrinsic aspects. As a result, these extrinsic items become a priority and divert key resources away from higher education's core production function, undergraduate education. Relying on external validating agencies for acknowledgement of the institutions' quality also leads to institutions increasing their costs in specific noninstructional areas. Interestingly, the results showed that the greater levels of growth in spending were not on instructional costs but on areas that have more "value" to external agencies, such as research or student support services.

Perrow (1961) also suggested that increased striving for prestige would negatively impact an organization's core production function. As was previously suggested, there is growing anecdotal and empirical evidence to suggest that many higher education institutions are sacrificing the undergraduate teaching mission in an attempt to pursue external indicators of prestige. For example, Morphew and Baker (2004) showed that institutions that increased their prestige spent less on instructional expenditures and more on administrative costs. Indeed, the results of this study showed similar findings, in that while instruction costs did increase over time, the growth rate was much smaller than in other areas.

Bowen (1980), in his influential book *The Costs of Higher Education*, spent a significant amount of time discussing differences in expenditures by institutions. The context Bowen provided is useful for discussing the significance of this study and the kinds of other research

questions suggested by these findings. In his discussion of the "Effect of Institutional Affluence on the Patterns of Resource Allocation," Bowen argued that greater institutional affluence does not result in greater spending on instructional line items. Instead, he found that institutions with greater resources (e.g., more spending per student) used their advantage "to spend a smaller portion of their budget for instructional functions and more on nonacademic staff and purchases of goods and services from outside" (p. 150). In other words, rather than leveraging their already greater spending per student with more spending, richer universities chose to leverage their administrative staff. In that sense, greater institutional affluence did not necessarily translate to more spending on faculty or academic support staff. Instead, as the data that Bowen provided indicated, the most affluent institutions—including research universities—spent proportionately greater amounts on institutional support than their less affluent peers.

The results of this study supported Bowen's observations. As institutions moved up to the highest Carnegie classifications in 2010, they gained membership in a group that spent, on average, greater amounts (in dollar per FTE terms) on instruction than any other Carnegie group (NCES, 2010). That means, according to Bowen's definition (1980), they became members of the most affluent sector in higher education. And, true to form, movement to this new group coincided with a shift in expenditures that emphasized institutional support, research, and student services and deemphasized spending on instruction in terms of proportionate spending.

This is important because in his discussion of the subject more than 20 years ago, Bowen (1980) argued that the most affluent universities engaged in a kind of inefficiency. That is, while these universities were gaining additional resources, they still spent a great deal on instruction but were choosing to put most of the new monies aside for other purposes not directly (or otherwise) related to educational quality. Or, as Bowen put it,

> as institutions become increasingly affluent, they seem to create overlays of administrators, secretaries, clerks, assistants, counselors, office equipment, travel, stationery, [and] supplies, in relation to the amount of resources devoted directly to education, which takes place primarily when faculty members are in the presence of students and when faculty and students are quietly studying. (pp. 150-151)

Bowen's point was that although the most affluent institutions do spend more dollars on instruction than other institutions, their pattern of spending greater shares of their wealth on "overlays" needs to be questioned by the same arguments that question higher education's efficiencies according to accepted measures such as student-faculty ratios and average class size. Moreover, the fact that these patterns change as a function of relative affluence is problematic because it implies a de-emphasis on instruction as the university is rewarded for its quality with increased revenues.

The findings of this study second Bowen's (1980) claim that the "burden of proof may be on the part of the more affluent institutions" (p. 151) to show that the patterns of spending they engage in are both efficient and honest. How universities might do this is not completely clear, but there should be some expectation that they can demonstrate that (a) new spending on institutional support is efficient, meaning that it contributes to important institutional outcomes in ways that reflect each university's goals and resources, and (b) honest in the sense that these expenditures contribute to educational quality in a real way. Especially within a context where public and private universities are being challenged by internal and external audiences to become more efficient, the findings suggested the need for institutions achieving newer, higher, Carnegie classification, especially the higher research university designations, to examine their

expenditure patterns over the past 25 years, analyzing how the changes in spending have contributed to the institution's primary missions of teaching, research, and learning.

Implications for Practice

Institutions are pursuing higher Carnegie status vigorously. There seems to be an unspoken belief that the payoff for increasing expenditures in key areas is an increase in prestige, which in turn will lead to increased revenue. Although research has confirmed that increases in prestige indirectly and positively impact revenue (Griffith & Rask, 2007; Jin & Whalley, 2007; Meredith, 2004; Monks & Ehrenberg, 1999), this study filled a gap in the existing literature by focusing on the relationship between prestige and the institution's pattern of expenditures.

First, the study showed that increases in prestige equated to an increase in any of a number of expenditure lines. Particularly interesting, this study provided quantitative support for the existence of striving indicators. Indeed, many of the theorized indictors were revealed to be specific areas of focus for institutions moving up on the ladder of Carnegie classifications. That is, indicators of an institution's intention of increasing its prestige through Carnegie classification were validated through results that demonstrated numerous areas of expenditures where striving institutions greatly surpassed the spending growth of their nonstriving counterparts. Such changes in spending served as a guide to institutions considering embarking on a strategic plan of striving for more prestige. However, they might also serve as a warning to those same institutions that moving toward greater prestige comes at a significant, long-term cost, especially since the elite institutions are not idling in neutral while rising institutions attempt to catch up.

Paradoxically, if these institutions are spending more to increase their prestige, and therefore their resource independence, as this study seemed to confirm, they may actually move

into a worse financial situation. Institutional administrators should consider the existing research on the impact of prestige aspirations on institutional behavior. Indeed, it is clear from the study's findings that there are economic ramifications to the pursuit of prestige, and previous research has shown other consequences of participating in what Bowen (1980) refers to as a "zero-sum game" (p. 23).

Limitations

Without question, this study showed that striving colleges and universities experienced substantial shifts in their spending during the period between 2002 and 2011. It was also apparent that these shifts were in the direction of greater proportionate spending on student and academic and institutional support services and lesser proportionate spending on instruction. The real question is, are these changes in the expenditure patterns of striving institutions the result of the changes that accompanied their new classifications as of 2010? Although I believe that the models and findings suggest a causal relationship (particularly the findings relative to the fifth research question), one cannot prove that this is definitely the case. These shifts are, however, consistent with the literature discussed earlier.

But the study and the models constructed to answer the research questions were limited by several factors. First, the IPEDS data used in the study were not precise in their classification of institutional expenditures. The reader can see from the discussion in Chapter 3 that multiple interpretations of these definitions are possible. For example, consider that the research category included all funds "expended for activities specifically organized to produce research outcomes," whereas the institutional support category included "expenditures for the day-to-day operational support of the institution . . . [and] expenditures for general administrative services, executive direction." Given these instructions, where would an institution choose to place the salary of its

vice president for research? Certainly, a case could be made for both categories. In this case, then, there may be "noise" in the IPEDS data that cannot be explicated.

Further, the specific data derived and reported by the Delta Cost Project provided some unique limitations. Institutions were assigned unique identifying codes. For universities, that had more than one large, self-sustaining campus, a different identifier was assigned to each campus. However, for some institutions, the Delta Cost Project reported financial data for the entire system, not for individual campuses, creating problems with any attempt to disaggregate the data to individual campuses. Such procedures are possible but require significant assumptions to be made by the individual.

Also, the analyses of striving institutions used data from relatively small groups (e.g., 202 institutions in the case of the striving institutions) to discern and compare changes in spending patterns. This small number means that results in the model may not reappear in larger groups. Although this limitation is real, the finding that institutions striving to higher Carnegie classifications experienced greater proportionate spending between 2002 and 2011 relative to their nonstriving counterparts was less likely to be the result of an erroneous finding because of the significant values shown in Tables 8 and 10.

Finally, the study utilized a single measure of prestige, change in Carnegie classification. The study would be enhanced by considering multiple measures of prestige and comparing the effects. Additionally, the prestige measure utilized in the study only referenced a single rating cycle (2005 and 2010). Indeed, the utilization of numerous rating cycles would have allowed a better understanding of striving behavior over a greater period of time. Further, inherent in the use of this measure of prestige is the dichotomous nature of the classification. Carnegie levels, due to their rigid definitions, only allow for an institution to either be classified at one level or

another. This limitation marginalizes those institutions that might have made significant progress toward achieving the next level only to come up short when the final classifications were released, creating perhaps a subgroup of the strivers defined within this study. Indeed, these institutions were striving for greater prestige, though maybe not to an extent that could be reflected by using Carnegie classifications.

Implications for Future Research

This study's findings contributed to the ongoing dialogue concerning the relationship between prestige and institutional behavior. The research conducted offered a wealth of opportunity for future research focused on the relationship between the pursuit of prestige and institutional behavior. Based upon lessons learned through an examination of the methodological limitations, the study itself could be extended in several ways. One, the population was confined to two cycles of Carnegie classification. Pursuit of prestige, however, is hardly limited to a 10-year period. This study should be replicated and expanded to include previous classification periods. Although requiring a rigorous methodology for redefining classification groups over the years, it could prove a worthwhile endeavor to see if the findings here hold true over a lengthier study period.

Although this study only looked at those institutions that changed Carnegie classification, there might exist a strong potential for research in the study of those institutions that could be classified as "near strivers." Certainly, these institutions might have been striving but at the time of classification might not have produced enough to rise in level. These institutions cannot simply be ignored as nonstrivers but might form a potentially large subgroup of strivers that as of yet have not been the focus of any study.

Also, this study excluded those institutions that did not report complete data for the entire time frame studied. With the availability of a number of data imputation / missing data strategies, future studies could benefit by utilizing one of these methodological processes to increase the sample pool of institutions that could be analyzed. Such an addition to the sample used in this study would be beneficial in understanding if the results were broad in scope or were simply reserved for the unique set of colleges and universities studied.

Secondly, alternative definitions of prestige might be used. The key predictor of interest utilized in the study was change in Carnegie classification. Although a valid representation of prestige (Morphew & Baker, 2004), other studies should implore other measures of the construct to confirm this study's findings. Future studies would also benefit from including multiple predictors of prestige in a single study to compare effects.

Another possible mode of research is the study of student fees. Although this study investigated the impact striving had upon institutional spending, the pursuit of prestige does not only affect the institution. Indeed, when a college or university decides to increase its prestige, the effect is not only felt be the institution at large but also by the individual student. Although much has been done on the impact prestige has upon tuition (N. Bowman & Bastedo, 2009), little research has looked at the effect striving has upon the fees that students are required to pay in addition to their tuition (Jacob et al., 2013). For example, supported by the findings of this study, one could investigate if student costs increased at a faster rate for striving institutions than for nonstrivers.

Finally, although this study found that numerous striving behavior indicators were statistically associated with changes in expenditures over time, the question of causality remains. Do these indicators actually drive the changes in classifications? Or is it the change in

classification that drives the indicators? The most that a statistical model can do is show what factors relate to an institution's spending behaviors or what relates to changes in the behaviors over time. The models cannot show what actually drives the behaviors or what drives any changes to those decisions. Indeed, the changes themselves are a product. It is likely that only a qualitative study featuring interviews of the leaders of striving and nonstriving institutions, would be able to assess what specifically drives the decision to strive and bring with it the increased costs and hopefully increased prestige. Questions should address the process leaders undertook in their decision to strive, what information they used to inform those decisions, how they prepared their institution for such a change, and the consequences that inevitably occur. Such a study would focus on institutions that have demonstrated striving behavior and encompass a variety of levels of strivings in order to provide the most comprehensive answers.

Conclusion

The pursuit of prestige by higher education institutions has been documented for almost a century (Thelin, 2004; Veblin, 1918; Veysey, 1970). Higher education institutions are altering their behavior in an attempt to increase their prestige (Anderson, 2001; Bok, 2006; Bowen, 1980; Morphew & Baker, 2004; O'Meara, 2007; Pusser, 2002; Slaughter & Leslie, 1997; Weerts & Ronca, 2006). Increasingly, not-for-profit higher education is being described by words like "marketization," "commodification," and "academic capitalism" (Bok, 2006; Pusser, 2002; Slaughter & Leslie, 1997). These labels attempt to capture a shift in the behavior of these institutions of higher education. The public good characteristics that defined the social compact, are threatening to be replaced by characteristics of industry (Gumport, 1993). An assumption fostering this aspiring behavior by institutions is the belief that increases in institutional

expenditures will lead to increased prestige, thereby increasing revenues for the university. The question remains, however, is it working? And to what end?

The study's findings showed that institutions that increase their Carnegie classification, a proxy for an increase in prestige, spend significantly more on major operational areas than institutions that have not sought to increase their prestige. The findings also showed that an institution's expenses are directly related to acquiring greater prestige. Simply stated, as an institution's strategic choices drive it to climb further up the ladder of the Carnegie classifications, costs, too, will rise. Even those institutions at the pinnacle of the prestige barometer sense the imperative to continually increase costs in order to remain at the apex of American higher education. Indeed, with such a conundrum at the doorstep of countless institutional leaders, perhaps the only solution is to decide how much they are willing to pay for prestige and to what end?

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Appendix A. Carnegie Classification Methodology

Methodology

Basic Classification

Classifications are time-specific snapshots of institutional attributes and behavior based on data from 2008-2010. Institutions might be classified differently using a different time frame.

For a flowchart illustrating the logic of the six all-inclusive Classifications click here

Associate's Colleges

Institutions were included if their highest degree conferred was the associate's degree or if bachelor's degrees accounted for less than 10 percent of all undergraduate degrees (according to 2008-09 degree conferrals as reported in IPEDS). As in previous editions, these categories were limited to institutions that were not eligible to be classified as Tribal Colleges or Special Focus Institutions.

The Associate's Colleges categories are based on a classification scheme developed by Stephen Katsinas, Vincent Lacey, and David Hardy at The University of Alabama. Katsinas and Hardy conducted the analysis and provided the institutional classifications. The following criteria determined category assignment in this analysis:

Rural -, suburban -, or urban - serving Urban-serving and suburban-serving institutions are physically located within Primary Metropolitan Statistical Areas (PMSAs) or Metropolitan Statistical Areas (MSAs), respectively, with populations exceeding 500,000 people according to the 2000 Census. Institutions in PMSAs or MSAs with a lower total population, or not in a PMSA or MSA, were classified as rural-serving.

Size (public rural - serving categories) Institutional size is based on full-year unduplicated credit headcount, where small is defined as less than 2,500; medium as 2,500 through 7,500; and large as greater than 7,500. Size is based on IPEDS data for 2008-09.

Single - campus Suburban- and urban-serving colleges were identified as single-campus if they have one primary physical campus under the institution's exclusive control and governance, at which the institution provides all courses required to complete an associate's degree. A single-campus college may offer educational services at more than one site if the other sites are not under the institution's exclusive control and governance, or if all courses required for the associate's degree cannot be completed at the other sites (examples include leased spaces, shared sites or regional education centers that provide offerings of multiple institutions, or satellite locations that do not have the full range of an institution's programs and services).

Multicampus Suburban - and urban - serving colleges were identified as multicampus if (a) they have more than one primary physical campus under the institution's exclusive control and governance, each of which provides all courses required to complete an associate's degree, or (b) they are part of a district or system comprising multiple institutions,

at any of which students can complete all requirements for an associate's degree, and that are organized under one governance structure or body. Institutions were not classified as multicampus simply due to control by a single statewide governing board. Multicampus institutions may report their data as separate entities in the IPEDS system, or they may participate as a single reporting entity.

Special Use Colleges were identified as special-use institutions if their curricular focus is narrowly drawn and they are not a part of a more comprehensive two-year college, district, or system.

Other considerations Public 2-year institutions under the governance of a 4-year university or system are included in the "Public 2-year Colleges under Universities" category. Baccalaureate-granting institutions where bachelor's degrees account for fewer than 10 percent of undergraduate degrees are designated as "Primarily Associate's" colleges.

Doctorate-granting Universities

Institutions were included in these categories if they awarded at least 20 research doctorates in 2008-09. First professional and Professional doctoral degrees (J.D., M.D., Pharm.D., Aud.D., DNP, etc.) were not counted for the purpose of this criterion. Institutions which granted fewer than 20 research doctorates can be identified by using Custom Listings to intersect categories of the Basic and Graduate Instructional Program classifications. As in previous editions, these categories were limited to institutions that were not identified as Tribal Colleges or Special Focus Institutions.

Level of research activity Doctorate-granting institutions were assigned to one of three categories based on a measure of research activity. It is important to note that the groups differ solely with respect to level of research activity, not quality or importance.

The analysis examined the following correlates of research activity: research & development (R&D) expenditures in science and engineering; R&D expenditures in non-S&E fields; S&E research staff (postdoctoral appointees and other non-faculty research staff with doctorates); doctoral conferrals in humanities fields, in social science fields, in STEM (science, technology, engineering, and mathematics) fields, and in other fields (e.g., business, education, public policy, social work). These data were statistically combined using principal components analysis to create two indices of research activity reflecting the total variation across these measures (based on the first principal component in each analysis).

One index represents the aggregate level of research activity, and the other captures per-capita research activity using the expenditure and staffing measures divided by the number of full-time faculty whose primary responsibilities were identified as research, instruction, or a combination of instruction, research, and public service. The values on each index were then used to locate each institution on a two-dimensional graph. We calculated each institution's distance from a common reference point, and then used the results to assign institutions to three groups based on their distance from the reference point. Thus the aggregate and per-capita indices were considered equally, such that institutions that were very high on either index were assigned to the "very high" group, while institutions that were high on at least one (but very high on neither) were assigned to the "high" group. Remaining institutions and those not represented in the NSF data collections were assigned to the "Doctoral/Research Universities" category. Before conducting the analysis, raw data were converted to rank scores to reduce the influence of outliers and to improve discrimination at the lower end of the distributions where many institutions were clustered. Detailed information about how the research activity index was calculated can be found here.

Data sources Doctoral conferrals by field were based on IPEDS Completions data reporting 2008-09 degree conferrals. Faculty counts were from the IPEDS Employees by Assigned Position (EAP) data for Fall 2009. R&D expenditures came from the NSF Survey of Research and Development Expenditures at Universities and Colleges* for fiscal year 2008. Research staff data came from the NSF Survey of Graduate Students and Postdoctorates in Science and Engineering for Fall 2008. These were the most current and complete data available at the time of our analysis, and we judged currency to be more important than temporal alignment of all data sources.

In some cases, the NSF data were reported at a higher level of aggregation than is needed for classification purposes (i.e., a university system comprising multiple campuses that are distinct entities for classification purposes, but that are reported together as a single entity in the NSF data). Because the Graduate Students and Postdoctoral Researchers data were reported by department, we made manual changes to create campus-level records. For the R&D Expenditures data, it was not possible to disaggregate the data at the campus level. We adopted the allocation scheme developed by The Center at the University of Florida (now housed at Arizona State University; see Data Notes [accessed April 15, 2010]).

*Starting with the 2000 edition of the Carnegie Classification, we eliminated the use of federal funding to differentiate doctorate-granting institutions for two reasons. First, federal support is at best a rough proxy for an institution's research activity that suffers from several weaknesses. Not all research is federally funded, and institutions differ in the proportion of all research that is funded from federal sources. Similarly, academic fields differ in their reliance on federal research funding and also in the costs associated with research. Thus a focus on federal dollars pays greater attention to fields that are heavily dependent on federal funding and also to fields where research requires substantial investments. The federal obligations data are also blind to the pass-through of funds from one institution to another, as happens in the case of large projects involving research teams at different institutions. All of these factors compromise the accuracy of federal obligations as a gauge of overall research activity.

Master's Colleges and Universities

Institutions were included in these categories if they awarded at least 50 master's degrees in 2008-09, but fewer than 20 research doctorates (as defined above). Some institutions with smaller master's programs were also included (see below). As in previous editions, these categories were limited to institutions that were not identified as Tribal Colleges or Special Focus Institutions.

Program size Master's program size was based on the number of master's degrees awarded in 2008-09. Those awarding at least 200 degrees were included among larger programs; those awarding 100–199 were included among medium programs; and those awarding 50–99 were included among smaller programs. The smaller programs group also includes institutions that awarded fewer than 50 master's degrees if (a) their Enrollment Profile classification is Exclusively Graduate/Professional or (b) their Enrollment Profile classification is Majority Graduate/Professional and they awarded more graduate/professional degrees than undergraduate degrees.

Some institutions that had been classified among Master's Colleges and Universities were given the option of classification among Baccalaureate Colleges based on their overall profile (see below).

Baccalaureate Colleges

Institutions were included in these categories if bachelor's degrees accounted for at least 10 percent of all undergraduate degrees and they awarded fewer than 50 master's degrees (2008-09 degree conferrals). In addition, these categories were limited to institutions that were not identified as Tribal Colleges or as Special Focus Institutions.

Among institutions where bachelor's degrees represented at least half of all undergraduate degrees, those with at least half of bachelor's degree majors in arts and sciences fields were included in the "Arts & Sciences" group, while the remaining institutions were included in the "Diverse Fields" group.

Institutions where bachelor's degrees represented at least 10 percent but less than half of undergraduate degrees were assigned to the Baccalaureate/Associate's category.

The analysis of major field of study is based on degree conferral data (IPEDS Completions). Up to two majors can be reported, and both were considered for this analysis. Thus for an institution with 1,000 bachelor's degree recipients, half of whom completed double majors, the analysis would consider all 1,500 majors. The mapping of fields of study to arts & sciences or professions is documented in this Excel file.

Some institutions that had been classified among Master's Colleges and Universities were given the option of classification among Baccalaureate Colleges based on their overall profile. These institutions met the following criteria:

FTE enrollment of fewer than 4,000 students

Highly residential (Size & Setting classification)

(a) Enrollment Profile classification of Very high undergraduate or High undergraduate, combined with No graduate coexistence or Some graduate coexistence (Undergraduate Instructional Program classification), or (b) Enrollment Profile classification of Majority undergraduate combined with No graduate coexistence.

Special Focus Institutions

The special-focus designation was based on the concentration of degrees in a single field or set of related fields, at both the undergraduate and graduate levels. Institutions were determined to have a special focus with concentrations of at least 75 percent of undergraduate and graduate degrees. In some cases the percentage criterion was relaxed if an institution identified a special focus on the College Board's Annual Survey of Colleges, or if an institution's only recognized accreditation was from an accrediting body related to the special focus categories.

Tribal Colleges

Tribal colleges are defined as members of the American Indian Higher Education Consortium, as identified in the IPEDS Institutional Characteristics data.

Methodology notes

We continue to employ the same classification methodologies used in the 2005 edition. The logic for each of the six all-inclusive classifications also remains the same, with the following exceptions due to changes in data reporting:

In the Basic Classification, we used the most recent data from the NSF Survey of Research and Development Expenditures at Universities and Colleges (fiscal year 2008). Due to recent changes in NSF reporting, the data contained disaggregated R&D expenditures in psychology and social sciences, which had been previously grouped within the Science and Engineering (S&E) expenditures (therefore inseparable from the S&E expenditures). Due to this new data regrouping possibility, in the 2010 update of the Basic Classification, R&D expenditures in the fields of psychology and social sciences are subtracted from the Science and Engineering (S&E) expenditures and added to the R&D expenditures in non-S&E fields.

In 2008, the IPEDS Completions survey revised the way it reports doctoral degrees. As a result, the 2008-2009 completions data (IPEDS data name “c2009,” which corresponds to degree conferrals from 2008 to 2009) contains both the “old” doctoral degree categories (doctoral degree and first-professional degree) and the “new” doctoral degree categories (doctoral degree–research/scholarship, doctoral degree–professional practice, and doctoral degree–other). The first-professional degree category was eliminated. Since over 50% of institutions still reported the old doctoral categories, we converted the new doctoral degree categories into the old categories in the 2010 classification update, that is treating doctoral degree–research/scholarship as doctoral degrees, and doctoral degree–professional practice and doctoral degree–other as first-professional degrees.

Appendix B. IPEDS Survey Components and Data Collection Cycle

IPEDS SURVEY COMPONENTS AND DATA COLLECTION CYCLE

IPEDS consists of nine interrelated survey components that are collected over three collection periods (Fall, Winter, and Spring) each year.

	Fall	Winter	Spring
Collection Opens	Early September	Early December	Early December
Collection Closes	Mid October	Mid February	Mid April
Survey components	Institutional Characteristics (includes pricing data) Completions 12-Month Enrollment	Student Financial Aid Graduation Rates 200% Graduation Rates	Fall Enrollment Finance Human Resources

IPEDS Survey Components

Fall Collection

Component	Cycle	Data
Institutional Characteristics (IC)	Annual	Data collected in the Institutional Characteristics survey provide general information about the institution. Data collected include: ■ Institution address, telephone number, and website; ■ Educational offerings and mission statements; ■ Control/affiliation, award levels, and calendar system; ■ Admissions requirements; and ■ Student charges, including tuition and required fees and room and board charges for institutions with first-time, full-time degree/certificate-seeking undergraduate students. These data elements are displayed on the College Navigator website.
Completions (C)	Annual	Completions data are collected for award levels ranging from postsecondary certificates of less than 1 year to doctoral degrees. Data collected include: ■ Degree completions by level and other formal awards by length of program, by race/ethnicity and gender of recipient, and by program (6-digit CIP code). In 2001, IPEDS began collecting information on the number of students receiving degrees with double majors by 6-digit CIP code (for the second major) and by race/ethnicity and gender of recipient.
12-Month Enrollment (E12)	Annual	12-month enrollment data are collected for undergraduate and graduate levels. The 12-month reporting period is July 1-June 30. Data collected/calculated include: ■ Unduplicated headcounts by level of student and by race/ethnicity and gender, ■ Instructional activity (contact or credit hours); and ■ Full-time equivalent (FTE) enrollment (calculated based on instructional activity). FTE is used in computing expenses by function per FTE and revenues per FTE, which are reported on the IPEDS Data Feedback Report.

Winter Collection

Component	Cycle	Data
Student Financial Aid (SFA)	Annual	Financial aid data are collected for undergraduate students. Data are collected regarding federal grants, state and local government grants, institutional grants, and loans. Data collected include: ■ Number of students receiving each type of financial assistance; and ■ Average amount received by type of aid. These data are displayed on the College Navigator website. In addition, data are collected for the calculation of average net price, in accordance with the Higher Education Opportunity Act of 2008.
Graduation Rates (GR)	Annual	Graduation rates data are collected for full-time, first-time degree and certificate-seeking undergraduate students . Data collected include: ■ Number of students entering the institution as full-time, first-time degree or certificate-seeking students in a particular year (cohort), by race/ethnicity and gender; ■ Number of students completing their program within a time period equal to one and a half times (150%) the normal period of time; and ■ Number of students who transferred to other institutions This survey was developed to help institutions comply with requirements of Student Right-to-Know.
200% Graduation Rates	Annual	Graduation rates data are collected for full-time, first-time, degree- and certificate-seeking undergraduate students. Numbers of students who completed within their program's normal time to completion, 150% of normal time, and 200% of normal time are used to calculate the graduation rates. This survey was developed to fulfill requirements in the Higher Education Opportunity Act of 2008.

Spring Collection

Component	Cycle	Data
Fall Enrollment (EF)	Annual	Fall enrollment data are collected for all students enrolled in credit-bearing courses/programs which could potentially lead to awards ranging from postsecondary certificates of less than 1 year to doctoral degrees. Data collected include: ■ The number of full and part-time students enrolled in the fall by level, race/ethnicity, and gender; ■ Residence and high school graduation status of first time, first-year students (in even years); ■ Age of students (in odd years) ■ Cohort numbers to compute retention rates. ■ Student-to-faculty ratio In even-numbered years, four-year institutions are also required to provide enrollment data by level, race/ethnicity, and gender for 9 selected fields of study for the Office for Civil Rights.
Finance (F)	Annual	This component collects data related to the financial condition of the institution. Data collected include: ■ Revenues by source (e.g., tuition and fees, government grants and contracts, private gifts); ■ Expenses by function (e.g., instruction, research, academic support, institutional support); ■ Assets and liabilities ■ Scholarships and fellowships Different formats are used based on the institution's accounting standards (GASB or FASB).
		■ Employees by primary occupational activity, faculty status, full

Human Resources (HR)	Annual	and part time (collected separately for medical schools) ▪ Full-time instructional staff by academic rank, gender, and contract length/teaching period ▪ Total salary outlay and number of months covered, by academic rank and gender
	Biennial (odd-numbered years)	▪ Full-time and part-time employees by primary occupational activity, race/ethnicity and gender ▪ New hires by primary occupational activity, race/ethnicity and gender

Appendix C. Delta Cost Project Documentation

IPEDS Analytics: Delta Cost Project Database 1987-2010

Data File Documentation

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IPEDS Analytics: Delta Cost Project Database 1987-2010

Data File Documentation

AUGUST 2012

Colleen Lenihan
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NCES 2012-823
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Overview

The IPEDS Analytics: Delta Cost Project Database was created to make data from the Integrated Postsecondary Education Data System (IPEDS) more readily usable for longitudinal analyses. Currently spanning the period from 1987 through 2010, it has a total of 202,800 observations on 932 variables derived from the institutional characteristics, finance, enrollment, completions, graduation rates, student financial aid, and human resources IPEDS survey components and a limited number of outside sources.

The maintenance and hosting of the IPEDS Analytics: Delta Cost Project Database was taken over by the National Center for Education Statistics (NCES) in 2012. The database was originally created by the Delta Cost Project (an independent, nonprofit organization) in 2007. For a detailed history of the development of the database under the Delta Cost Project, which covers the 1987-2009 database, please refer to its location on the NCES website, http://nces.ed.gov/ipeds/deltacostproject/download/DCP_History_Documentation.pdf .

The database has been posted online in two parts for easier downloading; the first part contains the file for the 1987-1999 academic years and the second for the 2000-2010 academic years. These files are intended to be merged together to create the full 1987-2010 database.

Design

The IPEDS Analytics: Delta Cost Project Database was created to make IPEDS data more readily usable for longitudinal analyses. The database has been organized to have one observation per institution for each year. The database includes data for every institution that has reported institutional characteristics data to IPEDS for the fall of the academic year. These data have been harmonized in order to mitigate changes in financial reporting standards over time by employing industry-accepted manipulations of the data. When possible, missing data have been replaced via imputation. The database has been organized to further ease longitudinal analyses by creating consistent institutional groupings and matched sets to account for changes to the IPEDS universe of institutions over the time period. Additionally, variables to adjust the financial information to constant dollars have been included for the Consumer Price Index-Urban Consumers (CPI-U), the Higher Education Price Index (HEPI), and the Higher Education Cost Adjustment (HECA).

Institutional Groupings

NCES allows certain institutions ("parent institutions") to report data for branch campuses or other affiliated institutions ("child institutions") for various IPEDS surveys. Parent institutions may have one or more child institutions and these parent/child relationships may differ over time and/or by survey. The need for this combined reporting often depends on the type of survey—child institutions may report their own data on some surveys (e.g., enrollment or completions), while the parent institution reports their combined data on other surveys (e.g., finance). These reporting relationships can also change when affiliated institutions are opened or closed, so the parent/child reporting structures may change over time and/or cease to exist.

Institutions that reported data together due to having a parent/child reporting relationship on any of the IPEDS surveys for any year between 1987 and 2010 have been grouped together for all years in order to maintain the consistency of the data for the entire time period. This means that all of the data for these parent/child institutions has been combined to make one observation per year for the set of institutions. The exact number of groupings in the database fluctuates from year to year; for the 2010 academic year, there were 567 institutional groupings in the dataset. Of these institutional groupings present in the 2010 academic year, 168 are public, 121 are private nonprofit, and 278 are private for-profit.

Longitudinal Institution Panels

In order to ensure that trends in the data are not being affected by institutions coming into or leaving the dataset of analysis, the database includes variables to identify panels of institutions that report data consistently over specified time periods. These institutional panels, referred to as "matched sets," have been created for U.S. public and private nonprofit 4-year and 2-year institutions that are classified as Associate's, Baccalaureate, Master's, and Research institutions according to the Carnegie 2005 Classifications. In order to be included in the matched set, the institution must have data on fall full-time equivalent (FTE) student enrollment, instructional

expenditures, and student completions for every year of the time period. There are three different matched sets to cover different time periods: 1987-2010, 2000-2010, and 2005-2010. Institutions that have extreme outlier data in the time period or that have changed sector or Carnegie Classification have been removed from the pertinent matched set.

The table below shows the institution counts for the three matched set panels for institutions in the seven major Carnegie/sector classifications.

Carnegie Classification 2005 by Sector	2005-2010 6-year matched set (matched_n_05_10_6)	2000-2010 11-year matched set (matched_n_00_10_11)	1987-2010 24-year matched set (matched_n_87_10_24)
Public Research	152	152	151
Public Master's	230	230	228
Public Bachelor's	89	86	83
Public Associate's	833	819	703
Private Nonprofit Research	100	99	97
Private Nonprofit Master's	313	311	304
Private Nonprofit Bachelor's	470	466	440

Data Harmonization

The Delta Cost Project has harmonized the IPEDS finance data to provide comparable revenue and expenditure data over time and across different financial reporting standards, to the extent possible. These adjustments ensure reasonable consistency in the patterns over time and allow broad comparisons between public and private institutions. In the standard IPEDS data, many of the finance variables are not consistent over time due to changes stemming from the conversion from the Common Form reporting format to separate Governmental Accounting Standards Board (GASB) and Financial Accounting Standards Board (FASB) reporting formats. The variables provided in the IPEDS Analytics: Delta Cost Project Database include the original data reported in IPEDS as well as the adjusted versions that have been used by the Delta Cost Project in their trend analyses.

For revenues, the most notable adjustments are to net tuition, federal grants and contracts, and auxiliary enterprise revenues. These adjustments have been made to account for the inconsistencies caused by reporting revenue amounts net of "applied discounts and allowances" under FASB, and later, GASB reporting standards. Over the entire 1987-2010 period, the net tuition amount in the Delta Database has been standardized to be gross tuition revenue net of only institutional grant aid. Federal grant revenues have been adjusted to be net of Pell Grants (where applicable), as these are captured in the net tuition revenue amounts. Sales and service of auxiliary enterprise revenues are provided in gross amounts only.

For expenses, adjustments have been made to the functional expenditure categories to account for changes in the reporting of Operations and Maintenance (O&M) and Interest across different reporting standards. Following Common Form and GASB reporting formats, O&M and interest

were separate expenditure categories; under the FASB and New Aligned form reporting formats these amounts had to be embedded in the other functional expenditure categories. The main expense variables in the database have been calculated for these amounts to be consistent over time by subtracting O&M and interest from the functional expenditure categories and then summing those O&M and interest amounts separately to create variables representing total amounts.

In addition to adjusting the data to be comparable across accounting standards, the data have also been organized to translate accounting information into more commonly understood data elements that reflect practical information for institutions and policy audiences. Revenue variables have been derived to show the amount of money coming from students, public sources, and private sources that are generally at the institution's discretion to determine how these funds are spent as opposed to those revenues that are restricted to certain purposes (such as hospitals and independent operations). Revenue variables have also been put in the context of expenditures to show the portion of educational expenses that come from students against those expenses that are subsidized by the institution.

Expenditure variables have been derived to present the functional expenditure variables in the broader context of different institutional purposes. Instruction, student services, and the associated share of overhead costs are grouped into education and related expenses; research and the associated share of overhead costs are grouped into research and related costs; and public service and the associated share of overhead costs are grouped into public service and related costs. These three categories along with net scholarships and fellowships combine to be education and general spending. The expenditures that are largely self-supporting, including independent operations, auxiliary enterprises, and hospitals are aggregated into a separate category. Variables have also been derived to put expenditures into the context of completions to show an estimate of what an institution spends for each degree or completion in a given year.

Imputations

The Delta Cost Project IPEDS Database involves two different imputation procedures. The first imputation procedure utilized a conservative methodology to fill in gaps for missing data for the general dataset. The second imputation procedure was done to account for changes in reporting standards over time for institutions following FASB accounting standards.

To develop a more robust dataset, regression imputation procedures have been employed as needed for all variables. Delta adopted a relatively conservative method to impute data for an institution any time that there was a 1-year gap between two data values (e.g., missing 2003 data for a series would be imputed for if there were data for 2002 and 2004). If the gap between values was 2 years or more, the gap was not filled in. Furthermore, values were not imputed when there were missing data at the beginning or end of the data series for an institution. There are imputation flags in the database to denote any instance where a value has been imputed.

A second imputation procedure was developed to improve the comparability between Common Form, FASB, and GASB expenditure data. In this methodology, data were imputed for FASB-reporting institutions when institutionally reported data were unavailable from 1997 to 2003. Interest and O&M expense data were not reported for any FASB institution between 1997 and 2001, therefore each was separately imputed. This imputation process was also employed for institutions that did not report interest or O&M data (or reported partial data) for 2002 and 2003.

The specific methodology for imputing the missing interest and O&M data from 1997 to 2003 used data that was reported from 2002 to 2008. First, the reported interest and O&M in each functional expense category were computed separately as a share of total expenditures. Then, for each institution, an institutional median share was also determined for interest and O&M for each expense category across the 2002-2008 period; the institutional median was used in years when there was no reported share. For those institutions with no reported data for a particular expense category over the 2002-2008 period, a "peer group median share" was constructed using the median share from a set of institutions with the same Carnegie Classification and similar FTE and core expenditures (instruction, student services, academic support, and institutional support). The shares for interest and O&M (institutional shares, institutional median shares, or peer group median shares) were then applied to the total expenditures for all years, 1997-2003; imputed values were assigned where interest and O&M data were missing. The sum of the interest and O&M data for each functional category were then scaled to ensure they summed to the control totals for interest and O&M.

For a more detailed history of the development of the database, including data harmonization, groupings, imputations, and other processing issues from the 1987-2009 database, please refer to http://nces.ed.gov/ipeds/deltacostproject/download/DCP_History_Documentation.pdf.

Cautions to Users

NCES assumed control of the Delta Cost Project IPEDS Database 1987-2009 with the understanding that NCES would: (a) provide annual updates to the database to bring in new data as it becomes available, (b) update institutional groupings as necessary, and (c) provide imputations for data missing from the prior year where possible.

Upon receipt of the database, NCES reviewed its contents for compliance with NCES Statistical Standards. In so doing, a limited number of inconsistencies were noted. These include: (a) percentage or share values that do not sum to 100 percent, (b) imputed values that are outside of the expected range, and (c) negative values where a negative amount is not feasible.

The majority of these inconsistencies appear related to imputation, specifically affecting variables where both total amounts and component parts are included in the database. Delta Cost Project imputation methodology did not consistently force the reconciliation of imputed component amounts to match reported totals, or vice versa. For example, if a component amount, such as salary expenses for academic support, has been imputed, then it is possible for this amount to be greater than the total amount reported for academic support expenses as

a whole. While it is rare for this mismatch to happen, it is possible using the Delta Cost Project imputation methodology and can result in unreasonable values for derived variables. NCES followed the Delta Cost Project methodology for the 2010 database update, including the imputations for data missing in 2009. In future updates of the database, the imputation methodology will be revised to reconcile the imputed amounts.

File Updates for the IPEDS Analytics: Delta Cost Project Database 1987-2010

This section contains a summary of the changes incorporated into the IPEDS Analytics: Delta Cost Project Database 1987-2010. The changes described include those made since the 1987-2009 file was released (on August 23, 2011) in addition to importing the 2009-10 IPEDS data into the database.

Changes to the 1987-2010 data file

1. New Variables

Variable	Label	Notes
total_enrollment_multi_tot	Total enrollment (Multi)	NCES started collecting information on enrollment of students that identify as being more than one race. This information was optional starting in the fall of academic year 2009 and will be mandatory for academic year 2011.

2. Revised Variables

- *Inflation Variables*

Variables	Revision
CPI_Scalar_2010 HEPI_Scalar_2010 HECA_Scalar_2010	The scalar variables were recalculated to inflate dollars to 2010 constant dollar amounts rather than 2009 constant dollar amounts and were renamed to reflect this change.

- *Matched Set Variables*

Variables	Revision
matched_n_87_10_24 matched_n_00_10_11 matched_n_05_10_6	The matched set variables were advanced a year to reflect an additional year of data. The number of institutions in the matched set will vary depending on whether Carnegie_sector_2000 or Carnegie_sector_2005 is used for analysis, as some institutions changed categories in the Carnegie 2000 and Carnegie 2005 classifications. The matched set variables only includes institutions in the United States (institutions located in territories are not included) that have consistently reported data on instructional spending, fall full-time equivalent student enrollment, and completions. Some institutions with complete data were removed from the matched set because they contained extreme outliers.

Revised institutional groupings

Any time an institution is a "parent institution" and has a new "full child" institution included in its data, these institutions are grouped together in the database. As long as the new "full child" institution has never reported its own separate data to IPEDS, the inclusion of the institution's data with the parent institution's data does not change the information that has been previously included in the data file.

Occasionally, institutions that have previously reported separate data merge together with the result that their data need to be grouped for the entire span of the database, which does change the data for these institutions from the 1987-2009 data file. The table below lists the institutions that have merged and now have revised grouped data in the database.

Institutional grouping	GroupID	Institutions included	UnitIDs
Santa Clara University	2900	Santa Clara University Jesuit School of Theology at Santa Clara	122931 116624
Middlebury College	2901	Middlebury College Monterey Institute of International Studies	230959 119058
University of Connecticut	2050	University of Connecticut System (previously grouped) University of Connecticut Medical and Dental School	129020 243762

Appendix D: Unconditional Means Model for HLM analysis

Results of Unconditional Means Model (Model A) and Unconditional Growth Model (Model B)

	Instruction		Research		Public Service	
	Model A	Model B	Model A	Model B	Model A	Model B
Fixed Effects						
Intercept	2647.39***	2647.16***	578.01***	578.02***	303.26***	303.24***
Rate of Change						
Intercept		64.94***		13.71***		4.95
Variance Components						
Level 1						
Within Person	268561***	130035***	59956.91***	39031.16***	39703.63***	18663.69***
Level 2						
Intital Status	14228207***	14242887***	3807270***	3809357***	829928***	832044***
Rate of Change		10896.49***		2094.98***		2270.97***
ICC		0.981		0.984		0.954
R^2_e		0.516		0.349		0.530

*p < .05. **p < .01. ***p < .001.

	Academic Support		Student Services		Institutional Support	
	Model A	Model B	Model A	Model B	Model A	Model B
Fixed Effects						
Intercept	673.65***	673.55***	588.71***	588.69***	969.21***	969.25***
Rate of Change						
Intercept		27.27***		22.34***		34.89***
Variance Components						
Level 1						
Within Person	83727.74***	20722.89***	21970.53***	10416.63***	214730.84***	131072***
Level 2						
Intital Status	1257945***	1264303***	297578***	298772***	1117135***	1125551***
Rate of Change		6130.04***		761.58***		7910.19***
ICC		0.938		0.931		0.839
R^2_e		0.752		0.526		0.390

*p < .05. **p < .01. ***p < .001.

	Scholarships/Fellowships		Total Core Expenses	
	Model A	Model B	Model A	Model B
Fixed Effects				
Intercept	256.74***	256.77***	6016.97***	6016.66***
Rate of Change				
Intercept		9.41*		177.51***
Variance Components				
Level 1				
Within Person	45791.86***	16100.48***	1702181***	579923***
Level 2				
Intital Status	274511***	277469***	78940319***	79055299***
Rate of Change		3150.81***		90926***
ICC		0.857		0.979
R^2_e		0.648		0.659

*p < .05. **p < .01. ***p < .001.