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Holding Performance Measures Accountable for Social Equity: A Polycentric Approach to Evaluating American Higher Education

Tracey L Norden Baham

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Holding performance measures accountable for social equity: A polycentric approach to
evaluating American higher education

By

Tracey L. Norden Baham

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Public Policy and Administration
in the Department of Political Science and Public Administration

Mississippi State, Mississippi

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Holding performance measures accountable for social equity: A polycentric approach to
evaluating American higher education

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America's founding fathers identified education as the key for sustaining democracy and economic growth. When determining how the new country would organize education, they decided not to centralize higher education institutions under a national university, thus creating a federalist system unique from the European model. This format allowed for diversity in educational missions, which many theorists suggest allows the country to serve its heterogeneous population. Many institutions that focus on social equity do not perform as high as institutions with selective admissions criteria. As governments begin enforcing accountability policies that encourage performance, institutions with social equity missions may be adversely affected. Furthermore, higher education leaders fear that the focus on performance downplays the role of educational effectiveness.

This research developed an Educational Performance Index (EPI)—a tool that combines measures of efficiency, effectiveness, and equity—to serve as an evaluation instrument for higher education institutions. The results of the study indicated that social equity related missions do have a negative relationship to traditional efficiency metrics;

however, the composite EPI was not influenced by institutional characteristics, such as Carnegie Classification and attributes indicative of social equity missions. By controlling for these mission-related features, institutional performance can be measured more comprehensively. A third hypothesis compared the EPI scores to those of traditional academic rankings to test whether the EPI was similar to existing measures. This hypothesis was partially supported, but it also excluded nearly half of the institutions in the study because they did not have regional rankings.

Through an exploration of the literature, this study asserts that the way higher education is measured has consequences in how institutions fulfill their missions. Current performance measures both in terms of graduation rates and in terms of academic rankings promote social inequity. The conclusions of this study presents an alternative instrument that provides an accountability mechanism that does not disincentivize institutions from serving the public good.

DEDICATION

For their unyielding support, I dedicate this dissertation to my guys. Jeremy, your patience and positive attitude kept me going through the ups and downs of research and doctoral life. Without you, this degree would not have been possible, and I cannot express how grateful I am for your contributions and sacrifices to my academic endeavors. James, you have been a constant reminder that life exists outside of the academy, and your imagination, laughter, and unconditional love have provided such richness and happiness my life. I hope you will always approach your life experiences with the same cheerful and engaging outlook as you have now. You have already built networks that people didn't realize were possible. Patrick (Rick), you have been with me for every college degree I ever earned, whether in the actual classroom or arranging Matchbox cars nearby as I completed homework. How many people can say that their first day of college was their third day in existence and that engineering school was their very first destination upon leaving the hospital after they had been born? You have motivated me to improve myself, and it was because of you that I even considered advancing beyond the baccalaureate in the first place. I hope that our shared journey in postsecondary attainment will also inspire you.

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CHAPTER I

INTRODUCTION AND BACKGROUND

America’s founding fathers identified education as the key for sustaining democracy and economic growth (e.g., Jefferson, 1779). When determining how the new country would organize a higher education system, the founding fathers decided not to centralize institutions under a national university. Several, including George Washington, supported the concept of a national university—one that would have common competencies and primary authority belonging to the federal government (Harris, 2013). Ultimately, the voices of other notable scholars and political figures convinced those present at the 1787 Constitutional Convention in Philadelphia that higher education needed to remain decentralized under the states’ authority because the states within the union were different from one another and had distinctive needs (Harris, 2013; Newbold, 2010).

The deliberate omission of education from the *U.S. Constitution* signaled a departure from the traditional European model of national education and shaped the framework of America’s distinctive higher education system (Barton, 2010; Harris, 2013). The lack of a federal oversight allowed for institutional diversification or “institution building” (Harris, 2013, p. 23) with the freedom to establish autonomously. Many religious institutions had already been established by this time, but many states began to form their own public education systems. Morpew (2002) explained that “[t]he

existence of postsecondary institution with unique and differentiated missions serves states' needs by improving efficiency and effectiveness" (p. 209).

Although colleges and universities were established with common goals to educate citizens and to support the American and global economy, they were free to determine how best they would accomplish these goals and which students they would serve.

Today, the U.S. higher education system represents the most institutional diversification in the world, including colleges and universities categorized as vocational, two-year or community, liberal arts, women's, historically black serving, tribal, religious, research, professional, proprietary, doctoral, and comprehensive. Such diversity provides overlapping services that offer multiple avenues for the United States' heterogeneous population to attain college education.

Institutional Diversity with Respect for Social Equity

Since its founding, the United States has grappled with applications of liberty and equality, particularly with its history of slavery, Native American persecution, and restrictions of women's rights. As such, several notable legislative acts were required to help define the legality of social equity, for example, allowing for equal voting rights and equal employment opportunities. Similarly, legislative acts, such as the Morrill Acts of 1862 and 1890, and the Higher Education Act of 1965, demonstrated the country's commitment to providing college access to underrepresented populations in terms of social class and race. Some colleges established to serve specific populations, while others focused on educating the masses rather than the elites. In support of the United States' heterogeneous population, these various missions allow institutions to serve a variety of students through individualized degree programs, distinct environmental

settings, multiple entry points, and numerous modes of receiving education (Harris, 2013).

This research focused on three types of social equity missions for four-year institutions: (1) Land-grant institutions for the “industrial classes” (*Morrill Act*, 1862 Title 7, section 304), (2) institutions that serve underrepresented populations, such as female and minority students, and (3) inclusive institutions that provide greater access to admission. Table 1.1 demonstrates the number and type of institutions with social equity missions. As this table illustrates, 38.1% of the country’s four-year institutions offer at least one form of social equity mission. Some institutions offer more than one form of social equity mission; for example, many historically black colleges and universities are also land-grant institutions, and some institutions target minority women. The combination of these types of missions provides multiple avenues and support for underrepresented populations (Harris, 2013).

Table 1.1 Four-year institutions with social equity missions

Four-year institutions		Number	Percentage
Land-grant		107	4.9%
Minority-serving	Asian	13	0.6%
	Black	84	3.9%
	Hispanic	73	3.4%
	Tribal	33	1.5%
	Women	40	1.8%
Inclusive Admissions		706	32.4%
Institutions with one or more social equity missions		829	38.1%
No social equity mission		1,348	61.9%
All four-year institutions		2,177	

Challenges to Social Equity Missions

Along with social equity, the government considers its commitment to efficiency as part of its moral imperative to the American public (Waldo, 2006; Wilson, 1887). The recent New Public Management (NPM) or Reinventing Government movement calls for bureaucracy to run more like a business and to adopt private-sector practices in an effort to improve efficiency. According to Hood (1991), NPM calls for shifts toward “quasi-privatization,” “explicit standards of measures and performance,” and “greater emphasis on outputs” (pp. 4-5). Well-known scholars, Osborne and Gaebler (1992), encouraged public administration to adopt market-like behaviors as a way of achieving efficiency. With use of performance measures, government agencies could adopt activities that advance desired outcomes.

The higher education system was not immune from NPM, as state legislators began pushing for using performance measures as part of the accountability paradigm in higher education beginning in the 1990s (Alexander, 2000; Ewell, 2008; McLendon, Hearn, & Deaton, 2006). These performance measures often involve indicators such as graduation rates and undergraduate enrollment targets, which relate to institutions’ productivity and efficiency (Archibald & Feldman, 2008b; Conner & Rabovsky, 2011).

Several issues arise from evaluating institutions by their graduation rates. For one, graduation rates capture only a portion of the college student body: first-time, full-time, bachelor’s degree-seeking students (NCES, 2013). These rates do not count graduate students, part-time students, transfer students, or students who started their education in the past and are returning to college to complete their degrees. Therefore, institutions

with academic offerings for students outside of the traditional educational career path would not be evaluated effectively.

Additionally, as Manna (2013) observed, graduation rates report performance in the aggregate and do not account for gaps in achievement among different student demographics. Further research indicates that minority and low-income students have the lowest degree achievement rates, while Asian and White students consistently have the highest graduation rates (refer to Figure 1.1). According to statistics from NCES (2013), of the students who started college in 2006, 40.2% of Black and Native American students graduated by 2012, compared to 62.5% of White and 70.1% of Asian students. Furthermore, students from the higher income brackets also complete their bachelor's degrees at higher rates than those from lower income families. Figure 1.2 illustrates the completion rates of students from the four tiers of socio-economic statuses. The bachelor's attainment gap between the students from the top and bottom income quartiles is 78 percentage points compared to 33 percentage points in 1970.

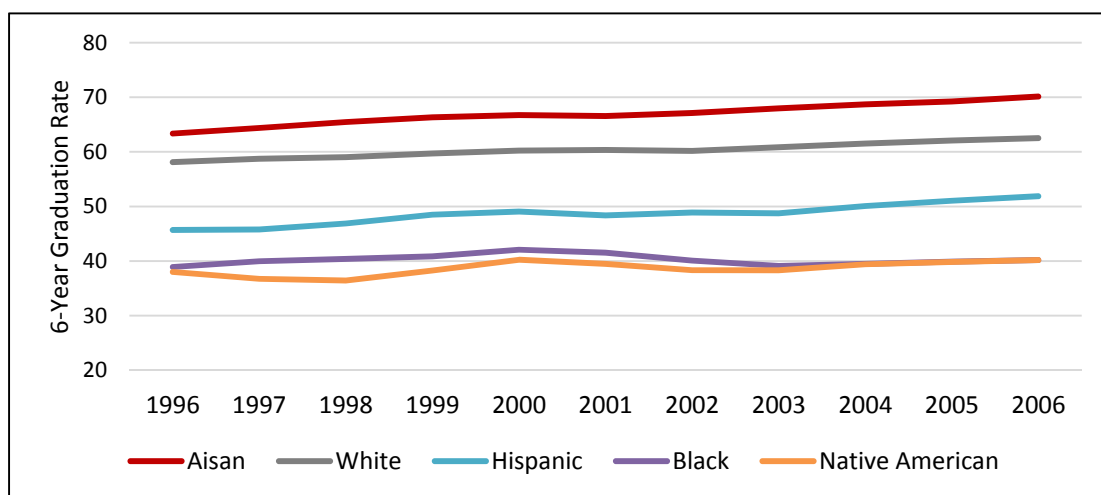


Figure 1.1 Six-year graduation rates by race/ethnicity (NCES, 2009, 2013)

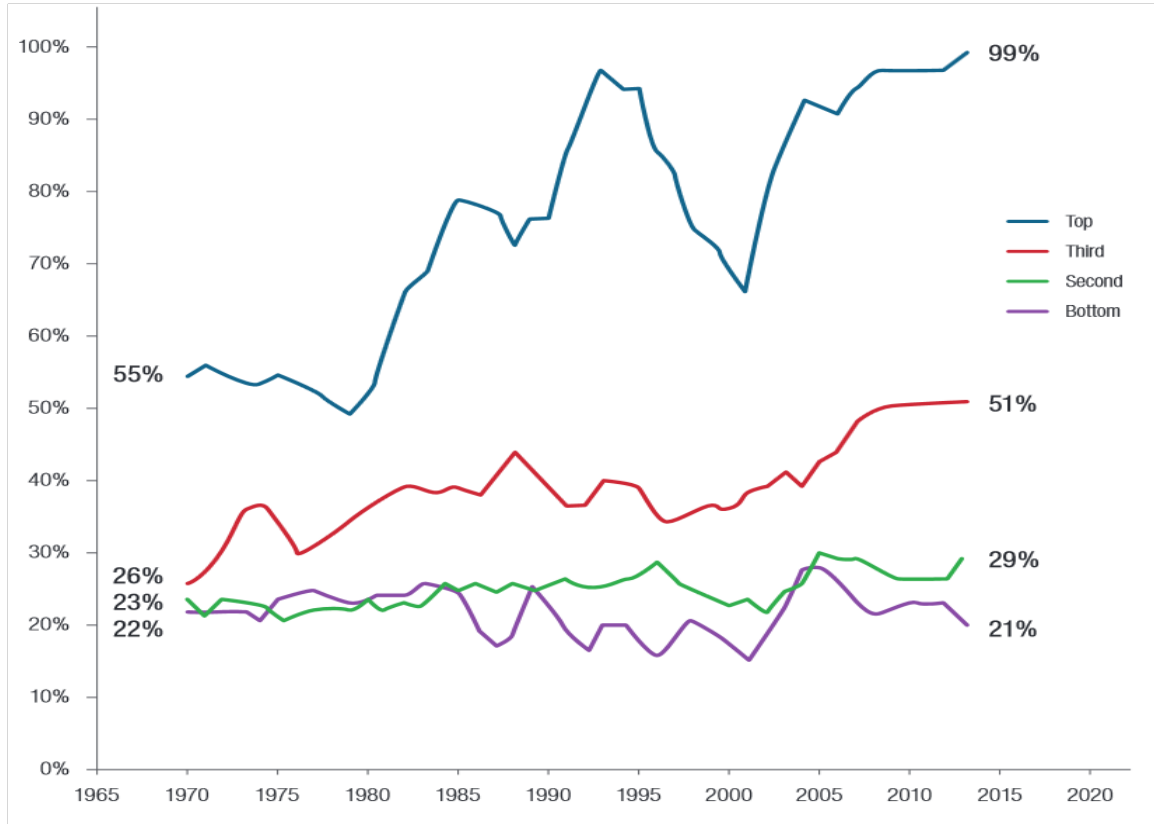


Figure 1.2 Proportion of students who entered college and completed a bachelor's degree before they turned 24 broken out by income quartiles (The Pell Institute & Penn AHEAD, 2015)

Finally, researchers assert that institutions, to improve their performance, have begun limiting enrollment—a process known as selectivity—to students who are likely to enhance or maintain graduation rates. Selectivity is typically based on admissions tests, such as ACT or SAT, to evaluate students' likelihood of success. More often than not, minority or low-income students do not score as high on these tests as their affluent, white counterparts (Bial & Rodriguez, 2007; Vigdor & Clotfelter, 2003). Bowman and Bastedo (2009) found that institutions that increased selectivity had lower student populations of minority and female students. Institutions may not intentionally be

limiting their enrollments to affluent, white students, but selectivity could adversely affect diversity in the student body.

Problem

The pursuit of increased performance, primarily measured in terms of graduation rates and selectivity, threatens the United States' institutional diversity (Harris, 2013; Morpew, 2009). Many fear that with this decline in aspects of diversity, education may no longer be the great equalizer it was once imagined (The Pell Institute & Penn AHEAD, 2015; Torche, 2011). The challenge for evaluating public entities, including the higher education system, has been (1) identifying potential consequences of a strict efficiency focus and (2) identifying mission-related measures to account for other aspects of public values.

Overview

This research developed an education performance index (EPI) to collect measures that accommodate different institutional missions. A performance index could help inform policymakers of the consequences of efficiency foci. This instrument may alleviate some of the concerns of institutions with social equity missions. Perhaps the failure of some institutions to perform at federally expected levels could mean success to other types of constituents, particularly underrepresented populations.

The second chapter of this prospectus describes the three theories that inform the research for the EPI's development. Ostrom (1973) identified systems of higher education as polycentric systems with multiple overlapping jurisdictions, diverse communities, and numerous external demands from various entities. In the case of public goods that affect

multiple communities, such as higher education, a single, self-governing body is not sufficient for handling the externalities (p. 218). The overlap and multitude of college and university missions help to ensure that many aspects of the nation's heterogeneous population are provided educational opportunity. The original authors of polycentricism were resistant to governmental centralization and are often associated with the public choice movement; however, research suggests that free-market competition has homogenizing effects on higher education institutions (Morphew, 2002; Riesman, 1958). This homogenization restricts institutional diversity, making the system of higher education less likely to serve underrepresented populations (Harris, 2013). On the other hand, some argue that government is necessary to uphold social equity (Frederickson, 1980, 1990) and effectiveness (Waldo, 2006). Frederickson's new public administration framework has an institutional approach to governmental practices, but also allows units to remain decentralized. He feared that public choice-based policies would not give social equity the same prominence as efficiency (1990). Waldo (2006) was concerned that government's preoccupation with business practices and efficiency turned focus away from effectiveness.

Despite these concerns, government-led performance agenda instill market-like practices into higher education policies, which also serves to homogenize institutional missions (Manna, 2013). These market-based policies do not consider aspects of social equity (Mettler, 2014; Torche, 2011) or educational effectiveness (Derthick & Dunn, 2009; Zemsky, 2007). Ideally, evaluation instruments would account for diverse institutional missions, while also addressing the concern for efficiency, effectiveness, and equity.

The third chapter describes the development of an EPI that encompasses educational objectives of efficiency, equity, and effectiveness. After describing the target population, which focuses on four-year undergraduate institutions in the Southeastern region, a description of the indicators and their sources is discussed. The EPI would determine whether institutional characteristics related to their missions influence their performance.

Chapter four provides the results of the regressions used to test aspects of the EPI and compare those results to the hypotheses. The linear regressions support the first two hypotheses that the EPI's efficiency subscore was significantly related to institutional characteristics, while the overall EPI minimized the relationship between performance and institutional characteristics. The EPI was also compared to traditional academic ranking systems to determine the effectiveness of the new instrument in representing broad educational objectives. This last comparison partially supported the hypothesis for regional universities, but regional colleges' rankings were significantly related to the EPI.

Finally, chapter five analyzes the findings as a whole and considers the implications of this research, particularly for accrediting bodies and for federal performance measures. The limitations for this study are also provided along with suggestions for further research in higher education accountability.

The relevance of this research expands beyond higher education policies. Numerous policies adopt performance measures and efficiency standards that could adversely affect social equity. Furthermore, performance policies often exclude mission-related metrics. This research offers a normative perspective on measuring the performance of public services.

CHAPTER II
THEORETICAL APPROACHES TO ACCOUNTABILITY
POLICIES FOR HIGHER EDUCATION

Since the Progressive era, modernity and pragmatist traditions have dominated administrative approaches to government. These traditions emphasize quantitative science and criteria related to efficiency and economy (Luton, 1999; Raadschelders, 2010). Simon (1997) offered two explanations of efficiency: (1) an economic, profit-driven conception with the goal of maximizing returns while also minimizing costs and calculated as a ratio of inputs to outputs, and (2) an administrative conception that seeks to attain objectives by choosing activities with the least amount of cost for the largest results. Many researchers have asserted that the criterion of efficiency does not constitute a complete image of public administration and its values; however, as Simon (1997) explained, the search for quantifiable measures often results in “satisficing” tangible economic objectives in lieu of abstract value premises (p. 252).

This chapter explores how current demands for efficiency, whether through market competition or through performance-centered policies, reduces institutional diversity, thereby hampering the system’s ability to serve underrepresented populations. Ostrom and colleagues’ polycentricism provides the overarching theory for this research, suggesting that multiple centricities, represented by the nation’s institutional diversity, must work together to solve common problems. Having a decentralized higher education

system may be a more efficient method of providing access for the general public, but researchers such as Frederickson (1980, 1990), Okun (1975), and Waldo (2006), warn that too much focus on efficiency downplays the roles of social equity and effectiveness. In an effort to evaluate institutional success without discouraging social equity, this research developed an education performance index that would represent efficiency, equity, and effectiveness.

Theoretical Approach to Polycentric Systems

Vincent Ostrom and his colleagues, Tiebout and Warren, are credited with creating the term polycentricism to describe multiple decision-making bodies that compete and cooperate to solve common problems (Ostrom, Tiebout, & Warren, 1961). Polycentric regimes are characterized by “fragmentation, complexity, and interdependence between actors, . . . and their boundaries are marked by the issues or problems which they are concerned with, rather than necessarily by a common solution” (Black, 2008, p. 138). Ostrom (1973) defined fragmentation in terms of overlapping jurisdictions. He discussed how critics oppose fragmentation because of the perceived duplication of services and waste of resources. Much governmental reform during the first half and middle of the century sought to unify the duplication through centralization. Ostrom countered, however, that such overlap is necessary to ensure efficiency and representation of services to citizens and to minimize the externalities of the common public goods.

Relationship to higher education

Ostrom (1973) identified systems of higher education as polycentric systems with multiple overlapping jurisdictions, diverse communities, and numerous external demands from various entities. In the case of public goods, such as higher education, that affect multiple communities, a single, self-governing body or mission is not sufficient for handling the externalities (p. 218). The overlap of jurisdictions helps to ensure that all parties are represented in decisions related to shared public goods. Ostrom contended that a federalist, polycentric system has its advantages over centralized monopolies. For example, citizens are better able to voice their concerns and be involved in public affairs, they can more easily bring grievances against public officials, they can enjoy more public goods and services than they would under centralized monopolies, and they will have greater freedom to choose their preferred goods and services.

The polycentric nature of higher education offers the potential for greater representation of the United States' diverse population. The American higher education system encompasses a vast array of institutional types, including colleges and universities categorized as vocational, two-year or community, liberal arts, women's, historically black serving, tribal, religious, research, professional, proprietary, doctoral, and comprehensive. No one institution could possibly serve the needs of every student and every economic need (Harris, 2013). Therefore, different institutional missions form the centricities of the educational system, and many institutions belong to more than one category, thus overlapping their services.

Social equity centricities of higher education

This research focuses on four-year undergraduate institutions with social equity missions, and these missions specifically seek to offer educational programs to a broader section of the American population. The first type of social equity mission features institutions that target certain underrepresented demographics, such as race, ethnicity, and gender. These institutions that serve various populations are designated either by their receipt of federal assistance in accordance with Title V or through their membership in organizations that advance the educational access to underrepresented populations. The second type of social equity mission accommodates students from various social-economic classes. The Morrill Act, land-grant institutions were established to serve the “industrial classes” as opposed to the elite classes (*Morrill Act*, 1862). Some institutions can possess more than one of these social equity missions. For example, half of the land-grant institutions were established for tribal colleges and African-Americans (also known as historically black colleges and universities). Table 2.1 lists the number of institutional missions that serve various demographics.

Table 2.1 Number of four-year institutional missions that serve specific demographics

	Land Grant	Not Land Grant	Total*
Asian	1	12	13
Black	20	64	84
Hispanic	2	72	73
Native American / Tribal	32	1	33
Women	0	40	40
No specific demographic	52	1,885	1,937
Total	107	2,070	2,177

* Note: Three colleges serve minority women.

Source: National Center for Education Statistics, 2015.

The third category of institutions with social equity missions provide greater access to college admission, as opposed to limiting their student populations based on certain criteria. The process of selectivity describes admissions practices that accept or reject students based on academic criteria (Kuh & Pascarella, 2004). Many researchers assert that selectivity is associated with social class as much as academic ability (Torche, 2011; U.S. Department of Education, 2006b). According to a study on graduation rates, the U.S. Department of Education (2006b) determined that institutions that serve low-income students are more likely to be inclusive or less selective institutions versus more selective. Several factors associated with social class could be related to higher test scores. Students from higher income brackets can afford prestigious, private college-preparatory secondary schools. They also have available funding to invest in preparations for standardized admissions tests, such as the SAT or ACT exams (Bial & Rodriguez, 2007; Oseguera & Astin, 2004). If they perform poorly on one of these standardized tests, as most students do the first time they take these tests, they can afford to retake the exam as many times as they feel necessary, which then increases their chances of scoring higher on the exam (Vigdor & Clotfelter, 2003). Therefore, inclusive or less selective institutions could be said to have social equity missions in promoting college access for low-income families. Selectivity in admissions processes are measured as inclusive, selective, or more selective by institutions' Carnegie Undergraduate Profile, which is reported in the National Center for Education Statistics (NCES). Table 2.2 demonstrates the levels of access to college admission.

Table 2.2 Number of four-year institutions by admissions selectivity

Undergraduate Profile	Number	Percentage
Inclusive	706	32.4%
Selective	708	32.5%
More Selective	763	35.0%
Total	2,177	

SOURCE: National Center for Education Statistics, Carnegie Undergraduate Profile, 2015.

Public choice in higher education

With the proliferation of different institutional missions, standardized data and market signals were needed to indicate prestigious institutions from those that serve the masses. Thus, academic ranking publications, such as *U.S. News and World Report*, emerged to inform the public about the level of institutional prestige (Hamrick, Schuh, & Shelley, 2004). Much of the data to support the U.S. News and World Report (USNWR) Rankings comes from the National Center for Education Statistics (NCES) Integrated Postsecondary Data System (IPEDS), which all postsecondary institutions must populate based on federally defined definitions. USNWR also surveys an institution's peers to determine its reputation. The primary determinants in these academic rankings are peer reputation and the perceived quality of students' academic abilities as measured through metrics such as graduation and retention rates and institutional selectivity. Selectivity signals educational prestige, because it indicates that an institution has more demand than it can accommodate and can choose which students to admit (Kuh & Pascarella, 2004).

Multitudes of research suggests that prospective students seek information about colleges and universities through these types of publications (Bell, Rowan-Kenyon, & Perna, 2009; Meredith, 2004), and these ranking systems have succeeded in directing students' enrollment behaviors toward colleges and universities that have higher scores

(Bastedo & Bowman, 2010; Bowman & Bastedo, 2009). These prolific researchers have provided ample evidence that academic rankings are more influential to students and their parents than governmental sources, such as NCES.

A few theorists and critics support the logic of academic rankings as informing the market behaviors of a decentralized, privatized higher education system. These critics suggest that the higher education system, largely sustained by governmental subsidies, ought to be subject to market-based competition (Bankston, 2011; Chubb & Moe, 1988; Winston, 1999). Increased competition would help improve educational efficiency because institutions with poor quality could not attract new students (Anctil, 2008), and institutions would not be tasked with the inefficient process of teaching non-college-ready students (Bankston, 2011; Wood, 2012). A privatized higher education system would encourage practices of rivalry and excludability as opposed to educating the masses.

Shortcomings of higher education polycentricism

Unfortunately, in its quest for efficiency, this market-driven, decentralized system has two negative trends for higher education: (1) reduction in access to enrollment and diversity within the student body, and (2) homogenizing effects on institutional diversity within the nation. Both of these trends have adverse effects on social equity.

The focus on selectivity often excludes minority and low-income students from admission to college. Bastedo and Bowman (2010; 2009) noticed a correlation between high academic rankings and low diversity in the student body. In their analysis, they found that as an institution raised its academic profile, it began excluding more females, more minorities, and more Pell grant students. They even go as far as to assert that

institutions with high proportions of minority students may be a signal of lower quality to unknowing potential students and their families. Bial and Rodriguez (2007) found that institutions may not deliberately prevent minority students from admissions, but rather put too much emphasis on high scores in admissions tests or in high school GPAs. Their research led them to conclude that a gap exists between white and minority students; thereby, making admissions to college more difficult for minority students. If selectivity based on admissions tests and GPAs continues to increase, then access to college admission may decline further for minority students.

On the other hand, Carnevale and Rose (2003) found that diversity in socio-economic status (SES) remains a larger problem than low diversity in racial and ethnic students. They found that highly selective institutions were more likely to enroll minority students than low-income students. Other researchers, such as Ballinger (2007) and Mettler (2014), have found similar trends that high-income students enjoy far greater access to college enrollment and completion than low-income students. Ballinger concluded that the majority of high-income students, regardless of academic ability, attend a college or university; however, less than half of low-income students are able to enroll. High-income students are more likely to have educational support from their parents, access to college guidance counselors, access to more rigorous schools, and funds to attend the most selective institutions. Mettler contends that even high-achieving, low-income students were less likely to attend and complete college than their low-achieving, high-income counterparts.

Some might argue that race and SES are intertwined, and in some parts of the country may even be equivalent (Wood, n.d.). Sirin (2005) studied academic

achievement, albeit at the secondary level, to determine the role of SES in schooling. He found that socio-economic differences matter for white students, but that the correlations nearly disappeared for minority students, particularly African-Americans. It should be noted that his study was a meta-analysis of research that had been published over several years. Along the same lines, Vigdor and Clotfelter (2003) found that retaking admissions tests help raise scores, and white students were more likely than minority students to retake an exam, mainly because of associated costs of the exams. Therefore, affluent white students had higher scores than their low-income and minority counterparts. These researchers suggested that colleges ought to accept only the first test scores so as to minimize the negative impact on low-income and minority students. Carnevale and Rose (2003) suggested that socio-economic status often relates to race and ethnicity; however, this access problem also affects low-income White students. They found that over 80% of college students come from the top quartile of family income. Although still predominantly white, selective institutions have a higher diversity among race/ethnicity than family income. The study also indicates that racial inequality is not equivalent to income inequality; however, Blacks and Hispanics tend to come from lower income brackets.

Figure 2.1 demonstrates how U.S. News and World Report rewards selective institutions in both the national university and national liberal arts college rankings. Very selective institutions, in terms of their Undergraduate Profile in IPEDS, comprise 100% of the top tier and 90.9% of the second tier in the 2014 educational rankings. Few inclusive institutions appear in the rankings, and most of the ranked inclusive institutions score in the bottom tier. These data suggest a relationship between prestige and

selectivity, which in turn discourages social equity. Table 2.3 provides a summary about studies that demonstrate how competition for high-ability students and exclusion of low-ability students encourages social inequality.

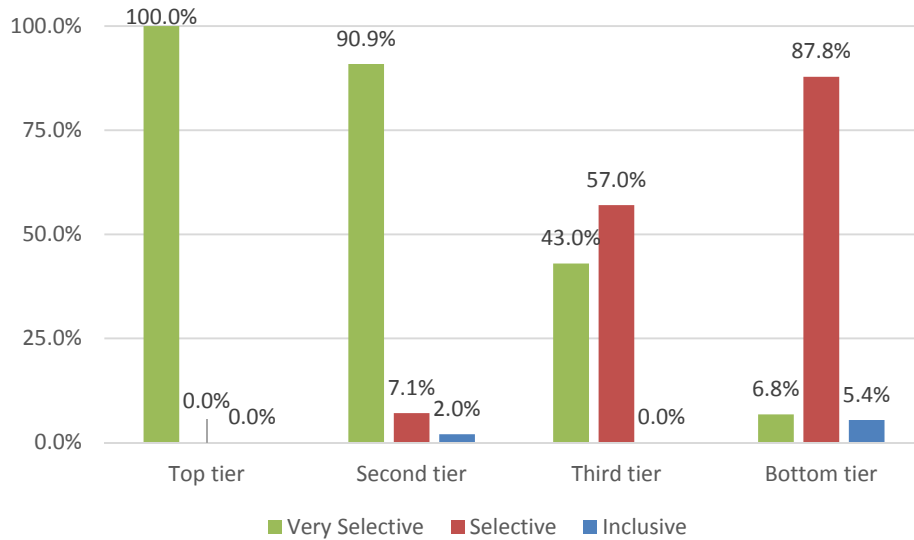


Figure 2.1 Four tiers of 2014 U.S. News and World Reports educational rankings for national universities and liberal arts colleges by admissions selectivity.

SOURCE: U.S. News and World Report National University Rankings (2014) and National Liberal Arts College Rankings (2014), and Undergraduate Profile data from the National Center of Education Statistics, IPEDS.

The competition among higher education institutions raises additional concerns for homogeneity (Oseguera & Astin, 2004). In an effort to remain competitive, lower ranked institutions may adopt behaviors of prestigious institutions to rise in the academic ranks (Ayalon, 2007; Bastedo & Bowman, 2011; Hossler, 2000). David Riesman (1958) coined the term “academic drift” to describe this effort to mimic highly ranked institutions. Riesman compared the movement of higher education to that of a snake where the tail, low-ranked institutions, follows the direction of the head, the more

prestigious universities. Academic drift essentially works toward homogenizing the types of institutions in the country as some feel the need to adopt more selective admissions policies that result in a less diverse student body or change their missions and curricular offerings (Birnbaum, 1983; Morpew, 2009). Morpew, in particular, found that institutions sought to become more comprehensive and reclassify themselves from college to university. In his longitudinal analysis, he found that institutions tried to advance themselves in Carnegie Classifications as if those classifications were equivalent to national rankings. It is true that people are often most familiar with the U.S. News and World Report *national* rankings, which are comprised specifically of institutions that have Carnegie Classification of research/doctoral. Although Morpew's analysis is more recent, dating back to the 1990s, his conclusions affirm those of Birnbaums that date back to the 1960s. Both assert that institutions compete with one another for students, and as a result, they forgo their original missions in an effort to conform to market practices. Thus, the studies from Table 2.3 and those supporting academic drift indicate that rivalry and excludability directly contrast with higher education's social equity missions.

Table 2.3 Studies that suggest that competition adversely affects social inequality

Biases against minority students

Author(s)	Findings
(Bial & Rodriguez, 2007)	High ability students are determined through high school GPA and standardized tests. Their evidence suggested a gap between the test scores of African-Americans and White students.
(Bowman & Bastedo, 2009)	Changes in rank resulted in changes in enrollment demographics with fewer minority and female students. The authors extrapolate that higher minority and female proportions in the student body signal lower quality.
(Vigdor & Clotfelter, 2003)	Authors found that students' SAT scores increased every time they retook the exam. Minority students were less likely to retake the exam often because additional tests were cost prohibitive; therefore, they held lower scores than their White counterparts.

Biases against low-income students

Author(s)	Findings
(Ballinger, 2007)	This author notes that the majority of high-income students, regardless of academic ability, attend a college or university; however, less than half of low-income students are able to enroll. High-income students are more likely to have educational support from their parents, access to college guidance counselors, access to more rigorous schools, and funds to attend the most selective institutions.
(Carnevale & Rose, 2003)	They found that over 80% of the students come from the top quartile of family income. Although still predominantly white, selective institutions have a higher diversity among race/ethnicity than family income. The study also indicates that racial inequality is not equivalent to income inequality; however, Blacks and Hispanics tend to come from lower income brackets.
(Mettler, 2014)	Her research indicated that students from the highest income bracket were more likely to attend and complete a college education than all of the other income brackets combined. She concluded that even high-achieving, low-income students were less likely to attend and complete college than their low-achieving, high-income counterparts.

Table 2.3 (Continued)

Biases against low-income students continued	
Author(s)	Findings
(Beller & Hout, 2006)	Students from lower socioeconomic backgrounds were far less likely to complete schooling than those from more advantaged families. They found a strong correlation between higher socioeconomic statuses and educational attainment.
(Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012)	The typical atmosphere on campuses tends to cater toward the middle- and upper-class citizens with parents who are college educated, making it extremely difficult for first-generation college students to succeed.
(Oseguera & Astin, 2004)	They found that socioeconomic status had become more stratified in higher education, with fewer low-income students than ever enrolled in more selective institutions. They theorized that the reason stems from increased competition among institutions of higher education, which thereby increases admissions standards.

If this trend continues, then the country may see a decline in the number of institutions with social equity missions. The near closing of Sweet Briar signifies a recent example of this trend. Institution leaders cited the inability to compete against coeducational research and comprehensive institutions as rationale for its closure. Some people (e.g., Bankston, 2011; Vedder, 2004) believe that such instances symbolize the efficiency of the market and that any government attempt to sustain a failing institution damages educational quality. Others (e.g., Harris, 2013; Morpew, 2009) feel that preserving institutional diversity allows the higher education system to better serve the country's heterogeneous population.

Theoretical Approaches to Social Equity

Only a few notable theorists believe that education should be completely free from government planning (e.g., Hayek, 1978). Many authors have concluded that free-

market capitalism requires governmental bureaucracy to uphold it (McSwite, 2002; Milgrom, North, & Weingast, 1990; Stanisevski, 2004), and as the prior literature suggests (e.g., Alexander, 2000; Derthick & Dunn, 2009), the government has been taking steps to increase its role in higher education accountability rather than relinquish control to the markets.

In what began as the new public administration movement during the 1960s, Frederickson (1980) asserted that government's responsibilities ought to include advancing social equity and maintaining normative ideals of a democratic society. Social equity pertains to "the equitable treatment of citizens" (p. 7). He suggested that bureaucracy discriminates against minorities in favor of the established, and the result "constitutes a fundamental, if long-range, threat to the viability of this or any political system" (p. 7). Frederickson criticizes public choice approaches to government, because the consumer approach to government places the individual desires, signaled through competitive markets, above the collective good of society. In preserving social equity, the government ought to ensure that services are administered equally and in a manner that does not perpetuate existing inequities. Thus, Frederickson (1980, 1990) called for considerations of social equity as important as efficiency and economy in government.

However, it would seem that the recent new public management (NPM) or reinventing government furthered the advancement of efficiency and economy, calling for bureaucracy to run more like a business and to adopt private-sector practices. According to Hood (1991), NPM calls for shifts toward "quasi-privatization," "explicit standards of measures and performance," and "greater emphasis on outputs" (pp. 4-5). Well-known scholars, Osborne and Gaebler (1992), encouraged public administration to

adopt market-like behaviors as a way of achieving efficiency. With the use of performance measures, government agencies could adopt activities that advance desired outcomes. According to authors such as Frederickson (1980) and Harmon (1989), these outcomes often assume a value-neutral approach without considering factors of discrimination and inequality.

Shortcomings in governmental regulation

Initially, governmental involvement in higher education policy could be said to parallel the intentions of new public administration. The Morrill Acts (1860s and 1890s) and the Higher Education Act (1965) advanced social equity through redistribution of services and resources to underrepresented populations. The Higher Education Act has been reauthorized many times since its creation, and each time more government regulations have been added. However, policies such as the Higher Education Act were not immune from reinventing government, as market-like practices or the “market ethos” (McSwite, 2002) influenced government practices.

State legislators began pushing for using performance measures as part of the accountability paradigm in higher education beginning in the 1990s and continuing through present time (Alexander, 2000; Ewell, 2008; McLendon et al., 2006). More recently, President Obama declared college completion as the federal government’s primary outcome for all of higher education and proposed the use of performance metrics to evaluate institutions’ progress toward achieving this goal (The White House, 2012, 2014). As SACSCOC President Belle Wheelan explained in her opening address at the 2013 Annual Meeting, the government has shifted its priorities from providing greater access to college toward graduating the students who can get accepted to college (2013).

Many critics suggest that the initial intentions of the higher education acts have been modified to focus on efficiency without regard for equity (Mettler, 2014; Torche, 2011).

Just like with free-market competition, government regulation can have exclusionary effects on prospective college students. As colleges adjust their practices to conform with educational policies and performance agenda, they may restrict their enrollments to accept only students who are likely to graduate college within six years (Lahr et al., 2014; Manna, 2013). This restriction to admissions and narrowing of institutional missions is “the most commonly mentioned unintended impact of performance funding” (Dougherty et al., 2014, p. 178). As previously described, selectivity in admissions tends to exclude minority and low-income students (e.g., Bial & Rodriguez, 2007; Carnevale & Rose, 2003).

Governmental financial aid policies further the exclusionary practices in keeping with its market ethos. Pell grants and other similar grant packages for low-income students have not kept pace with the escalating costs of college (Mettler, 2014), and, therefore, low-income students must secure other forms of scholarships or loans if they want to attend college. Long (2010) found that the expansion of grant aid, such as the Pell grant initiative, helped high-achieving, low-income students select better schools, rather than encourage more low-income students to seek admissions to college.

Often, state and institutional scholarships or grants are structured in a merit-based format to reward high-ability students rather than a need-based format that assists low-income students (e.g., Brown, 2007; Doyle, 2010). Doyle described merit-based financial aid packages as favoring students with the highest academic qualifications. He argued that state financial aid plans are structured as merit-based so as to appease the tax-paying

public who want their tax dollars to go to whom they feel are deserving. Furthermore, Doyle and his colleagues (Doyle, Delaney, & Naughton, 2009) found that institutions were more likely to comply with state financial aid models and also award merit-based aid over need-based aid. As previously described, high-ability students include those who score high on standardized tests or have strong college preparatory backgrounds. Thus, financial aid packages are structured to reward students from higher socio-economic statuses over students from low-income and minority families. Brown, who titled his article “Merit aid: The practice of giving money to those who do not need it,” portended that institutions rely on merit aid to “sculpt” (p. 45) their incoming freshman classes to help raise the academic profile and rankings of the institution. In this manner, financial assistance often goes to students from the most affluent families rather than to the students from the lower-income brackets. Table 2.4 provides more literature about how government financial aid policies affect social equity.

Table 2.4 Government financial aid policies and effects on social equity

Author(s)	Findings
(Long, 2010)	Found that the expansion of grant aid, such as the Pell grant initiative helped low-income students select better schools, rather than encourage more low-income students to enroll in college. He contended that the current financial support system for higher education does not enhance the desired outcomes because it perpetuates the unequal access dilemma.
(Mettler, 2014)	Also found an enormous gap in college attendance between the high-income and low-income students. She explained that this disparity in enrollment and completion among the socioeconomic classes could be the result of what she called “policyscape,” which is “a political landscape densely cluttered with a vast array of policies of all varieties that...do not function as effectively as they once did” (p. 14). Federal Pell grants have not kept pace with the rising college costs, and policy designs tend to cater toward the wealthy populations. She feels that bold legislation with bipartisan support could fix the higher education crisis and reset the balance of social justice.
(Doyle, 2010)	States’ financial aid policies use merit-based criteria over need-based criteria in accord for the tax-paying public’s perception of deserving individuals. He suggested that public institutions run the risk of eliminating their middle class students as a result of merit-based financial awards.
(Doyle et al., 2009)	Found that institutions follow the lead of state financial aid policies. As most states policies feature merit-based awards, so do public institutions.
(Brown, 2007)	He pointed out that 80% of an institution’s scholarship money was focused on merit rather than on financial need. Brown asserted that colleges and universities practice this form of financial aid because they want to “sculpt” their incoming freshman classes, which helps raise the academic profile of the institution (p. 45). Therefore, merit-based financial aid awards scholarships and financial assistance most often go to students from the most affluent families.
(Kim, 2012)	The study indicated that need-based financial aid did close the income gap at both nonselective and selective colleges; however, merit-based aid did not affect low-income and minority students. Thus, the continued focus on selectivity without consideration for need will decrease access for disadvantaged or minority students.

The governmental trends described in this section indicate that bureaucratic involvement without consideration for social equity has the same effect as market-driven selectivity and homogenization. Figure 2.2 depicts how both free-market competition and

governmental regulation can decrease the diversity of institutional missions. Therefore, a balance must be struck: a socially conscious polycentric network requires government regulation that considers the policy effects on social equity.



Figure 2.2 Depiction of market influences and government regulation on institutional diversity

Measures of Effectiveness in Higher Education

Another criticism with the narrow consideration for efficiency in higher education suggests that productivity measures do not necessarily signal effectiveness. As McSwite (1996) noted, the public often equates efficiency with effectiveness. Waldo (2006) was especially concerned that the pursuit of efficiency and productivity downplays the importance of effectiveness. He worried that this narrow perspective threatened the nation’s democratic values by putting the goals of business above the goals of government. Likewise, Stone (2002) asserted that efficiency targets are not goals in and of themselves, but rather short-term objectives toward achieving the long-term outcomes. Therefore, seeking efficient services as the end product could negatively affect the long-term goals.

Similar criticisms about recent educational policies also abound as many observe the absence of measures for effective educational practices (e.g., Lingenfelter, 2007; Zemsky, 2007). Graduating students efficiently does not also ensure that those students have learned the requisite material (Archibald & Feldman, 2008b; Arum & Roksa, 2011). Derthick and Dunn's (2009) analysis of the 2008 reauthorization of the 1965 Higher Education Act (HEA) asserted that the Act expands with every reauthorization, but very little focuses on effectiveness. They stated that the reauthorization "... was quintessentially a product of the legislature: 1158 pages long, with roughly seventy new spending programs targeted to narrow constituencies and nearly two hundred new reporting and regulatory requirements.... Virtually none of the new regulations is in any way instrumental to the advance of learning" (p. 1029-1030). Zemsky (2007), a member of the Spellings Commission on the Future of Higher Education that informed the most recent reauthorization of the HEA, lamented that college affordability and student learning were listed as the highest objectives for the commissions' analysis, but neither of these were addressed in the final report. To address student learning would require either more time or more money on the part of the student or the institution—both options diminish the institution's efficiency.

Furthermore, as institutions direct more funds toward initiatives to improve retention and graduation rates to meet national imperatives, they may then have less to spend on instructional costs, such as facilities, learning technologies, or full-time faculty (Derthick & Dunn, 2009; Zemsky, 2007). Dougherty and colleagues (Dougherty, Natow, Bork, Jones, & Vega, 2013) found that institutions in response to performance pressures would close programs or classes with high failure rates while investing more in retention

programs. Grade inflation could also occur as faculty members feel pressure to pass students rather than issue grades that may interfere with their graduation (Jewell, McPherson, & Tieslau, 2013; Summary & Weber, 2012). Archibald and Feldman (2008b) declared that institutions cannot graduate one hundred percent of the students they enroll; therefore, incentivizing institutions to graduate more students who may or may not have achieved the desired learning outcomes seems to contradict the intent of graduating more students.

Finally, many higher education critics assert that the focus on non-instructional activities results in graduating students who do not possess the same levels of learning as previous generations (Arum & Roksa, 2011; Bok, 2008). Former President of Harvard University, Derek Bok, along with Arum and Roksa, studied numerous standardized tests and surveys to determine that students are not improving their critical thinking, analytical reasoning, moral reasoning, or writing skills during their early college years. Furthermore, students reported that faculty do not require lengthy papers or even a significant amount of reading. Bankston (2011) in particular faults the ideal of educating the masses because of the resulting decline in student learning. He concluded that math scores in the 2000s have finally reached their post-war levels. Reading levels, on the other hand, reached their peak in the 1950s and 1960s, and scores have never come close to those high marks. Table 2.5 provides a summary of the literature describing how government regulation has affected educational effectiveness.

Table 2.5 Government regulation and concerns for effectiveness

Author(s)	Findings
(Bankston, 2011)	Once the government compelled institutions to educate the masses, student learning declined. He suggested that by the 2000s, math scores finally returned to their post-war levels, but reading levels reached their peak in the 1950s and 1960s, and scores have never come close to those high marks.
(Archibald & Feldman, 2008b)	Colleges neither could nor desire to graduate one hundred percent of the students they enroll. Incentivizing institutions to graduate more students who may or may not have achieved the desired learning outcomes seems to contradict the intent of graduating more students.
(Zemsky, 2007)	As a member of the Spellings Commission, he later lamented how college affordability and improved student learning were listed as the highest objectives for the commission's analysis, and yet neither of those issues were fully addressed in the final report. Enhancing student learning would require a greater financial or time commitment either from the institutions or from the students—both trends diminish an institution's efficiency.
(Derthick & Dunn, 2009)	Pointed out that the most recent reauthorization of the Higher Education Act included no provisions for enhancing, tracking, or measuring teaching and learning.
(Bok, 2008)	Although students achieve a great deal from their college experiences, students report that they have not made much gains in terms of their writing abilities, quantitative reasoning skills, moral reasoning, or cultural knowledge. Furthermore, the most important classes for these students are often taught by the least qualified or part-time faculty members, particularly classes specific to writing or general education.
(Arum & Roksa, 2011)	Students are not improving their critical thinking, analytical, reasoning, or writing skills during their first couple of years in college. Furthermore, faculty are not asking students to devote enough time to developing these skills, because 50% of the students responded that they had not taken a course in the prior semester that required a lengthy paper or even a significant amount of reading.
(Landrum, 2009)	Institutions rely more on part-time faculty than ever before; therefore, he studied the instructional differences between full-time and part-time faculty. He found no differences in grade distributions or results of student evaluations of teaching, but he did find significant differences in support for full-time over part-time, and a decrease in students' ability to access part-time faculty outside of class. He did not determine whether part-time faculty achieved the same learning outcomes as full-time counterparts.
(Grove & Wasserman, 2004)	Asserted that over the past several decades, grades have increased without a corresponding increase in rigor. They studied five cohorts and uncovered that earlier cohorts had significantly lower GPAs than later cohorts.
(Dougherty et al., 2013)	Found that in response to performance agenda, institutions did make changes to their own practices, such as closing programs and practices that adversely affected the institution's performance or eliminating requirements for classes with high failure rates.

Shortcomings of focusing on educational effectiveness

Incorporating effectiveness measures into the performance scenario is not without its criticisms. For one, political and educational leaders cannot agree on how to measure effectiveness. Many authors point out the difficulty in measuring long-term, mission-based outcomes, particularly for public entities (Lauth, 1987; Piotrowski & Rosenbloom, 2002). Some standardized tests have emerged to attempt to fulfill this role of measuring student competencies, such as the Collegiate Learning Assessment (CLA), National Survey of Student Engagement (NSSE), and the Educational Testing Service (ETS) (Nichols & Berliner, 2008; Steedle, Kugelmass, & Nemeth, 2010). These tests attract as many criticisms as they do accolades from narrow views of student learning (Klein, Benjamin, Shavelson, & Bolus, 2007) to issues of under sampling the student population and low response rates (Porter & Whitcomb, 2005) to biases against minorities (Bial & Rodriguez, 2007). Because of these difficulties, policies substitute proxy measures, particularly those that favor efficiency and productivity, which are easier to measure (Kelly & Rivenbark, 2003; Simon, 1997; Thompson, 1994).

Another shortcoming for incorporating effectiveness into the performance arena suggests a greater investment in time and resources. Studies show that under-prepared students rarely graduate within six years of their initial enrollment in college (Archibald & Feldman, 2008b). A large portion of these students may drop out of college, and others extend their academic studies well past six years. The U.S. Department of Education (2006b) suggested that inclusive or less selective institutions enroll higher proportions of underprepared students, and many studies suggest gaps in academic performance among minority and female populations. Providing effective education for these students

involves more time to deliver academic content than those who had the advantage of college preparation through their primary and secondary school systems (Bok, 2008; Zemsky, 2007). As a result, low-ability students are less likely to complete college within a six-year timeframe, and the institutions that serve these students will have lower graduation rates.

For all of the reasons discussed in this section, student learning assessment is challenging to measure in a comparative way. Either education policies must be satisfied using the proxies, or institutions must be trusted to continue assessing and improving student learning on their own without comparisons to other colleges.

Role of Accreditation in Evaluating Higher Education

Performance agenda are a relatively new tool in evaluating higher education (Alexander, 2000). Accrediting bodies have held the primary responsibility for evaluating colleges and universities for over 100 years (Brittingham, 2009; Wheelan & Elgart, 2016). As Brittingham (2009) described, accreditation adds another layer of uniqueness to the American higher education system. In this country, accreditation is non-governmental, largely voluntary, and heavily reliant on self-assessment to both set standards for evaluation and to serve as a reference by which to identify strengths and weaknesses. Eaton (2009) listed four primary roles for accreditation: (1) determining quality assurance, (2) providing access to federal funds, (3) signaling effectiveness for the private sector in terms of employers and donors, and (4) facilitating the transfer of credits. Numerous authors contend that accrediting bodies can evaluate institutional effectiveness without adversely affecting social equity (Bardo, 2009; Kuh & Ewell, 2010;

Wheelan & Elgart, 2016). However, accrediting bodies have also been called into question with the emergence of NPM ideals.

The 2000s saw a distinct shift in how institutions of higher education are governed, moving away from peer and self regulation to increased governmental oversight that focuses on performance and results (Alexander, 2000; McLendon et al., 2006; Webber & Boehmer, 2008). After former-President Bush appointed the National Commission on the Future of Higher Education, the commission found “a lack of clear, reliable information about the cost and quality of postsecondary institutions, along with a remarkable absence of accountability mechanisms” (U.S. Department of Education, 2006, p. x). Institutions and accrediting agencies ought to be more transparent and to document and improve student learning. The most recent reauthorization of the Higher Education Act originally began in 2003 and intended for the federal government to take over accreditation, particularly in light of the commission’s report (Derthick & Dunn, 2009; Webber & Boehmer, 2008). However, legislators met with so much opposition that the reauthorization, which was not finalized until 2008, settled for increased regulations on accrediting bodies (Bardo, 2009; Graca, 2009).

More recently, the U.S. Department of Education (Mitchell, 2016) drafted a letter to the leaders of the regional accrediting bodies. This letter expressed concerns for students who are adversely affected by recent school closures—specifically for-profit institutions—and escalating financial situations. As a result, the department suggested that accrediting bodies be more flexible in their reaffirmation processes so that they do not have to spend as much resources on high-performing institutions as they would on those that they have reason to believe are underperforming. At the same time, the

department chastised the accreditation process for not being rigorous enough in enforcing student learning: “Regional accreditors tend to use qualitative measures of student achievement, and tend not to have numerical metrics. We encourage them to consider adding objective, transparent, comparable, and actionable quantitative measures. Important measures, such as retention, graduation, and cohort default rates may be utilized if they are not already” (p. 6).

In response, two accreditation leaders published an editorial that stated that the department is “crossing the line” by forcing a narrow perspective of outcomes upon regional accreditation (Wheelan & Elgart, 2016). These leaders were concerned most about mingling the ideals of improved student learning with regulations that sustain federal financial aid. Although these quantitative measures for graduation rates and default rates are important for how college affects students, these data do not help institutions improve their educational programs to benefit student learning. The editorial specifies the following unintended consequences of these narrow foci: (1) reducing access to underserved populations, (2) punishing institutions for economic circumstances beyond their control (such as a down economy with high unemployment or reduced state funding), and (3) encouraging institutions to manipulate or game the data rather than face negative actions. By forcing accreditation to conform to these types of outcomes, oversight becomes “more like a data-collection service” (para. 1). None of these arguments or criticisms are new, and the debate that began in the 2000s continues unreconciled. The concerns of the accreditation leaders echo the concerns of Waldo (2006), who feared an emphasis on efficiency downplayed the role of effectiveness, and

Frederickson (Frederickson, 1980, 1990), who feared that such practices neglect social equity.

One of the more government-sympathetic regional accreditation leaders, Stephen Crow (2009), executive president of the Higher Learning Commission, explained that despite the numerous criticisms from public policymakers and institutional leaders, accreditation remains irreplaceable in its role on quality assurance. He also pointed out that the federal government and accrediting agencies need each other. Accreditation can be the tool to demonstrate accountability and to analyze student learning, but federal financial aid is invaluable to institutions and students. He concluded that research is needed to find a way to both control for institutional missions and still determine appropriate benchmarks for effectiveness, including nationally established ideals.

The Need for Better Measurements

As described in this literature review the aspects of efficiency, equity, and effectiveness seem to contradict each other, as do the roles of the many stakeholders in higher education. Neither frameworks of polycentricism or new public administration capture the complex educational policy issues. Education leaders recommend a blend: preserving institutional diversity and autonomous missions with policy input from government. Bok (2008) and Zemsky (2007)—who both worked with The Secretary of Education’s Commission on the Future of Higher Education—suggested that the best way for colleges to improve student learning is not at the national level with additional reporting requirements, but at the institutional level in conjunction with the faculty and the teaching experts of the specific student populations. They support a decentralized system under a federalist structure, preserving the diversity of institutional missions. As

Manna (2009, 2013) pointed out, educational leaders do not want to sever ties with the government, because educational policies are needed to ensure that these national issues related to efficiency, effectiveness, and equity remain at the forefront. Crow (2009) also asserted that institutional mission alone does not address a broad national problem related to student learning and affordability. These initiatives must all be combined for a more comprehensive picture of accountability.

The federal government's performance management solutions seem one-sided, as do the accreditation processes. Many researchers have noted that only what is measured in performance regimes receives attention, and existing performance agenda often do not consider aspects of equity and effectiveness in addition to productivity metrics (Jennings, 2010; Piotrowski & Rosenbloom, 2002). Accountability instruments must also allow for disparate institutional missions because a one-size-fits-all accountability model is not appropriate for heterogeneous populations. Frederickson specifically called for more research to identify alternative policy structures to accommodate social equity (1990, pp. 235-236). Others point out that focusing strictly on institutional missions misses the larger national goals (Crow, 2009; Manna, 2009). Without the help of the federal government, higher education institutions would not be contributing to national outcomes, and social equity policies would have little authority. Thus, an instrument that controls for multiple missions and combines national imperatives supports the polycentric nature of the higher education system as well as broader social values.

CHAPTER III

METHODOLOGY

This study developed a new accountability instrument and conducted a subsequent comparative test of that instrument against traditional performance ranking systems. For the purpose of this study, four-year institutions in the southern region of the United States serve as the primary focus, because this region has the highest proportion of social equity missions. An educational performance index (EPI) was created that combined data from various sources to provide a composite score for each institution in the study out of a possible 100%. Indicators for the EPI were identified under the broad objectives of efficiency, equity, and effectiveness. The intent of this index is to prevent institutions with higher effectiveness or equity but lower efficiency scores from being punished as they would in traditional measures that emphasize only efficiency. Linear regressions were used to test the influence that social equity missions have on institutions' EPI scores. Additionally, regressions compared the relationship between the EPI and traditional academic rankings.

Research Questions

Guiding the research design and hypotheses were the following questions:

- No one institution type can serve all students, all missions, or all of the country's or states' needs. If institutions with social equity missions perform lower than those without these missions, then the former

institutions will be at a disadvantage. How do social equity missions influence institutional performance?

- If institutions that serve underrepresented populations may be adversely effected by efficiency-driven policies, then how can policy-makers best measure higher education in a manner that also protects social equity?

Research Hypotheses

These hypotheses tested the relationship between institutional mission and performance. Table 3.1 at the end of this section provides a list of the variables included in this study.

H₁ Social equity missions will have no influence on an institution's EPI composite score.

$$\text{EPI} = \alpha + \beta_1(\text{Access}) + \beta_2(\text{Population}) + \beta_3(\text{LandGrant}) + \beta_4(\text{Private-nonprofit}) + \beta_5(\text{Private-forprofit}) + \beta_6(\text{Master's}) + \beta_7(\text{Baccalaureate}) + \beta_8(\text{Special}) + \varepsilon$$

Institutional missions should not be the basis of performance scores; rather other factors related to efficiency, effectiveness, and equity ought to determine an institution's success or failure. The EPI incorporates factors of equity and effectiveness equal to efficiency as Frederickson (1990) advanced in his call for alternative policy designs. Furthermore, these considerations echo the concerns of critics who fear that performance-based policies downplay the role of public missions (Piotrowski & Rosenbloom, 2002;

Thompson, 1994). If the EPI can control for institutional mission, then it could preserve institutional diversity in a socially responsible performance regime.

H₂ Institutions with social equity missions will have lower graduation rates than institutions with no social equity missions.

$$\text{Graduation rate} = \alpha + \beta_1(\text{Access}) + \beta_2(\text{Population}) + \beta_3(\text{LandGrant}) + \beta_4(\text{Private-nonprofit}) + \beta_5(\text{Private-forprofit}) + \beta_6(\text{Master's}) + \beta_7(\text{Baccalaureate}) + \beta_8(\text{Special}) + \varepsilon$$

Calls for accountability pressures institutions to increase their graduation rates as a demonstration of success. Prior research indicates that graduation rates demonstrate an institution's efficiency rather than its effectiveness (e.g., Archibald & Feldman, 2008b). The U.S. Department of Education, among other researchers, has already recognized that institutions with social equity missions have lower graduation rates. Mettler (2014) and Torch (2011) asserted that the pursuit of higher graduation rates encourages institutions to limit access to low-income and minority students. This hypothesis tests the relationship between graduation rates and social equity missions.

H₃ An institution's EPI score is not related to its U.S. News and World Report Score

$$\text{EPI} = \alpha + \beta_1(\text{Access}) + \beta_2(\text{Population}) + \beta_3(\text{LandGrant}) + \beta_4(\text{Private-nonprofit}) + \beta_5(\text{Private-forprofit}) + \beta_6(\text{Master's}) + \beta_7(\text{Baccalaureate}) + \beta_8(\text{Special}) + \beta_9(\text{USNWR}) + \varepsilon$$

Theorists such as Frederickson (1980) and Waldo (2006) feared that the preoccupation with efficiency downplays the role of social equity and effectiveness. Many critics assert that the traditional performance measures in terms of academic rankings focus primarily on efficiency measures (Archibald & Feldman, 2008b; Hamrick et al., 2004). This last hypothesis evaluates the effectiveness of the EPI in accounting for efficiency, effectiveness, or equity. If efficiency can also predict effectiveness and equity, then there should be no significant difference in the EPI and traditional performance measures.

Table 3.1 Study constructs

Dependent Variable (Abbrev.)	Source
Education Performance Index (EPI)	The proposed EPI collects 10 indicators to evaluate institutional performance within the categories of efficiency, effectiveness, and equity. Scale: 0 – 100, with 0 being lowest and 100 being highest
Graduation Rates	From NCES’s six-year graduation rate. Scale: 0 – 100, with 0 being lowest and 100 being highest
Access to admissions (Access)	From NCES’s Carnegie Undergraduate Profile, institution’s degree of selectivity: 9. Full-time four-year, inclusive 10. Full-time four-year, selective, lower transfer-in 11. Full-time four-year, selective, higher transfer-in 12. Full-time four-year, more selective, lower transfer-in 13. Full-time four-year, more selective, higher transfer-in Coded: 1 = 9, 0 = all other options
Targeted populations (Population)	NCES contains a variable for historically black colleges and universities and tribal colleges. Asian, Hispanic/Latino, and Women’s colleges will be determined based on their membership to Asian American and Pacific Islander Association of Colleges and Universities, Hispanic Association of Colleges and Universities, and Women’s College Coalition. Coded: 1 = serving a minority population, 0 = serving a general population
Land Grant status (LandGrant)	NCES contains a variable distinguishing land-grant institutions. Coded: 1 = land grant, 0 = not land grant
U.S. News and World Report score (USNWR)	Annual rankings are published in the U.S. News and World Report magazines: they include national rankings as well as regional rankings for universities and colleges. Scale: 1 – 200, with 1 being highest rank and 200 being lowest rank or unranked

Table 3.1 (Continued)

Institutional control	<p>Categorical variables based on NCES's variable for institutional control has 3 options: public, private non-profit, and private for-profit.</p> <p>Coded:</p> <p>Public will serve as the assumed variable.</p> <p>Private non-profit coded: 1 = private non-profit and 0 = public or private for-profit</p> <p>Private for-profit coded: 1 = private for-profit and 0 = public or private non-profit</p>
Carnegie Classification	<p>NCES's variable for Carnegie Classification 2010: Basic with the following options:</p> <ul style="list-style-type: none"> 3 Associate's--Public Rural-serving Large 6 Associate's--Public Urban-serving Single Campus 7 Associate's--Public Urban-serving Multicampus 10 Associate's--Private For-profit 12 Associate's--Public 4-year Primarily Associate's 14 Associate's--Private For-profit 4-year Primarily Associate's 15 Research Universities (very high research activity) 16 Research Universities (high research activity) 17 Doctoral/Research Universities 18 Master's Colleges and Universities (larger programs) 19 Master's Colleges and Universities (medium programs) 20 Master's Colleges and Universities (smaller programs) 21 Baccalaureate Colleges--Arts & Sciences 22 Baccalaureate Colleges--Diverse Fields 23 Baccalaureate/Associate's Colleges 24 Theological seminaries, Bible colleges, and other faith-related institutions 26 Other health professions schools 30 Schools of art, music, and design <p>Coded:</p> <p>Research universities 15-17 was the assumed variable</p> <p>Master's coded as 1 = 18-20, 0 = all other options</p> <p>Baccalaureate coded as 1 = 21-23, 0 = all other options</p> <p>Associate's coded as 1 = 3-14, 0 = all other options</p> <p>Special will be coded as 1 = 24-33, 0 = all other options</p>

Population

More than a quarter of the institutions with social equity missions exist in the Southeastern region of the United States according to NCES (refer to Figure 3.1). Therefore, this study focused on four-year, degree-granting institutions in the Southeastern region of the United States that receive Title IV funding. The implications of this research have a greater impact on this region more than any other in the country. More specifically, the institutions met the following criteria:

- Have a Carnegie Classification
- Hold SACSCOC regional accreditation
- Have first-time, full-time degree-seeking students
- Offer baccalaureate degrees or higher

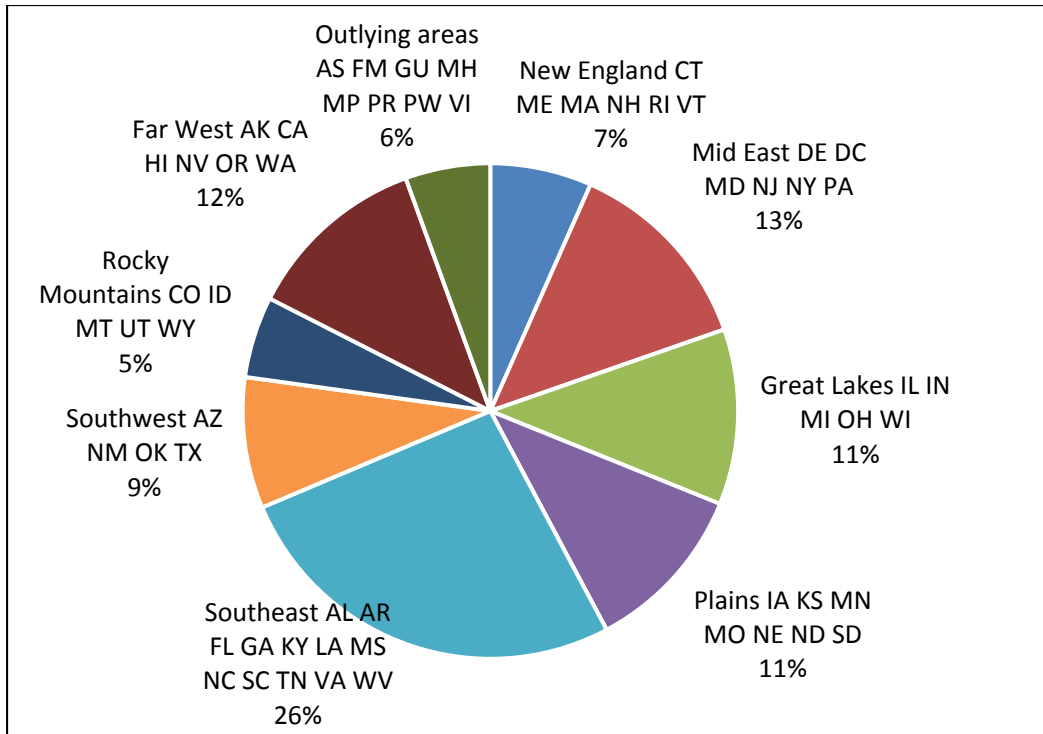


Figure 3.1 Percentage of the nation's institutions with social equity missions by geographic region

The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) serves as the regional accreditor for the Southeastern region; however, SACSCOC defines the region differently than the federal government. For example, SACSCOC includes Texas but not West Virginia. Institutions with SACSCOC accreditation must provide evidence of student learning (SACSCOC, 2011), which is an aspect that is not captured accurately in any other data source or standardized examination (e.g., Kuh & Ewell, 2010; Palomba & Banta, 1999; Porter & Whitcomb, 2005). During the 2013-14 academic year, 416 four-year institutions accepted Title IV funding, had a Carnegie classification, and held SACSCOC accreditation. Of those 416,

172 (41.3%) had social equity missions. Table 3.2 provides a breakdown of the types of social equity missions that institutions in the SACSCOC region offered during 2013-14.

Table 3.2 Number of social equity missions in the SACSCOC region.

African-American	Asian	Hispanic	Tribal	Women	Land Grant	Inclusive Admissions
61	0	3	0	13	25	188

Note: Many institutions support more than one type of social equity mission
Source: NCES, 2013-2014

Sample

To identify the specific institutions for this study, the researcher obtained from the SACSCOC database of members (2015) the institutions that will undergo reaffirmation in 2021, 2022, 2023, 2024, and 2025. These institutions' last reaffirmation would have been ten years earlier in the springs of 2011, 2012, 2013, 2014, and 2015. From this list of institutions, the researcher eliminated institutions classified as Level I, associate's degrees. Level I institutions would not have comparable data for this study and would need their own instrument for evaluation. The resulting compilation provided 241 possible institutions for the study.

Next the researcher accessed the IPEDS Data Center and selected the "compare institutions" using the final release data option for the 241 SACSCOC institutions. Forty-six institutions were excluded because they were either not in the IPEDS system or they had incomplete data—leaving 195 institutions for this study. A .csv file was downloaded from IEPDS containing the institutions' IPEDS identification numbers and locations of

the main campus, making the institutions easier to locate for future data collection. The complete list of institutions in this study is provided in Appendix A.

The study's participants were representative of many types of higher education institutions in the country, and all of them report graduation rates and other government-required, performance-based metrics. The types of institutions include public non-profit, private non-profit, and for-profit institutions, as well as institutions across the Carnegie 2010 basic classifications. Furthermore, 90 (46.1%) institutions had at least one of the three types of social equity missions in this study: (1) classified as a land-grant institution, (2) served a target population, and (3) offered inclusive admissions policies. Thirty-four institutions had more than one of these types of missions.

Carnegie Classification

One of the most common forms of identifying institutional mission focuses on its Carnegie Classification (U.S. Department of Education, 2006). Most of the four-year institutions could be classified as either bachelor's, master's, or doctoral institutions. A small number of others could be said to have a special focus, such as a theological seminary or a law school. Most for-profit institutions have the special classification. Furthermore, some associate's institutions offered bachelor's degree programs and filed first-time, full-time information with IPEDS. Table 3.3 demonstrates the Carnegie classifications in this study. The Carnegie Foundation reevaluated its classifications in 2010, and 52 of the institutions altered their statuses. However the differences did not have much of an effect on the total numbers in each category as indicated in Table 3.3.

Table 3.3 Carnegie Classification for institutions in the study, 2009-2012

Carnegie Classification*	Special**	Associate's**	Bachelor's	Master's	Doctoral
2009	7	8	68	72	40
2010-12	5	8	67	73	42

* Carnegie 2010 basic classifications are categorized broadly. Refer to Table 3.1 for how these broad categories were determined.

** Although the study excludes associate's institutions (or Level I institutions), some associate's level institutions offer bachelor's degrees and meet the criteria for having first-time, full-time bachelor's degree seeking students.

Institutional Control

An institution's affiliation can also provide more insight into its missions. In this study, the majority of the institutions were private non-profit with a religious affiliation.

A breakdown of institutional control is provided in Table 3.4.

Table 3.4 Breakdown of institutional control

Public Non-Profit	Private Non-Profit Religious Affiliation	Private Non-Profit Non-religious Affiliation	Private For-Profit
83 (42.6%)	87 (44.6%)	19 (9.7%)	6 (3.1%)

Social Equity Missions

The addition of social equity foci in institutional missions—the centricities—provides a unique dynamic to this study. For the purposes of this study, three types of missions were classified as social equity. One mission serves underrepresented populations, including historically Black institutions, Hispanic-serving institutions, and women's institutions. In this study, 43 (22.1%) institutions could be classified as serving a special population. Second, colleges and universities that have inclusive admissions policies offer more access to students, particularly those who come from low-income

families and could be considered underprepared for college. Fifty-nine (30.3%) of the institutions were classified as having inclusive admissions. Finally, land-grant institutions have a mission to serve the industrial classes and prepare the working class with opportunities for higher education. This study included ten (5.1%) land-grant institutions. A total of 81 (41.5%) institutions have at least one social equity mission. Some have more than one; for example, an institution may be a land grant with inclusive admissions policies that serves an underrepresented population. Table 3.5 provides information on the number of institutions that have social equity missions.

Table 3.5 Number of institutions with social equity missions

No social equity mission	1 social equity mission	2 social equity missions	3 social equity missions
144 (54.5%)	51 (26.1%)	28 (14.4%)	2 (1.0%)

Missing Data

For three of the institutions in the study, one year of data was excluded. For example, one institution was struck by a natural disaster in 2005, which prevented it from enrolling first-time, full-time students. For this reason, a graduation rate could not be calculated for the 2011 year. Another institution did not have a default rate for 2009; therefore, an efficiency score could not be calculated. The third institution had missing data for 2010, but had all data available for 2009, 2011, and 2012. Rather than strike these institutions completely from the study, the incomplete years for these three institutions were excluded from the study. None of the missing years overlapped, and with 194 institutions for those years, the sample was large enough not to be effected by the omissions.

Time Frame

The original study called for five years of data; however, only four years of data were available at the time the data were gathered. Most of the financial data, such as the default rates and expenditures, have a two-year delay after the close of the fiscal year. The 2013-2014 data will be available in September of 2016. Therefore, the data for the EPI reflect 2009-2010, 2010-2011, 2011-2012, and 2012-2013.

Need for Confidential Data

All of the data for the EPI are publically available except for the accreditation evaluations. The presence of this variable not only restricts the dataset to the southeastern region, but also requires that the data remain unidentifiable outside of institutional characteristics. Without this variable, the index would be comprised solely of input and

output data, which are proxies of educational outcomes. The correlation between the SACSCOC variable and the other effectiveness variables of student-to-faculty ratio, percentage of full-time faculty, and mission-related expenditures is $-.0390$, but is not statistically significant. The lack of a significant correlation means that the accreditation information does not provide the same information as the other variables in the effectiveness objective. Excluding the accreditation data would omit a different perspective on higher education accountability that cannot be replaced by publically available data.

Procedure

To test the relationship of institutional missions to their performance, this study developed an index. All data for the index variables were gathered and combined into an Excel spreadsheet by each institution's unique IPEDS identifier. The Excel spreadsheet was used to create the indicators, either as an adjustment to the raw score or as a percentile rank. The spreadsheet was imported into STATA 14 to first conduct a factor analysis to determine which indicators would be included in the index. The factor analysis resulted in three factors, labeled as equity, efficiency, and effectiveness. Within those factors, ten indicators proved relevant to the study. A discussion of how the index was created follows in the next section.

The three subscores were generated using a factor-based score calculation. Each indicator in the factor was added together and divided by the total number of indicators. The factor-based score approach was more appropriate than calculating weights for this index because the factor loadings were all very similar to each other and using the average allowed the indicators to retain their original scales rather than undergo further

treatments to ensure that all indicators were on the same scale. Finally, a composite EPI score was created by summing the three subscores for equity, efficiency, and effectiveness.

In addition to the index development, the researcher gathered data to test the hypotheses. These data included the results of U.S. News and World Report as traditional accountability measures, as well as relevant institutional characteristics from NCES to serve as the study constructs. The discussion of how these data were gathered is described in the Traditional Accountability Tools and Study Constructs sections respectively.

Finally, the Hypothesis Testing section describes how linear regressions were used to evaluate the influence of social equity missions, and to compare the EPI to traditional rankings. Each regression was tested for autocorrelation, normality, heteroskedacity, and multicollinearity.

Index Development

An index involves multiple calculations to derive an overall score (refer to Figure 3.2). First, the raw data representing every institution in the study must be gathered for each metric. Data for this study were obtained from publically accessible databases within the National Center of Education Statistics' (NCES) Integrated Postsecondary Education Dataset (IPEDS) and Federal Student Aid (FSA). The researcher also worked with the staff of the Southern Association of Colleges and Schools, Commission on Colleges (SACSCOC) to obtain data related to student learning to contribute to the effectiveness metrics. Metrics were then converted to indicators by identifying a target and evaluating each metric against that target. In most cases, the metric was also the

target, such as the graduation rate. In other cases, the targets were determined through each institution's percentile rank, such as the cost of attendance. For example, an institution that scores in the 75th percentile will have a metric that is higher than 75% of the other institutions' scores; therefore, its indicator score would be 75%.

Data Collection for the Metrics and Indicators

This section describes the variables collected and the source where the data were obtained. With the exception of data from SACSCOC, all metrics are available from publically accessible sources. SACSCOC granted permission for the researcher to use accreditation results as an indicator, and that section of this document explains how the researcher protected potentially sensitive information. Unless stated otherwise, the value of each metric was the raw data from the data source. These metrics were then converted to indicators. Many of the indicators for this study also appear in various performance reporting already (e.g., Conner & Rabovsky, 2011; Dougherty et al., 2013); others were gathered based on the researcher's fifteen years of experience related to institutional research. Table 3.8 at the end of this section provides a summary of all indicators, and Appendix B provides a codebook for each metric and indicator.

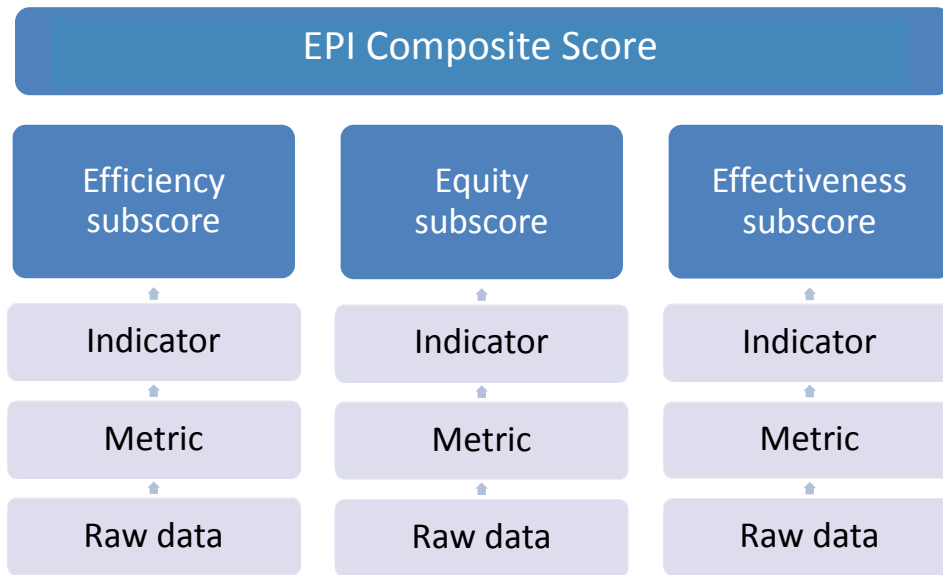


Figure 3.2 Components to derive the EPI composite score

Indicators often included in performance reporting

Graduation rates: represent the percentage of first-time, full-time, degree-seeking undergraduate students who receive a baccalaureate degree within six years of their initial enrollment (NCES, n.d.). Graduation rates are the most commonly used performance metric (Archibald & Feldman, 2008b; Conner & Rabovsky, 2011) and are calculated as a part of U.S. News and World Report rankings. The standardized graduation rates are tracked and publically available through the IPEDS system.

Undergraduate headcount enrollment: Total number of undergraduate students who enrolled in the fall semester. This number includes full-time and part-time students, as well as students classified as freshman, sophomore, junior, and senior. Many state-level performance agenda utilize these metrics as part of their funding formula (Conner &

Rabovsky, 2011). Each institution reports annually this number in a standardized format in the IPEDS system.

Student default rates: The percentage of students in a cohort who took out federally funded student loans and “who default before the end of the second fiscal year following the fiscal year in which the borrowers entered repayment” (FSA, 2014). Student default rates are calculated annually in a standardized method and are reported in terms of three-year cohorts. These calculations are publically available on the Federal Student Aid website for all institutions that receive Title IV funding.

Cost of attendance: “Average net price for full-time, first-time degree/certificate-seeking undergraduates paying the in-state or in-district tuition rate who received grant or scholarship aid from federal, state or local governments, or the institution” (NCES, n.d.). This average factors in the cost for books and supplies, as well as weighted average room and board expenses. As Derthick and Dunn (2009) as well as others have complained, the cost remains one of the greatest concerns for lawmakers, and is often the rationale for performance requirements. Institutions report the net price of attendance as part of their annual reporting responsibilities through NCES.

Student-to-faculty ratio: The student-to-faculty ratio indicates the number of full-time equivalent undergraduate students divided by the number of full-time equivalent undergraduate faculty members. Smaller numbers signal the potential for smaller classes and greater opportunities for students to interact with the faculty, which Pascarella and colleagues (2006) lists among good practices of effective undergraduate education. These ratios are reported annually in NCES.

Percent full-time faculty: Of the instructional faculty who deliver undergraduate education, the proportion of those who are full-time demonstrates potential availability to work with students, as well as institutional commitment to the pedagogical process (Pascarella et al., 2006). These percentages are reported annually in NCES.

Mission-related expenditures: The percentage of all expenditures that were devoted to mission-related activities, such as instruction, student support services, academic support, research, and outreach. The IPEDS Glossary (NCES, n.d.) provides the following definitions for these categories of expenses:

- Instructional expenses include “all operating expenses associated with the colleges, schools, departments, and other instructional divisions of the institution and for departmental research and public service that are not separately budgeted. This would include compensation for academic instruction... conducted by the teaching faculty for the institution's students.”
- Student support expenses include “admissions, registrar activities, and activities whose primary purpose is to contribute to students' emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program. Examples include student activities, cultural events, student newspapers, intramural athletics, student organizations, supplemental instruction outside the normal academic program (remedial instruction for example), career guidance, counseling, financial aid administration, and student records.”

- Academic support expenses include “operating expenses associated with activities and services that support the institution's primary missions of instruction, research, and public service.”
- Research-related expenditures are “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. The category includes institutes and research centers and individual and project research.”
- Public services expenses include those “associated with activities established primarily to provide noninstructional services beneficial to individuals and groups external to the institution. Examples are conferences, institutes, general advisory services, reference bureaus, and similar services provided to particular sectors of the community. This function includes expenses for community services, cooperative extension services, and public broadcasting services.”

Administrative expenditures: Many critics assert that rising administrative costs encourage the increased costs in tuition (e.g., Archibald & Feldman, 2008a; Bowen, 1980). Determined by dividing the total institutional support expenses by the total expenses. These data are publically available in the IPEDS system. IPEDS defines institutional support expenses as follows:

The sum of all operating expenses associated with the day-to-day operational support of the institution. Includes expenses for general administrative services, central executive-level activities concerned with management and long range

planning, legal and fiscal operations, space management, employee personnel and records, logistical services such as purchasing and printing, and public relations and development (NCES, n.d.).

Equity-inspired indicators not often associated with performance reporting

Considerations for social equity are often neglected from performance management structures (Frederickson, 1990; Piotrowski & Rosenbloom, 2002); however, this aspect remains important for social mobility (Beller & Hout, 2006; Lucas, 2001). No aspect of social equity appears in U.S. News and World Report rankings (U.S. News and World Report, 2014). All equity metrics were obtained from IPEDS.

Proportion of Pell-grant students: The percentage of first-time, full-time degree-seeking undergraduate students who received Pell grants. Students who are eligible for Pell grants must meet need-based criteria according to the federal government's qualifications. Several researchers, including those at the U.S. Department of Education, find that as the proportion of Pell-grant students rise, the graduation rates decline (Mettler, 2014; Torche, 2011; U.S. Department of Education, 2006).

Cost of attendance for low-income students: Average net price for students paying in-state tuition, who received Title IV federal student aid, and whose family income is between \$0-\$30,000. Although, an institution may have a high average net cost of attendance, it may offer lower prices for students from low-income families.

Debt burden as a proportion of the total cost: "Average amount of student loans received by full-time, first-time degree/certificate-seeking undergraduate students" (NCES, n.d.). This average includes federal subsidized and unsubsidized loans, as well as all institution or privately sponsored loans. Looking at the total amount borrowed does

not tell the complete story for some institutions. For example, many students often borrow more money than is needed to cover the cost of attendance. Students who borrow 20% or less of the total cost may not seem as disadvantaged as those who borrow 200% of the total cost of attendance.

Proportion of student body that takes out loans: “Percentage of full-time, first-time degree/certificate-seeking undergraduate students who received student loans.” (NCES, n.d.). These loans include “all monies that must be repaid to the lending institution, including Title IV subsidized and unsubsidized loans and all institutionally- and privately-sponsored loans” (NCES, n.d.). This metric combined with the proportion of the cost that the students borrow indicates the level of access the institution provides to low-income students. Highly selective institutions attract more affluent students, and they would have fewer students who take out smaller loans. On the other hand, an institution that serves low-income students would ideally have lower tuition, so even though a high proportion of the student body would have to take out loans, those loans would be relatively small.

Many researchers have found that structural diversity in both the student body and the faculty at the college or university contributes to students’ growth in academics (particularly with regard to critical thinking) and their abilities to interact with those who are different from themselves (Astin, 1993; Denson & Chang, 2009; G. R. Pike & Kuh, 2006). Chang (1999) describes structural diversity as the proportion of races and ethnicity in the student body, as opposed to the number of minority students. Structural diversity in this way prevents Historical Black Colleges and Universities and other institutions with special populations from skewing the data.

Structural racial/ethnic diversity of graduating students: Ideally, the structural racial/ethnic diversity of the graduates would mimic the structural diversity of the overall undergraduate student body. If any one group of students tends to fail in this area, then the institution may want to address this deficiency. Furthermore, any shortcomings in this area could signal a problem in the campus climate for certain populations (Denson & Chang, 2009; Hurtado, Milem, & Clayton-Pedersen, 1999). Therefore, to calculate this metric, the structural racial/ethnic diversity of the undergraduate student body would be determined in terms of proportions of African-American, Asian (including Pacific Islander), Latino, Native American, and White (e.g., 13%, 20%, 2%, 65% or 80%, 0%, 20%, 0%). That ratio would then be compared to the structural diversity of the students who graduated to determine how closely the graduating students represent the overall student body.

Gender diversity of faculty: As with racial/ethnic diversity, the faculty must represent the genders of the student body. The proportion of females will be compared between the faculty and the student body.

Unfortunately, ethnic and racial diversity of the faculty is not available through IPEDS. Institutions could complete that data optionally, and most of the small, private schools opted not to complete that data. All institutions were required to provide this type of information for their faculty beginning in 2012, and therefore future research could include this indicator.

Proportion of degrees awarded to female students: Bastedo and Bowman (2010, 2011) found that as institutions increased selectivity, the proportion of females in the student body declined.

Proportion of degrees awarded to minority students: Finally, as prior literature asserts, efficient institutions tend attract and enroll a homogenous group of affluent white students (Bastedo & Bowman, 2010; Mettler, 2014). This measure seeks to balance heterogeneity with selectivity.

Effectiveness-inspired indicators not often associated with performance reporting

As many higher education accountability critics lament, the performance metrics and ranking systems do not capture elements of effective teaching and learning (Bok, 2008; Volkwein & Sweitzer, 2006; Zemsky, 2007). This EPI incorporates indicators from one of the regional accrediting bodies, whose role it is to ensure educational quality and effectiveness (Eaton, 2012; Wheelan, 2013). Thus, the inclusion of effectiveness seeks to add a new perspective to higher education accountability.

Accreditation standards: SACSCOC reaffirmation occurs in three phases: Off-site committee review of the self-study documentation, On-site committee review that visits the institution to ensure compliance, and Commission's Board of Trustees review (SACSCOC, 2011, pp. 8–9). This study features the results of the on-site review for selected accreditation standards that feature student learning and student achievement.

Student learning outcomes are defined as what academic programs want their graduates to think, know, or do, student learning outcomes directly reflect the effectiveness of the student's education (Palomba & Banta, 1999). These outcomes, however, cannot be standardized easily, because they must be related to the individual institution's mission, student characteristics, and other relevant but potentially unique features (Barton, 2010). Because of this lack of standardization, measuring this form of effectiveness becomes extremely difficult.

Student learning outcomes are evaluated as part of the accreditation process, but those results are not available to the public. For the purposes of developing the EPI, a calculated variable was created out of a combined 18 SACSCOC (2011) standards that focus on student learning or practices that theoretically support student learning: CR 2.5 Institutional effectiveness (p. 18), CR 2.8 Number of full-time faculty (p. 20), CR 2.9 Learning resources and services (p. 20), CR 2.10 Student support services (p. 20), CR 2.12 Quality Enhancement Plan (p. 21), CS 3.3.1.1 Student learning outcomes for educational programs (p. 27), CS 3.3.1.2 outcomes for administrative support services (p. 27), CS 3.3.1.3 outcomes for academic and student support services (p. 27), CS 3.3.2 Goals and Assessment of the Quality Enhancement Plan (p. 27), CS 3.4.9 Academic support services (p. 29), CS 3.4.11 Academic program coordination (p. 29), CS 3.4.12 Technology use to enhance student learning (p. 29), CS 3.5.4 Terminal degrees of faculty (p. 30), CS 3.7.1 Faculty qualifications and competence (p. 30), CS 3.8.1 Learning/information resources (p. 31), and CS 3.8.2 Instruction of library use (p. 31).

Student achievement in the areas of college competencies and national outcomes are also evaluated as part of the accreditation process. For the purposes of developing the EPI, a calculated variable will be created out of combined SACSCOC standards.

SACSCOC (2011) identifies these standards as follows: CS 3.5.1 General Education Competencies or the proportion of education not focused on skills, techniques, and discipline specific courses (p. 29) and FR 4.1 Student Achievement (p. 39).

To prevent individual institutions from being identified by these specific requirements, the results of these 18 standards were combined into one metric. If the institution was in compliance with the standard during either the most recently completed

decennial certification or the fifth-year interim review, then it would receive a 1 for that standard. If it was not in compliance, then it would receive a 0 for that standard. The total possible score for this metric would be 18 and the lowest possible score would be 0. The indicator for this metric was the total score divided by 18.

Percentage of the student body who graduate: Rather than focusing on the efficiency with which students graduate, this measure determines what proportion of the student body completes degrees. This metric would capture students who transferred into the school at any point, those who took classes on a part-time basis, and any others who are not considered first-time, full-time students. These data are publically available through the IPEDS system.

Index Creation

All of the indicators listed in the previous section were included in the original factor analysis. Several of the indicators dropped out of the index, and therefore the factor analysis was repeated with the ones that had relevance to the index. The results of the principal component factor identified three factors as indicated in Table 3.6. These three factors were then labeled as equity, efficiency, and effectiveness, respectively.

Table 3.6 Results of factor analysis: Variance explained

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.52757	1.21533	0.3528	0.3528
Factor2	2.31224	1.18394	0.2312	0.5840
Factor3	1.12830	0.14703	0.1128	0.6968
Factor4	0.98127	0.35453	0.0981	0.7949
Factor5	0.62674	0.12166	0.0627	0.8576
Factor6	0.50508	0.10756	0.0505	0.9081
Factor7	0.39752	0.09083	0.0398	0.9479
Factor8	0.30669	0.16148	0.0307	0.9785
Factor9	0.14522	0.07585	0.0145	0.9931
Factor10	0.06937	.	0.0069	1.0000

Note: principal component factor (unrotated)

LR test: independent vs. saturated: $\chi^2(45) = 4062.80$ Prob> $\chi^2 = 0.0000$

The indicators for each factor were determined by their factor scores, which involved an orthogonal varimax rotation with Kaiser normalization. Nine indicators were retained because they had factor scores over 0.6. A tenth indicator for adjusted administrative expenses was also included even though its factor score was .59. The alpha score for the third factor was notably higher at 0.4636 when it was included than when it was excluded at 0.0823. These results of the rotation are displayed in Table 3.7. Based on the three factors, subscores for equity, efficiency, and effectiveness were created by adding the indicators that loaded in those factors and dividing the sum by the number of indicators. With factor scores similar to one another, weights would not alter the subscore much.

The Cronbach's alpha was used to test the reliability of the subscores (see Table 3.8). For the first two factors, related to equity and efficiency, the alpha scores are excellent at 0.8748 and 0.7982 respectively. On the other hand, the alpha for effectiveness is weaker at 0.4636, but not low enough to reject the reliability altogether. This weaker score for

effectiveness indicates that caution should be taken when drawing conclusions about how this subscore relates to higher education institutions.

A summary of the EPI is provided in Table 3.9. This table indicates the three factors of the EPI and the ten indicators within those factors. Additionally, the table provides the source of the data for the indicators. A more detailed codebook of these indicators are provided in Appendix B.

Table 3.7 Factor scores of principal component factor (rotated component matrix)

Variable	Factor1 Equity	Factor2 Efficiency	Factor3 Effectiveness	Uniqueness
Graduation Rate	0.7600	-0.2485	0.1195	0.3463
Default rates	0.8421	-0.0206	0.2073	0.2474
Proportion of bachelor's degrees awarded to minorities	-0.7982	-0.0844	0.1353	0.3374
Proportion of Pell grants in student body	-0.9245	0.0750	-0.1055	0.1285
Cost of attendance	-0.2605	0.9153	0.0221	0.0939
Cost of attendance for low- income families	0.0249	0.9323	0.0893	0.1222
Amount of student loan	0.3152	0.6607	-0.1443	0.4433
SACSCOC	-0.1285	0.0125	0.6775	0.5243
Mission expenses	0.3440	-0.0439	0.6343	0.4774
Administrative expenses	0.5088	0.2850	0.5907	0.3110

Note: Rotation method: orthogonal varimax with Kaiser normalization

Table 3.8 Cronbach's alpha scores for the indicators in each of the three factors

Factor	Item	Sign	Item-test correlation	Item-rest correlation	Average inter-item correlation	Alpha
Factor 1: Equity	Graduation rate	-	0.8212	0.6791	0.6716	0.8598
	Default rate	-	0.8650	0.7516	0.6218	0.8314
	Bachelor's degrees to minorities	+	0.7903	0.6300	0.7067	0.8785
	Pell grants	+	0.9339	0.8732	0.5435	0.7813
	Test scale				0.6359	0.8748
Factor 2: Efficiency	Cost of attendance	+	0.8904	0.7365	0.4515	0.6221
	Cost of attendance for low-income families	+	0.9219	0.8058	0.3717	0.5419
	Loan amounts	+	0.7199	0.4241	0.8831	0.9379
	Test scale				0.5687	0.7982
Factor 3: Effectiveness	SACSCOC	+	0.5572	0.0926	0.5100	0.6755
	Mission expenditures	+	0.7452	0.3697	0.1181	0.2112
	Administrative expenditures	+	0.7813	0.4348	0.0429	0.0823
	Test scale				0.2237	0.4636

Note: Test scale = mean (standardized items)

Table 3.9 EPI indicators with data sources, listed by factor

Index Weight	Factor	Indicator	Indicator source
33.3%	Equity	Graduation rate	IPEDS
		Student default rate	FSA
		Percent of bachelor's degrees to minority students	IPEDS
		Pell grant students	IPEDS
33.3%	Efficiency	Amount of student loans	IPEDS
		Cost of attendance	IPEDS
		Cost of attendance for low-income students	IPEDS
33.3%	Effectiveness	Student learning outcomes	SACSCOC
		Mission-related expenditures	IPEDS
		Administration-related expenditures	IEPDS

Traditional Accountability Tools

To test its effectiveness as an accountability tool, this research compared an institution's EPI composite score to its U.S. News and World Report (USNWR) rankings. Data were obtained from the USNWR magazines that are published annually. Although most rankings data are available publically through USNWR web sites, the magazines contain more detailed information. Rankings for national universities, national liberal arts colleges, regional universities, and regional colleges are listed as 1 being the highest rank to 200 being the lowest rank. Institutions that do not require admissions tests are not ranked because their data are not available for USNWR selectivity metrics. These institutions are excluded from the third hypothesis, but are included in the first two hypotheses.

Study Constructs

The independent variables for this study relate to institutions' social equity missions in terms of targeting special populations, offering inclusive admissions, and holding land grant status. This study considers the following special populations: African-American/Black, Asian (including Pacific Islands), Hispanic/Latino, Native American, and Women. NCES includes variables to identify historically black colleges and universities and tribal colleges; however, the U.S. Department of Education does not monitor or track status for Asian, Hispanic, or Women's serving institutions. These designations are determined based on institutional membership in their respective national organizations. Asian-serving institutions, determined through membership with the Asian American and Pacific Islander Association of Colleges and Universities, have a student enrollment with 10% or more Asian American or Pacific Islander students (APIACU, n.d.). Hispanic-serving institutions are recognized by their membership with the Hispanic Association of Colleges and Universities and by having a total Hispanic enrollment of 25% or more of the total enrollment (HACU, n.d.). Finally, Women's institutions belong to the Women's College Coalition. Although the majority of institutions across the United States enroll more women than men, women's institutions offer specific missions to serve this population (WCC, 2015). With the compilation of institutions from these sources, including NCES, this study identified institutions that serve specific populations.

Furthermore, identifying data for land-grant institutions and institutions with inclusive admissions processes are available through NCES. The admissions processes are signaled through a variable called Undergraduate Profile, which designates

admissions processes as inclusive, selective, and more selective. These designations along with institutions that have missions to serve special populations constitute the social equity missions.

Additionally, institutions' scores in the traditional accountability mechanisms served as independent variables to test the effectiveness of the new instrument. For the third hypothesis, the U.S. News and World Report ranking will serve as the independent variable.

The EPI served as the dependent variable in this study. The first hypothesis used the equity subscore as the dependent variable to test the existing assumptions that institutions with social equity missions would have lower efficiency scores. The remaining two hypotheses utilized the composite EPI score as the dependent variable.

To help isolate the relationship of EPI to institutions, control variables were necessary to limit potential external influence. These control variables included the institutions' control (public, private non-profit, and private for-profit) and Carnegie classification (Research, Master's, Baccalaureate, and Special). These variables commonly serve as controls in prior research (e.g., Archibald & Feldman, 2008b; Rutherford & Rabovsky, 2014; U.S. Department of Education, 2006). All of these variables are publically available in IPEDS.

Hypothesis testing

To test the three hypotheses for this research design, all indicators were grouped into three subcategories: equity, efficiency, and effectiveness. The first hypothesis utilized a linear regression to determine the influence of any institutional mission on its composite EPI score. Ideally, this hypothesis would determine whether the new

instrument evaluates institutions on higher education objectives without punishing any particular centrality, thereby preventing discrimination against institutions with social equity missions. The second hypothesis also employed a linear regression to measure the influence of social equity missions on the graduation rate. This hypothesis tested the assumption that institutions with social equity missions would have lower performance scores.

The last hypothesis required linear regressions to assess the EPI's effectiveness. For H₃, the composite EPI score was analyzed with the score of U.S. News and World Reports, the traditional measure of institutional success. If the traditional academic rating scores are not related to the EPI, then more research could further develop this instrument as an accountability tool.

Limitations

The primary limitation for this research is its lack of participation among the various higher education stakeholders during its creation. Although, a thorough literature review identified the weaknesses of the current performance models and some variables that based on theoretical contributions, more discourse is needed to ensure mutual agreement among the multiple perspectives. The intent of this research is to propose a new instrument for consideration and to explore whether the outcomes of a polycentric system could be measured in a more inclusive manner rather than in the existing narrow processes. Ideally, the proposed EPI could start a meaningful conversation, and input from multiple stakeholders could improve its structure.

With reference to the data points, this research cannot verify the accuracy of the data within the original data sources. The United States Department of Education does

not conduct audits of the data in the IPEDS system, and therefore, the value of this proposed EPI relies on the quality of the data as they were entered into the databases. Furthermore, some of the indicators suggested for this study could be considered proxies rather than direct measures of efficiency, equity, and effectiveness. In its current form, the EPI must rely on the data that are available, and future work could help improve the instrument's accuracy and reliability.

Delimitations

Finally, this study intentionally narrows the institutions in the study to focus on four-year institutions from the southeastern region of the United States. The researcher has twelve years' experience and connections with the Southern Association of Colleges and Schools, Commission on Colleges, and therefore, those data are more readily attainable. Caution must be taken when generalizing the results of the hypotheses, because these results may not represent all colleges and universities. However, the results of this study could determine whether future research could expand to a national setting.

CHAPTER IV

DATA ANALYSIS

The results of building a new education performance index (EPI) supported two of the hypotheses, and partially supported the third hypothesis. Institutions' characteristics such as Carnegie Classification and admissions selectivity were strongly related to graduation rates, a popular metric used to evaluate performance. If graduation rates were used alone to evaluate higher education, then those institutions with social equity missions would be adversely affected. The EPI scores were less influenced by institutions' characteristics, and those schools with social equity missions were either not affected or positively affected by the results. Finally, the relationship between the EPI and U.S. News and World Report rankings was significant for regional colleges, but not for regional universities.

Overview of Analysis

This study used three linear regressions to test the hypotheses. The researcher gathered most of the data from publically available data sources, and the SACSCOC data were entered by one of the agency's staff members. After the SACSCOC employee entered the data, he then created unique identifiers for the institutions and stripped their names from the dataset so as to protect their identities. All data were sorted in an Excel spreadsheet and then imported into STATA, version 14.

The variables for the study compare aspects of the newly formed EPI to institutional characteristics. Independent variables included the various indicators for mission: Carnegie Classification, institutional control, and social equity missions. An additional independent variable for U.S. News and World Report's College Rankings was added to the third hypothesis. For Hypotheses One and Three, the composite EPI score served as the dependent variable. The dependent variable for Hypothesis Two was the graduation rate, the most widely used performance indicator. In all of the regressions, institutions with Carnegie classifications of special or associate's were excluded from the models because their inclusion created non-normal, heteroskedastic results; however, including all of the institutions did not change the overall conclusion of the hypotheses.

Analysis for Hypothesis One

The first hypothesis sought to evaluate whether the newly developed EPI would control for institutional characteristics, particularly those associated with social equity missions. With the addition of equity measures and effectiveness measures, the EPI encompasses a broader concept of accountability. Ideally, the EPI would not be influenced by institutions' social equity missions, unlike prevalent performance metrics.

The results of the first regression support Hypothesis One as demonstrated in Table 4.1. In this regression, public, research institutions with more selective admissions practices are the constant. Institutions' selectivity had no significant influence on the composite score, and those that serve underrepresented populations have a higher coefficient than more selective, public, research institutions. Furthermore, land-grant institutions have significantly higher coefficients than non-land grants. Carnegie Classification had no influence on the EPI score, indicated by the lack of significance for

the master's and bachelor's levels. Both private and for-profit institutions scored significantly lower than public institutions.

Table 4.1 Regression analysis of the EPI and institutional characteristics

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	203.9634	2.028316	100.56	0.000***	
Private	-36.45399	1.583195	-23.03	0.000***	1.53
For-profit	-63.1829	6.275594	-10.07	0.000***	1.07
Master's	-3.20492	1.793939	-1.79	0.074	1.93
Bachelor's	-1.211291	2.123199	-0.57	0.569	2.62
Inclusive	2.679172	2.111229	1.27	0.205	2.47
Selective	9165966	1.82426	0.50	0.616	2.07
Land grant	-1.346223	3.071041	-0.44	0.661	1.23
Population	16.77547	1.734949	9.67	0.000***	1.31

Dependent variable = EPI, N = 722; $R^2 = 0.5481$; Adj. $R^2 = 0.5431$; F (8, 714) = 108.26, Prob > F = 0.000; mean VIF = 1.78; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: p = 0.8425; Shapiro-Wilk W: p = 0.03195; Durbin-Watson = 0.7658
***p < .001

A histogram of the EPI score (see Figure 4.1) reveals a fairly symmetric, unimodal pattern, following a generally expected distribution with a few abnormalities. Several diagnostic tests were run on this regression, including multicollinearity, heteroskedasticity, normality, and autocorrelation. The model had no multicollinearity as indicated by the mean variance inflation factor (VIF) of 1.78, and none of the independent variables had a VIF higher than 2.62 (refer to Table 4.1). A test for heteroskedasticity was also reassuring because its probability was 0.8425. The other two tests had a few initial problems, however. The Shapiro-Wilk W test failed to support that the data were normal, and the Durbin-Watson test also indicated likely autocorrelation in the regression.

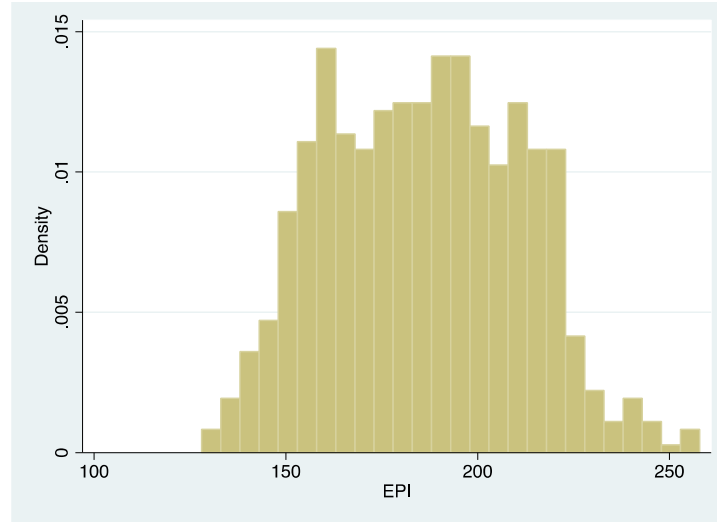


Figure 4.1 Histogram of the EPI dependent variable

An analysis on the inter-quartile range (IQR) within the data revealed six mild outliers as contributing to the normality problems. Two instances were low and the other four were high. The two low institutions occurred with public, research-level schools with selective admissions. Three of the four high outliers institutions were private, bachelor's level schools with inclusive admissions. The fourth was a master's level, public school with selective admissions. When these six institutions were excluded, the Shapiro-Wilk W test failed to reject that the data were normal with a significance of 0.08694. The same regression for the first hypothesis was re-run without the six outliers, and the results are provided in Table 4.2. With a normal data set, the adjusted R^2 moved from 58.2% to 60.1%. The only change with the normal dataset is that the master's level institutions were significantly lower than research institutions, while none of the Carnegie Classifications had any significance in the original model.

Table 4.2 Regression analysis of the EPI and institutional characteristics, excluding the six outliers

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	205.5788	1.895077	108.48	0.000***	
Private	-37.53507	1.478039	-25.40	0.000***	1.51
For-profit	-62.77882	5.834628	-10.76	0.000***	1.07
Master's	-3.923809	1.685453	-2.33	0.020*	1.93
Bachelor's	-3.419254	1.98857	-1.72	0.086	2.57
Inclusive	1.564652	1.972553	0.79	0.428	2.43
Selective	.9364464	1.701291	0.55	0.582	2.03
Land grant	-2.669588	2.859519	-0.93	0.351	1.23
Population	17.12609	1.630213	10.51	0.000***	1.31

Dependent variable = EPI, N = 704; $R^2 = 0.6006$; Adj. $R^2 = 0.6051$; $F(8, 696) = 133.33$, Prob > F = 0.000; mean VIF = 1.76; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: p = 0.3178; Shapiro-Wilk W: p = 0.08694

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

To adjust for the issues with autocorrelation, a threshold generalized autoregressive conditional heteroskedastic (TGARCH) model was used (see Table 4.3). This test corrected for serial correlation and moved the R^2 from 54.8% to 72.2%. The Durbin-Watson test moved from 0.7658 to 1.9426, which means autocorrelation is unlikely. The primary difference in findings between this model and the original one depicted in Table 4.1 is that institutions with inclusive admissions have significantly higher EPI scores than institutions with selective or more selective admissions standards. As in all of the models for the first hypothesis, private and for-profit institutions have significantly lower scores than public institutions, and institutions that serve underrepresented populations have significantly higher scores than their counterparts. No other institutional characteristic has significant impact on the scores.

Table 4.3 TGARCH analysis of the EPI and institutional characteristics

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	204.2453	2.5963	78.67	0.000***	
Private	-36.1964	1.4370	-25.19	0.000***	1.51
For-profit	-72.6513	6.1349	-11.84	0.000***	1.07
Master's	-3.2701	3.0178	-1.08	0.279	1.93
Bachelor's	-2.3525	3.0307	-0.78	0.438	2.57
Inclusive	5.2202	1.6863	3.10	0.002**	2.43
Selective	0.3663	1.5494	0.24	0.813	2.03
Land grant	-4.6420	2.5924	-1.79	0.073	1.23
Population	14.6470	1.3269	11.04	0.000***	1.31

Dependent variable = EPI, N = 721; $R^2 = 0.7219$; $F(8, 713) = 176.68$, Prob > F = 0.000
 ***p < .001 **p < .01

The diagnostic tests indicate that the large sample of institutions vary widely among the institutional types. Removing the outliers results in normal error distribution in the regression, but the findings change for bachelor's level institutions compared to the inferences drawn from the original model. Furthermore, the original model tested positive for autocorrelation, making the predictive nature more difficult in volatile higher education arenas. A TGARCH model corrected for the serial correlation, but again the findings were different from the original model in that inclusive institutions would have significantly higher EPI scores than other forms of admissions standards. Such results overcorrect for that specific type of social equity mission. More research is needed to fine-tune the variables within the EPI; however, the sample for this study focuses on about 20% of the institutions in the southeastern region, which comprises an even smaller proportion of the institutions in the United States. As more data points from other institutions and regions are incorporated into the model, some of these deficiencies could correct themselves or worsen. Regardless, the initial findings provide promising evidence that the EPI controls for different types of institutional missions, thereby preserving

institutional diversity, and would serve as an alternative to the current use of narrow performance measures.

Critics (e.g., Moynihan et al., 2011; Piotrowski & Rosenbloom, 2002) of performance mechanisms often cite concerns with focusing on input to output comparisons rather than evaluating longer-term, mission-related outcomes. By focusing on what can be counted and evaluated numerically, institutions may neglect to evaluate the fulfillment of their missions. Such concerns echo the facts versus value debates that Simon and Waldo grappled with. Waldo (2006) feared that a preoccupation with efficiency and economy often neglected the social values that are important to society. Even Simon (1997) admitted that input to output comparisons in the search for quantifiable measures often result in “satisficing” tangible economic objectives in lieu of abstract value premises (p. 252), but such measures do not provide a complete picture.

The results of the EPI test suggest that the newly developed instrument does control for most mission-related characteristics. Institutional control continues to influence the EPI results, but those same characteristics would affect traditional performance metrics regardless as well be described in Hypotheses Two and Three. With an adjusted R^2 of 57.6%, the institutional characteristics do explain a large portion of the variations in the EPI score; however, those variations do not adversely affect institutions with social equity missions. Such considerations for mission-related characteristics, particularly those missions focused on social equity, preserve institutional diversity (Harris, 2013). The preservation of institutional diversity follows the polycentric theory that Ostrom (1973, 2007) and colleagues (1961) advanced to allow for multiple, overlapping jurisdictions. With the institutional characteristics or missions forming the

centricities, each type provides a different approach to higher education whether in focus of academic programs as identified by Carnegie Classification or by access to education as identified by the level of selectivity in admissions. Furthermore, the tolerance in the EPI for different social equity missions echo the spirit of Frederickson (1980, 1990) who sought public policies informed by concepts of efficiency, effectiveness, and equity.

Analysis for Hypothesis Two

To test underlying assumptions of how all of the types of institutions perform in commonly used accountability measures, the second hypothesis compares institutions' graduation rate to the mission-related independent variables. More specifically, this hypothesis tests whether institutions with social equity missions have lower performance subscores than their counterparts. The graduation rate is recognized as the most commonly used indicator to assess an institution's success (Conner & Rabovsky, 2011; McLendon et al., 2006). Many accountability mechanisms focus heavily on graduation rates, which many critics argue do not provide a complete picture of institutional performance (Archibald & Feldman, 2008b; Dougherty, Natow, & Vega, 2012). In particular, Hamrick and colleagues (2004) and Kuh and Pascarella (2004) assert that graduation rates are determined by institutional characteristics, not good practices of effective education; therefore, graduation rates do not accurately measure the true outcome of higher education.

The results for the second regression support Hypothesis Two as indicated by Table 4.4. Public, research institutions that are more selective in admissions remain the constant as with the first regression. Private non-profit institutions had significantly higher graduation rates, while for-profit institutions had no significant difference.

Institutional admissions selectivity seems to have the most influence in graduation rates with selective admissions practices scoring significantly lower than more selective institutions, and inclusive admissions practices scoring even lower than selective institutions. The results for selectivity variables also support prior literature, suggesting that graduation rates are more indicative of an institution's level of access than its effectiveness (Kuh & Pascarella, 2004; Pascarella et al., 2006). Interestingly, Carnegie Classification does not significantly influence graduation rates, most likely as a result of controlling for selectivity. Finally, land-grant institutions have significantly higher scores than their non land-grant counterparts, but institutions that serve underrepresented populations have significantly lower graduation rates than those serving a general population. With an adjusted R² of 57.8%, the model explains over half of the variance in graduation rates.

Table 4.4 Regression analysis of graduation rates and institutional characteristics

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	67.79138	1.245714	54.42	0.000***	
Private	5.706456	0.97869	5.83	0.000***	1.53
For-profit	8.065719	3.881388	2.08	0.038*	1.07
Master's	-5.508241	1.107971	-4.97	0.000***	1.93
Bachelor's	-6.183876	1.312243	-4.71	0.000***	2.62
Inclusive	-31.0144	1.303455	-23.79	0.000***	2.47
Selective	-16.84288	1.124851	-14.97	0.000***	2.07
Land grant	7.095293	1.896694	3.74	0.000***	1.23
Population	-3.458036	1.072305	-3.22	0.001**	1.31

Dependent variable = graduation rate, N= 723; $R^2 = 0.5824$; Adj. $R^2 = 0.5777$; F (8, 715) = 124.64; Prob > F = 0.000; mean VIF = 1.78; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: p = 0.7025; Shapiro-Wilk W test: p < .001; Durbin-Watson = 0.9465
 ***p < .001 ** p < .01 * p < .05

As with the first hypothesis, the histogram of the graduation rate indicates a unimodal pattern, with some clear outliers or variations (refer to Figure 4.2). The same diagnostic tests were run for this regression as with the first regression, including tests for multicollinearity, normality, heteroskedasticity, and autocorrelation. Because the same institutions and dataset were used in the first hypothesis as with the second hypothesis, the conclusions of all the diagnostic tests were the same. This model has no issues with collinearity or heteroskedasticity; however, troubles arise with normality and autocorrelation.

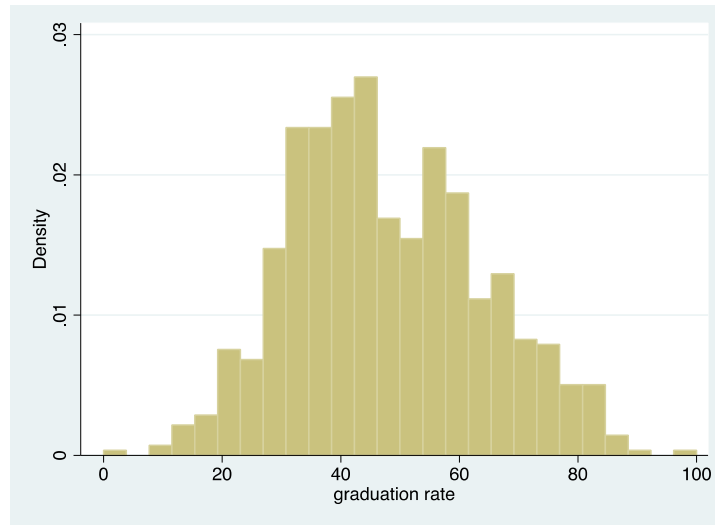


Figure 4.2 Histogram for graduation rate

A more in-depth analysis of the normality issues with this model indicate fifteen mild outliers and two severe outliers. The majority of the outliers are on the high side as indicated in Table 4.5 below. Most of the outliers are private, bachelor's level institutions that tend to have higher graduation rates than their counterparts. One for-profit and one public institution has abnormally high graduation rates. No other pattern is apparent from the level of selectivity in admissions. When these outliers are excluded from the model that tests graduation rates against institutional characteristics, much of the same conclusions can be drawn from the data (refer to Table 4.6). In this case, for-profit institutions had no significant effect on graduation rates. Private and land-grant institutions have significantly higher graduation rates, while all other institutional characteristics have significantly lower scores. In particular, inclusive institutions have dramatically lower coefficients than any other predictor. The adjusted R^2 moved from 57.8% in the original model to 68.8%.

Table 4.5 Inter-quartile range indicating the outliers for the regression testing graduation rates against institutional characteristics

	Low	High
Mild outliers	4 (0.55%)	11 (1.52%)
Severe outliers	1 (0.14%)	1 (0.14%)

Table 4.6 Regression analysis of graduation rates and institutional characteristics, excluding outliers

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	70.04938	1.052354	66.56	0.000***	
Private	5.622043	.8178088	6.87	0.000***	1.53
For-profit	-7.632609	4.457824	-1.71	0.087	1.07
Master's	-6.44059	.9314474	-6.91	0.000***	1.93
Bachelor's	-7.175555	1.103139	-6.50	0.000***	2.62
Inclusive	-32.79244	1.139985	-28.77	0.000***	2.47
Selective	-19.06762	.9564987	-19.93	0.000***	2.07
Land grant	5.658072	1.577337	3.59	0.000***	1.23
Population	-2.353169	.9636848	-2.44	0.015*	1.31

Dependent variable = graduation rate, N = 680; $R^2 = 0.6916$; Adj. $R^2 = 0.6879$; F (8, 671) = 188.12; Prob > F = 0.000; mean VIF = 1.78; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: p = 0.6502; Shapiro-Wilk W test: p = 0.47690

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

Another TGARCH corrected for autocorrelation in the graduation rate model (see Table 4.7). The revised model moved the R^2 from 58.2% to 70.8%, and the Durbin-Watson score moved from 0.9465 to 1.9935. Much like with the full graduation rate model and the model with no outliers, the TGARCH resulted in the same conclusions that private and land-grant institutions had significantly higher graduation rates than their counterparts, while all other institutional characteristics had significantly lower scores. Despite all of the corrections for normality and autocorrelation, all models of graduation rates explain the same variance and significance. As predicted by prior research (Archibald & Feldman, 2008b; Hamrick et al., 2004; U.S. Department of Education,

2006), graduation rates are as much a sign of institutional performance as they are institutional characteristics and student-level inputs.

Table 4.7 TGARCH regression of graduation rates and institutional characteristics

Variable	Coef.	Std. Error	t	P> t	VIFs
Constant	64.4269	1.8099	35.60	0.000***	
Private	7.3506	0.8393	8.76	0.000***	1.53
For-profit	7.9891	2.1624	3.69	0.000***	1.07
Master's	-5.2926	1.9186	-2.76	0.006**	1.93
Bachelor's	-7.8234	1.9785	-3.95	0.000***	2.62
Inclusive	-24.9445	1.0311	-24.19	0.000***	2.47
Selective	-14.0982	0.8831	-15.96	0.000***	2.07
Land grant	10.3412	2.7546	3.75	0.000***	1.23
Population	-6.5171	0.8532	-7.64	0.001**	1.31

Dependent variable = graduation rate, N = 723; $R^2 = 0.7078$; $F(8, 715) = 124.64$; $Prob > F = 0.000$; mean VIF = 1.78; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: $p = 0.2333$; Shapiro-Wilk W test: $p = 0.49001$
 *** $p < .001$ ** $p < .01$

It may be *a priori* to suggest that an institution with higher graduation rates would have lower social equity indicators and vice-versa (e.g., McLendon et al., 2006; U.S. Department of Education, 2006); however, this research supports that assumption. As Figure 4.3 indicates, graduation rates have a negative relationship with the proportion of Pell grant students. The correlation between the two is -70.7%, which is significant at less than .001 level. Both of these variables appear together in the equity factor, with graduation rate having a negative factor score compared to the positive Pell grant ratios.

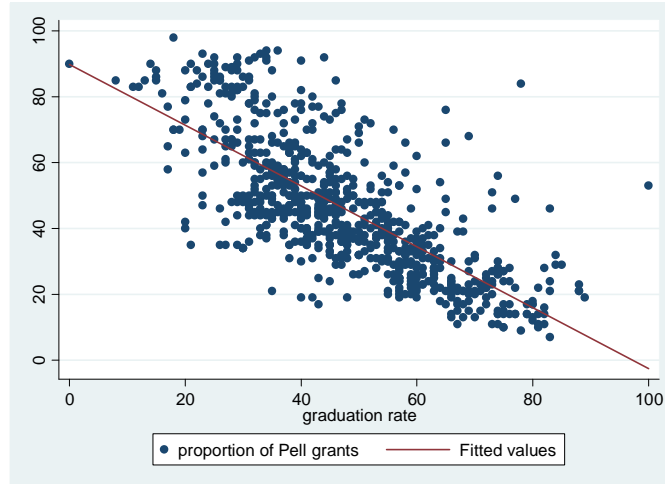


Figure 4.3 Scatterplot and fitted line depicting the tradeoff between graduation rates and the proportion of Pell grant students

Note: Pearson's correlation = -0.7071 , significant at the less than $.01$ level (2-tailed)

Related to the comparison between graduation rates and Pell grant students, similar patterns are found with relationships between graduation rates and costs. As graduation rates increased, the cost of attendance also increased. Likewise, cost of attendance is negatively associated with Pell grant students, thus, as costs decrease, the number of Pell grant students increase. The comparison between Pell grant students and cost of attendance for low-income students was also negative, but not significantly related (refer to Figure 4.4). In the development of the EPI, the efficiency subscore was calculated using cost percentiles, depicting low cost institutions in the higher percentiles. Therefore, graduation rates would be negatively associated with efficiency while the proportion of Pell grant students would be positively associated (refer to Figure 4.5).

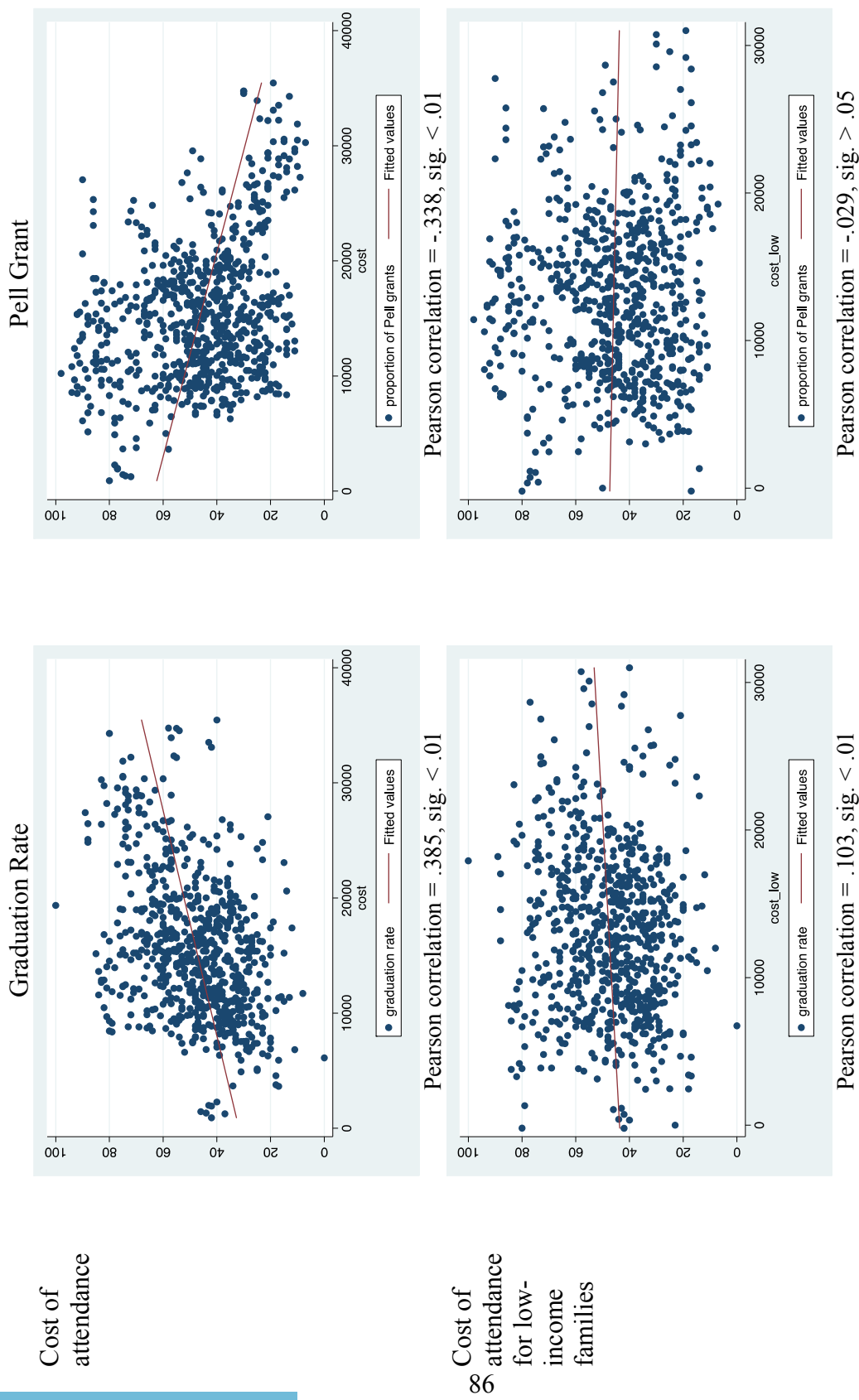


Figure 4.4 Scatterplots with fitted lines depicting graduation rates and proportions of Pell grants with costs

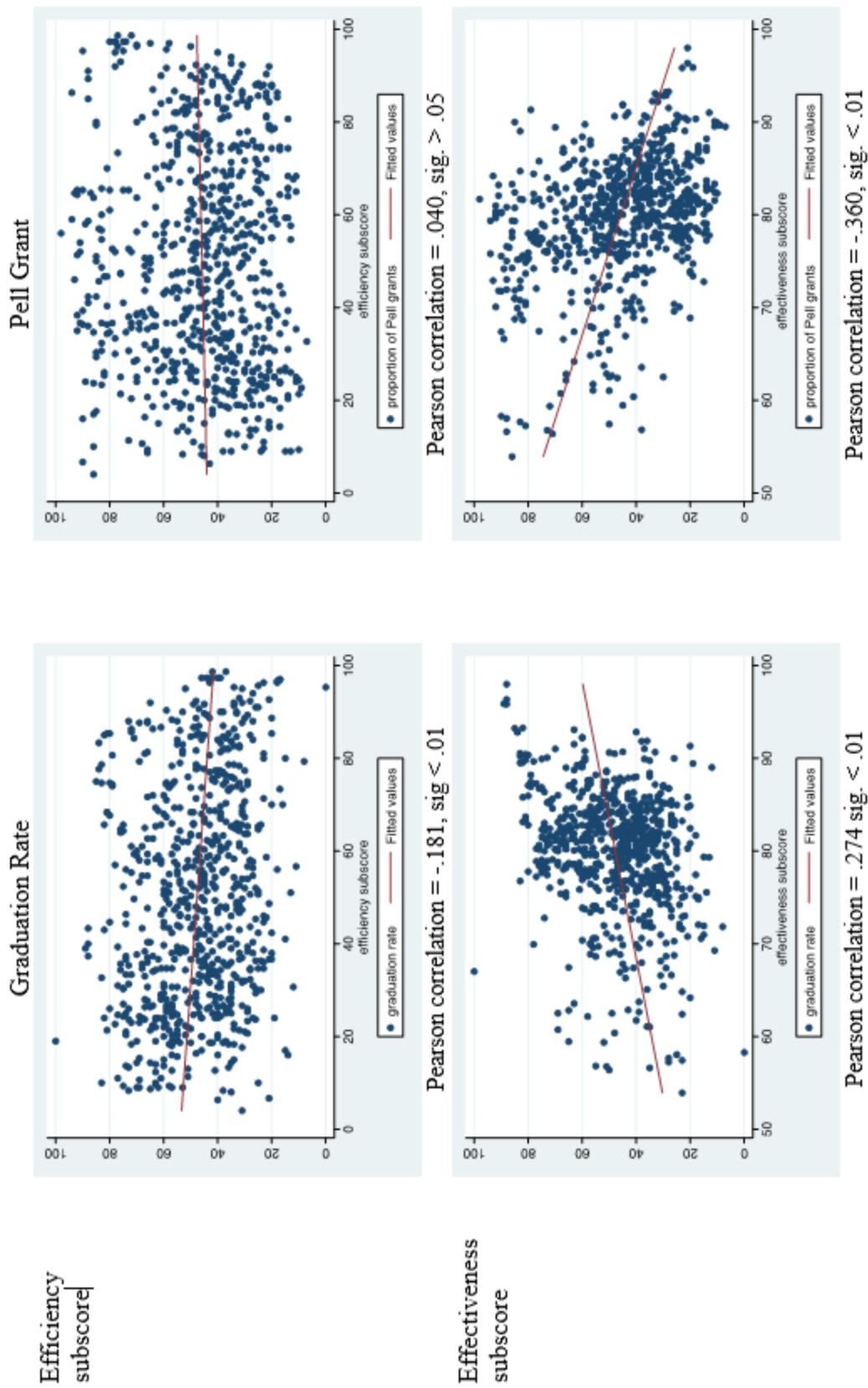


Figure 4.5 Scatterplots with fitted lines depicting graduation rates and proportions of Pell grants with efficiency and effectiveness

A debate remains about whether proportions of low-income students are the same measures as proportions of minority students. Some researchers equate proportions of minority with proportions of low-income students (e.g., Wood, n.d.), and others suggest that these measures may be related (particularly in the southeastern region), but are not necessarily the same (Carnevale & Rose, 2003; Sirin, 2005). In this study, the proportion of Pell grant students does have a strong positive relationship to minority students, but the Pearson correlation is 71.5%, which is significant at the .01 level (see Figure 4.6). Despite the strong correlation, the two variables are not exactly the same. Therefore, comparisons on the relationships between graduation rates and minority students are warranted. A Pearson's correlation indicates a relatively strong, negative, significant relationship between graduation rates and the proportion of minority students (see Table 4.8).



Figure 4.6 Scatterplot and fitted line comparing proportion of Pell grant students to the proportion of minority students in the undergraduate student population

Notes: Pearson's correlation = .715, which is significant at the .01 level (2-tailed)

Table 4.8 provides the parallel correlations between the proportions of Pell grant (or low-income) students and the proportions of minority students to the same variables in the study. Although the significant correlations generally seem to follow similar trends, the impact is not the same for low-income and minority students. The cost of education for low-income students had no significant relationship for Pell-grant students, while costs for low-income students were significantly related, but only slightly higher as the proportion of minority students increased. The only other obvious difference between the two types of indicators is that SACSCOC is negatively associated with Pell-grant students while positively associated with minority students; neither correlation is significant, however. For the rest of the correlations, proportions of Pell-grant students provide a different perspective from proportions of minority students. Both variables are included in the models for this study.

Table 4.8 Comparison of Pearson's correlation between proportions of Pell-grant students and proportions of minority students against other predictors

	Proportions of Pell-grant students	Proportions of minority students
Graduation rate	-.707**	-.474**
Cost of attendance	-.338**	-.128**
Cost of attendance for low-income students	-.029	.08*
Efficiency subscore	.04	-.068
Effectiveness subscore	-.360**	-.204**
SACSCOC	-.043	.027

** p < .01 * p < .05

As accrediting leaders, such as Dr. Wheelan and Dr. Elgart (2016), have asserted, policymakers assume that graduation rates equate to effectiveness, and that an institution's performance can be solely measured by a single variable. A comparison

between graduation rates and the effectiveness subscore do support the assumption that a positive relationship exists between graduation rates and effectiveness. The Pearson's correlation between the two is 27.4%, which is significant at the .01 level.

As one would expect, higher Pell grant percentages negatively correlate with effectiveness and have a Pearson's correlation of -36.0%, which is significantly at the .01 level (see Figure 4.7). These relationships are consistent given the strong negative relationship between graduation rates and the proportion of Pell grant students.

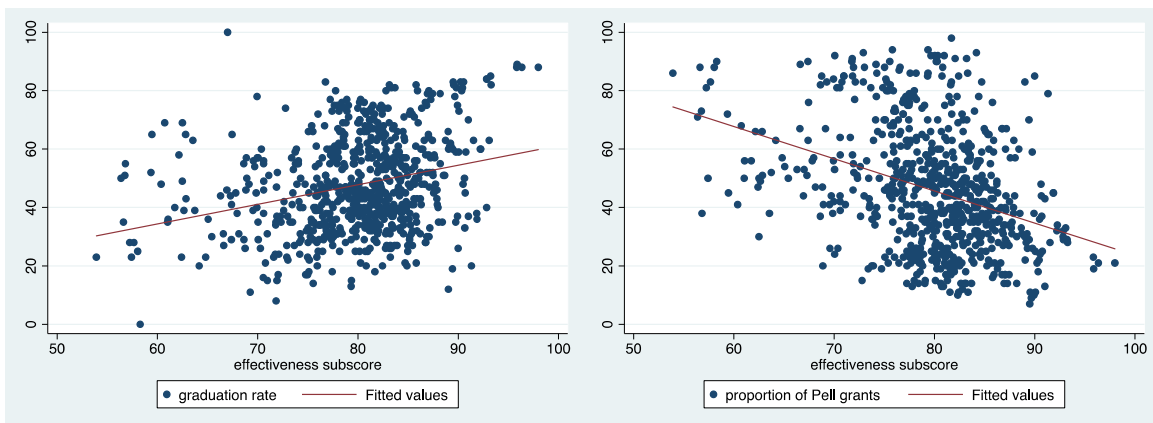


Figure 4.7 Scatterplot with fitted line comparing graduation rates to the effectiveness subscore and proportion of Pell grant students to the effectiveness subscore

Notes: Graduation rate and effectiveness subscore: Pearson's correlation = .274, significant at the .01 level (2-tailed).

Proportion of Pell grant students and effectiveness subscore: Pearson's correlation = -.360, significant at the .01 level (2-tailed)

Caution must be taken when relying on graduation rates alone to predict effectiveness. First, the effectiveness subscore had a weak Cronbach's alpha score at 0.46. This subscore consists of input metrics for expenditures as well as outcomes for accreditation. If one compares the relationship of graduation rates to SACSCOC scores, a much weaker, but significantly positive correlation can be found with a Pearson's

correlation of 8.4%, significant at less than .01. As indicated in Table 4.8, Pell grants and minority proportions have no significant influence on SACSCOC scores.

More importantly for this research, higher graduation rates, although a potential signal of effectiveness, are also a signal of low social equity. In other words, institutions that enroll high-income students have higher graduation rates and may be more effective than those that have higher proportions of low-income students. If performance continues to stress higher graduation rates, then institutions that serve low-income students will be at a disadvantage. A concerning implication is that the pressure to increase graduation rates could incentivize institutions to restrict access for low-income students.

One final caution to mention, these scatterplots indicate relatively weak relationships and several outliers. Other factors beyond these basic bivariate comparisons exist, such as institutional characteristics related to control (i.e., public, private, for-profit), Carnegie status (i.e., research, masters, and bachelors), and selectivity (i.e., inclusive, selective, and more selective admissions). The EPI analyzed in the first hypothesis controls for many of these institutional characteristics.

Further analysis suggests that graduation rates have a slightly negative, significant relationship with the EPI (refer to Figure 4.8). The scatterplot indicates a wide spread in data points, which again suggests that other factors are needed to provide a stronger relationship. On the other hand, the proportion of Pell grant students has a slightly positive, significant relationship with the EPI. With correlations this small, more influences are needed to better predict an institution's EPI than its graduation rate and proportion of Pell-grant students.

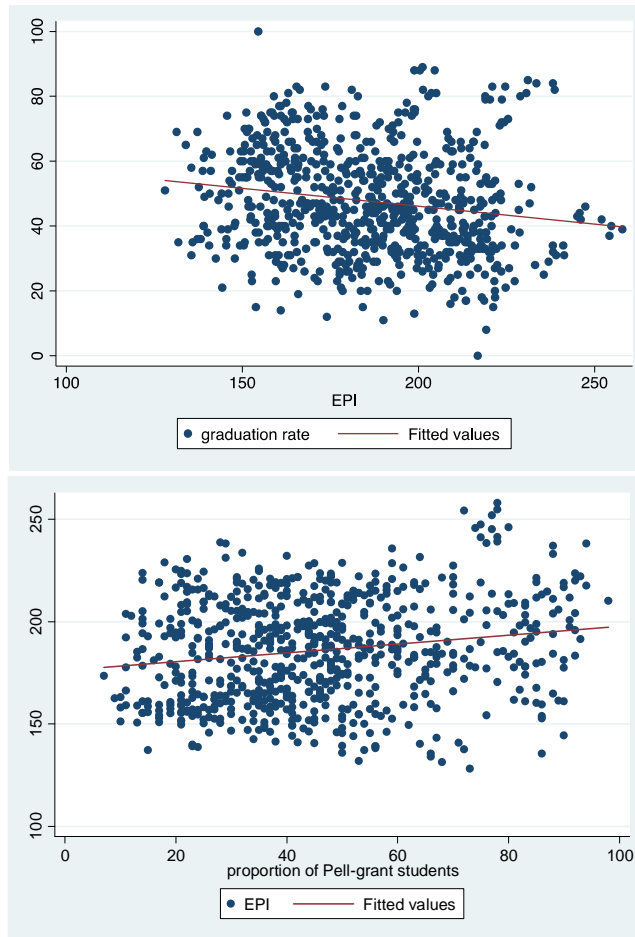


Figure 4.8 Scatterplot with fitted line comparing graduation rates to the EPI and proportion of Pell grant students to the EPI

Notes: Graduation rate and EPI: Pearson's correlation = $-.171$, significant at the $.01$ level (2-tailed)

Proportion of Pell-grant students and EPI: Pearson's correlation = $.175$, significant at the $.01$ level (2-tailed)

The results of this second hypothesis and the diagnostic tests all indicate that graduation rates are a poor measure of institutional success, because they signal effectiveness for institutions that serve high-income students. The lower the graduation rate, the more likely that that institution has a mission to educate underrepresented populations. These findings support a multitude of prior research asserting that

graduation rates relate more to student and institutional inputs than to educational effectiveness (Gansemer-Topf & Schuh, 2006; Hamrick et al., 2004; Pike & Graunke, 2015). Rather than develop higher education policies around metrics that misrepresent institutions that serve an already advantaged population, policymakers could consider the EPI, which controls for many institutional characteristics associated with students' socio-economic status.

Analysis for Hypothesis Three

The third hypothesis compares the EPI to traditional rankings—namely U.S. News and World Reports (USNWR). The hypothesis states that the EPI would not be related to U.S. News Ranking, because the traditional models do not account for equity. Because the SACSCOC variable in the effectiveness score applies only to institutions in the southeastern region, a national comparison would not necessarily be accurate. Therefore, the two models included in this section pertain to the regional colleges and universities that do fall within the SACSCOC purview. Carnegie Classifications of bachelor's and master's loosely distinguish colleges and universities respectively.

Four years of numerical USNWR rankings comprised the independent variable compared with the EPI score. The regressions including USNWR for the third hypothesis have mixed results. The rankings have no significant relationship to the EPI scores for regional universities, but they are significantly related for regional colleges.

The histogram for USNWR for regional universities displays as expected (see Figure 4.9). The density is skewed to the left, with a preference for the lower USNWR scores. The lower the score, the higher the rank for USNWR. However, the scatter plot and fitted line along with a Pearson's correlation comparing USNWR and EPI scores for

regional universities indicates a lack of relationship between the two variables (see Figure 4.10).

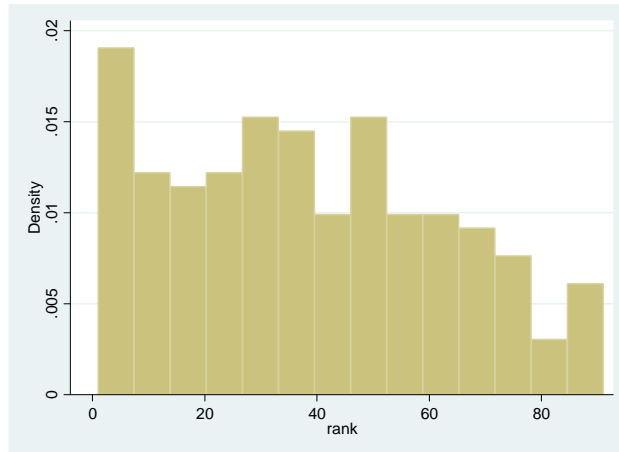


Figure 4.9 Histogram of USNWR scores for regional universities

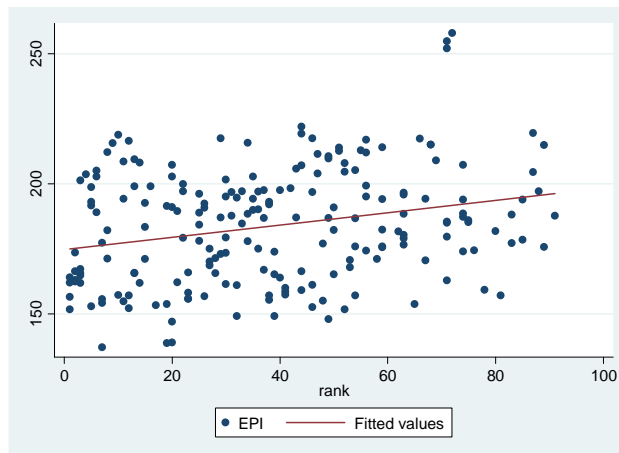


Figure 4.10 Scatterplot and fitted line comparing USNWR to the EPI score

The regression that compares the EPI to institutional characteristics displayed no significant influence from Carnegie Classification, selectivity, and USNWR scores (see Table 4.9). Universities that serve underrepresented populations had significantly higher

EPI scores, while private and land-grant institutions had significantly lower scores. For-profit institutions were not included in this model. With an adjusted R-squared of 63.5%, the model describes more than half of the variance for EPI scores.

Table 4.9 Results to test the relationship between the EPI and U.S. News and World Report rankings for regional universities

Variable	Coef.	Std. Error	t	P> t	VIF
Constant	195.4991	6.795017	28.77	0.000***	
Private	-34.82333	2.023659	-17.21	0.000***	1.17
Master's	3.191368	6.233799	0.51	0.609	1.07
Inclusive	-1.131194	4.639435	-0.24	0.808	3.02
Selective	-2.469059	2.968147	-0.83	0.407	2.25
Land grant	-29.57645	8.564825	-3.45	0.001**	1.22
Population	25.64574	3.066607	8.36	0.000***	1.28
USNWR rank	.0707193	.0547536	1.29	0.198	2.00

Dependent variable = EPI, N = 204; R² = 0.6489; Adj. R² = 0.6364; F (8, 196) = 51.76, Prob > F = 0.000; mean VIF = 1.72; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity = p < 0.2198; Shapiro-Wilk W test: p = 0.15923; Durbin-Watson = 1.0388

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

Autocorrelation was the only diagnostic test that warranted further attention. As indicated in Table 4.9, the EPI model comparing USNWR scores for regional universities were normal, homoskedastic, and had no multicollinearity. The Durbin-Watson appeared to indicate autocorrelation, so another TGARCH was needed for this model. The TGARCH increased the R² from 64.9% to 72.8%, and the Durbin-Watson moved from 1.0388 to 1.9449 (see Table 4.10). The inferences drawn from the revised model were no different than the original model. USNWR score had no influence on the EPI. Private and land-grant institutions had a significantly negative relationship when controlling for USNWR scores, while institutions serving underrepresented populations had significantly higher EPI scores.

Table 4.10 TGARCH comparing EPI and U.S. News and World Report rankings for regional universities

Variable	Coef.	Std. Error	t	P> t
Constant	198.8610	6.8490	29.03	0.000***
Private	-36.1100	1.8588	-19.43	0.000***
Master's	1.4204	6.3699	0.22	0.824
Inclusive	-0.7287	4.2039	-0.17	0.862
Selective	-3.3676	3.0853	-1.09	0.275
Land grant	-28.0545	8.9817	-3.12	0.002**
Population	25.9920	2.5867	10.05	0.000***
USNWR rank	0.0623	0.0517	1.21	0.228

Dependent variable = EPI, N = 204; $R^2 = 0.7283$; $F(8, 196) = 90.0$,

Prob > F = 0.000; Durbin-Watson = 1.9449

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

In the same model for regional colleges, the constant reflected public, bachelor's institutions with very selective admissions. The histogram for USNWR for regional college reflects similar findings as with regional universities with a density skewed to the left (see Figure 4.11). The scatter plot and fitted line comparing USNWR and EPI scores for regional colleges indicates even looser, negative association than for regional universities (see Figure 4.12).

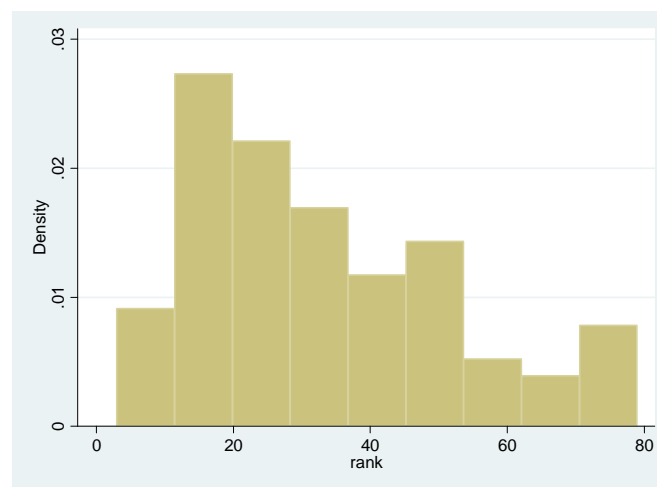


Figure 4.11 Histogram of USNWR scores for regional colleges

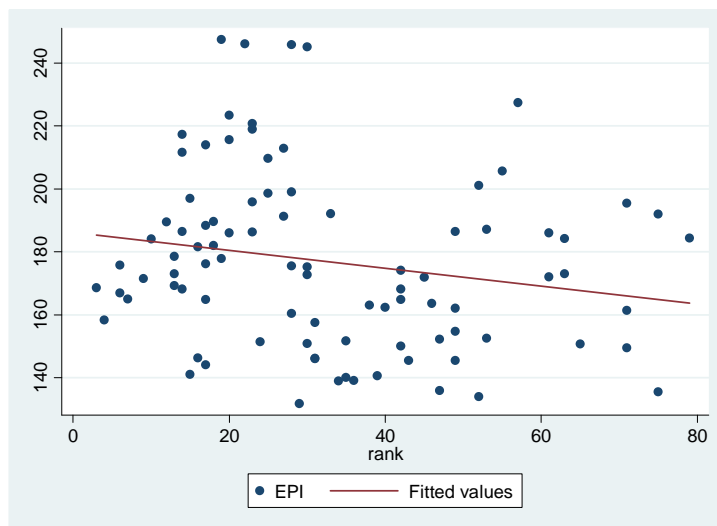


Figure 4.12 Scatterplot and fitted line comparing EPI to USNWR scores for regional colleges

As indicated by the scatterplot, USNWR rankings are significantly, negatively related to EPI scores (see Table 4.11). Because the scale for USNWR favors institutions with lower scores, a negative coefficient for regional colleges does imply that USNWR rank relates to EPI scores. Private colleges in most of the analyses in this study have significantly lower EPI scores, while institutions that serve underrepresented populations have significantly higher EPI scores, even when controlling for USNWR scores. However, this model has a lower adjusted R^2 at 47.9% and a much lower sample size than any of the others in this overall study. Research, land-grant, and for-profit institutions were excluded from the model, and selective institutions were dropped because of collinearity.

Table 4.11 Results to test the relationship between the EPI and U.S. News and World Report rankings for regional colleges

Variable	Coef.	Std. Error	t	P> t	VIF
Constant	224.6697	6.362825	35.31	0.000***	
Private	-47.01936	5.900368	-7.97	0.000***	1.08
Master's	26.06011	14.70634	1.77	0.080	1.05
Inclusive	-5.18526	4.991142	-1.04	0.302	1.40
Population	18.39235	6.400332	2.87	0.005**	1.20
USNWR rank	-.2888735	.1311743	-2.20	0.030*	1.37

Dependent variable = EPI, N = 90; $R^2 = 0.5082$; Adj. $R^2 = 0.4793$; $F(5, 85) = 17.57$, Prob > F = 0.000; mean VIF = 1.22; Breusch-Pagan / Cook-Weisberg test for heteroskedasticity: p = 0.1755; Shapiro-Wilk W: p = 0.04284; Durbin-Watson = 0.8334
 *** p < .001 ** p < .01 * p < .05

As with the first two hypotheses, diagnostic tests indicate non-normality and autocorrelation; however, the model appears to be homoskedastic and has no multicollinearity. The interquartile range does not indicate any outliers, whether mild or severe. Another TGARCH addresses the shortcomings of the original model for regional colleges. After the TGARCH, the R^2 moved from 50.8% to 68.2%, and the Durbin-Watson score moved from 0.8334 to 1.8977. The revised model also corrects for normality. Interestingly, the TGARCH output was exactly the same as the original model displayed in Table 4.11, meaning that no further treatment is needed for the model depicting regional colleges in this dataset.

The mixed results for the third hypothesis make the comparison between the EPI and USNWR rankings inconclusive. Up to 72 institutions were categorized as regional universities, but only 22 institutions were included in the regional college models. That leaves 101 institutions with no comparable USNWR ranking. These low sample numbers make generalizability difficult. Furthermore, because institutions with social equity missions, particularly those with inclusive admissions practices, are excluded from

USNWR rankings, the EPI provides a more encompassing accountability measure that applies to broader types of institutions.

Much prior research warns about using academic rankings as a basis for evaluating educational effectiveness. For example, Kuh and Pascarella (2004) assert that these rankings merely measure an institution's selectivity in admissions and not necessarily the association with sound educational practices. These authors strongly suggest the development of alternative indicators of effective practices. Furthermore, other critics warn of the adverse repercussions associated with rising through academics ranks. Researchers such as Meredith (2004) and Bastedo and Bowman (2009, 2010, 2011) found negative implications for socioeconomic and racial demographics. By controlling for institutional characteristics associated with socioeconomic and racial demographics, the EPI minimizes the adverse effects on institutions with social equity missions, and the newly developed instrument allows for the inclusion of effective educational practices.

CHAPTER V

CONCLUSIONS

This study developed an alternative accountability instrument for higher education that combines measures related to efficiency, equity, and effectiveness, called the Education Performance Index (EPI). Although graduation rates and related efficiency metrics do have a purpose in accountability, they portray a narrow perspective of institutional performance often more related to an institution's characteristics than its educational efforts. The EPI was applied to 195 institutions in the southeastern region across four years.

The results of this study support the first hypothesis that institutions with social equity missions would not have significantly lower scores than their counterparts. Adding dimensions for equity and effectiveness diminishes the influence that institutional characteristics have on accountability measures. The EPI provides a more comprehensive picture of accountability that efficiency measures alone.

An analysis of the EPI upholds the second hypothesis and prior literature, which asserts that performance in terms of graduation rates favor institutions with more selective admissions criteria and fewer low-income and underrepresented students (e.g., Hamrick et al., 2004; Mettler, 2014; Pascarella et al., 2006). Institutional characteristics comprise 57.8% of the variation in graduation rates as depicted in Table 4.4. Those

institutions with social equity missions have significantly lower graduation rates than their counterparts.

Finally, comparisons between the EPI and traditional rankings as measured by U.S. News and World Report (USNWR) partially supported the third hypothesis. Because the accreditation metric in this study is regionally based, the national universities and national liberal arts rankings could not be used in the comparison. Regional universities saw no significant relationship between the EPI and USNWR rankings, but regional colleges did have a significant negative, albeit small, relationship between the scores and the rankings. This last finding would seem as though traditional rankings would be indicative of institutional performance for small colleges; however this hypothesis excludes 101 (51.8%) institutions because they had did not have any or had national USNWR rankings. Therefore, the EPI has broader applications than traditional rankings alone.

Several unique dimensions separate the EPI from prior performance metrics. The three subcategories of the EPI help shift the focus away from institutional characteristics. Using the EPI score, institutions with social equity missions would be less likely to experience adverse effects that might result from evaluations based on efficiency measures alone. Finally, by allowing the results of accreditation to inform the effectiveness score, the performance index incorporates some educational outcomes along with the traditional inclusion of institutional inputs and outputs.

Discussion

This study demonstrates Ostrom and colleagues' (1961) idea of polycentricism with multiple types of missions forming the centricities. These missions offer institutional

characteristics, often overlapping one another. As this study asserts, mission-related characteristics can influence an institution's performance, making the college or university more or less efficient. Applying a single-focused accountability model based on efficiency would encourage monocentric university missions. Nevertheless, colleges and universities cannot be excused from accountability standards. The EPI provides additional means by which institutions can be evaluated so as to preserve the variety of missions and institutional diversity. On the other hand, too much focus on individual missions could encourage public choice tendencies, which also has homogenizing effects on institutional diversity as the result of increased competition and academic drift (e.g., Harris, 2013; Morphew, 2009; Riesman, 1958). Therefore, the educational outcomes identified by the federal government also remain a part of the overall model.

Historically, institutions in the southeast have performed below many other institutions in the country, as indicated by the relatively low number of southeastern institutions in the national U.S. News and World Report rankings (U.S. News and World Report, 2009, 2010, 2011, 2012). The results of this research support the same trend with an average graduation rate of 46.9%. Furthermore, institutions with social equity missions had significantly lower graduation rates than their counterparts (refer to Table 4.4). As described in chapter 3, the highest proportion of institutions with social equity missions are located in the southeastern region, which could also explain why the institutional averages appear low when compared against the rest of the nation. However, the southeastern region has some of the most diverse populations as well as some of the most need for social equity missions. Regardless, the results of this study suggest that

efficiency scores are highly related to institutional characteristics, which discourages institutions that are not large, public, research entities.

Many researchers assert that graduation rates are measures of inputs to outputs and would therefore be classified as an efficiency indicator (Archibald & Feldman, 2008b; Hamrick et al., 2004; Mettler, 2014). However, in keeping with Okun's (1975) concern for the trade-off between equity and efficiency, placing graduation rates and other equity indicators in the same subscore supports a social equity continuum. The efficiency subscore can then focus on financial considerations for students and institutions, which also directly responds to policymakers' concerns about the rising costs and expenses associated with higher education.

By controlling for factors related to social equity, then institutions that are truly underperforming could be differentiated from those that are underperforming as a result of their institutional characteristics. Rather than make excuses for those institutions that they are unduly penalized for their institutional characteristics, the EPI begins to help demonstrate whether these institutions are truly fulfilling their missions, which may satisfy critics of accreditation (e.g., Crow, 2009). In this study, inclusive institutions and private institutions still generally seem to perform below the others, but not all of them perform badly.

Finally, the EPI is not a ranking, so it does not promote competition among institutions. Although a few of the measures are percentile ranks, those pertain to financial ratios that are difficult to measure without greater context with comparisons to other institutions. Furthermore, these percentiles help adjust for fluctuations in the economy and when such a large number of institutions are included in the index, then the

elite institutions with large endowments cannot skew the results. With the EPI, institutions do not have to forgo their social equity missions in order to remain accountable using traditional measures. Instead, they could continue to focus on what they do best in serving the underrepresented populations, while others continue to serve a select few. This last statement justifies the continued support for rankings, such as USNWR, because some families and employers would like to see differentiation of elite institutions from all the others. However, if governments were to adopt a performance metric that supports all types of missions, then traditional measures, such as USNWR, become less threatening to those institutions with social equity missions.

Addition of SACSCOC as a measure

Incorporating the accreditation results provides a peer-reviewed mechanism by which to evaluate institutions beyond comparing the relationship of inputs to outputs. The accreditation process emphasizes the importance of institutional practices in accordance with the school's mission with a high tolerance for institutional diversity and social equity (Wheelan & Elgart, 2016). As Bardo (2009) and Crow (2009) acknowledged, no other system in the world compares to the unique American version of assuring educational effectiveness.

Accrediting agencies are not perfect measures of effectiveness, however, and peer reviews can be as flawed as narrow performance agenda. Although based on theoretically defined practices of effective education, accreditation standards still rely on proxies and inputs to measure student learning (e.g., number of faculty to support the missions, faculty qualifications, appropriate student support services). These standards put more emphasis on quality assurance and processes than on true learning outcomes (Kuh &

Ewell, 2010; Wergin, 2005). SACSCOC in particular has begun focusing its principles on improvement and aspirational goals, which moves away from inputs and processes.

Not all accreditation supporters would favor the incorporation of this indicator in the EPI (Eaton, Fryshman, Hope, Scanlon, & Crow, 2005). For one, the agencies would have to concede to greater transparency in reaffirmation decisions. Many fear that disclosing accreditation results would damage the bonds of trust between institutions and the peer reviewers. As a result, agencies would find difficulty in convincing volunteers to participate if the volunteers felt threatened by potential negative action. Accreditation documents may be authored by public relations personnel rather than academic administrators and faculty. Institutions may feel pressure not to undergo an honest self-assessment for fear of being found non-compliant. Furthermore, review committee members may not be comfortable giving public criticism of an institution for fear of retaliation or even potential legal action.

On the other hand, many of these concerns may be unfounded. Public institutions often publish their self-study documents publically, and many would make the reports from the accrediting agency available upon request. Institutions share best practices with one another and discuss the details of the committee findings. Furthermore, committee members cannot hide behind anonymity when examining the institution, and must exercise diplomacy when authoring the results of their reviews.

For accreditation to remain credible as the educational effectiveness and quality experts, more of the process, albeit not every detail, would have to become transparent. This openness would also be imperative for the EPI to have meaning to external constituencies. Regardless of these criticisms, many would agree that accreditation

evaluates higher education institutions differently than the government, and these standards provide a different perspective to performance. Not all efficient institutions have high SACSCOC scores, and many with low graduation rates may still be effectively educating their students. Incorporating accrediting bodies in measures of performance provides a broader form of accountability, and gives institutions more voice in these measures.

Impact based on institutional control

Although the EPI controlled for social equity missions, institutional control was the only institutional characteristic that consistently showed significance. Private non-profit institutions have much lower EPI scores than anticipated. Most likely, the relationship is related to financial variables: cost of attendance, cost of attendance for low-income students, and the rate at which students default on those loans are all higher for private non-profit institutions than for public institutions. Affordability has risen in prominence in accountability structures (The White House, 2012, 2014), and a model that excluded these factors would not appease federal legislators. The recent closures that have been announced have all been small, private non-profit institutions, and several editorial pieces in prominent higher education newspapers (e.g., Biemiller, 2016; Wootton, 2016) speculate whether these small colleges can survive in the current era of accountability. Furthermore, the most recent negative actions against four-year institutions from SACSCOC were directed at five institutions, all of which were small, private non-profit institutions and as a result of financial instability (SACSCOC, 2016, p. 8).

For-profit institutions could not be effectively compared in this research. Only six for-profit institutions could be included in this study, which is too small of a sample size upon which to base conclusions. Although many more exist within the SACSCOC region, most have incomplete IPEDS data and could not be incorporated into the EPI. In fact, across the for-profit sector, only 66 for-profit institutions were in the IPEDS universe and were classified as four-year, degree-granting, Title IV accepting. Of those 66, 23 (34.8%) had regional accreditation, and the rest held national accreditation, mostly from the Accrediting Council for Independent Colleges and Schools. These facts were gathered by downloading the accreditation data files from the Office of Postsecondary Education (2016), entering those institutions into the IPEDS Data Center (National Center for Education Statistics, 2015), and comparing the institutional characteristics.

Despite the low sample size, the for-profits were not completely excluded from this study because future research must allow for their inclusion. These institutions must be evaluated in the same manner as the non-profit institutions if all sectors of higher education are called to demonstrate their accountability. For-profit institutions collect over \$1 billion in federal financial aid from public funding (Mettler, 2014), and yet, their performance trails non-profit institutions. According to College Board (2013), 12% of all postsecondary full-time equivalent students were enrolled at for-profit institutions; however, these institutions received 21% of Pell Grant funds, 21% of both direct subsidized and unsubsidized loans, and 37% of Post-9/11 GI Bill funds (p. 19). Furthermore, 43% of for-profit students who entered repayment defaulted by September 2012, compared to 10% of all federal student loan borrowers in the nation (p. 4).

These for-profit institutions would argue that they provide education to an underrepresented student population, which is true. In this study, four of the for-profit institutions operated with inclusive admissions practices, meeting one of the definitions of social equity missions. However, 25 public institutions and 30 private non-profit institutions also offered inclusive admissions practices, and these institutions scored significantly higher in the EPI than their for-profit counterparts.

Regardless of these facts, care should be taken when attempting to generalize the conclusions of this study to the broader for-profit sector, particularly when so few input data into the IPEDS database. More research is warranted to further develop the indicators to accommodate special institutions, especially those classified as for-profit.

Implications for Higher Education Policy

Despite the criticisms of New Public Management, the accountability trends have intensified rather than subsided. Performance-based agenda, particularly those based on quantifiable data, are not leaving the policy arena (Kelly & Rivenbark, 2003; McLendon et al., 2006; Rutherford & Rabovsky, 2014). As authors such as Dougherty and colleagues (2012) and McLendon and colleagues (2006a) have noted, state governments enact performance funding systems, watch those systems fail, wait for a period of time until another major election, and then reinstate performance-based decisions.

One of the primary reasons researchers have found as to why performance-based initiatives fail has to do with lack of involvement among all constituents, lack of trust with the government, and an unwillingness to forgo institutional missions, particularly those missions focused on social equity, for the sake of efficiency (Dougherty et al., 2012). The EPI addresses these types of short-comings that prior performance-centered

policies have not considered. The implications for this research affect the federal government, accrediting agencies, academic ranking publications, as well as potentially other public entities or policy systems.

Implications of the EPI for the federal government

Federal leaders and policymakers have long awaited a quantifiable metric for evaluating the higher education system; however, these desires are met with staunch resistance, particularly from higher education institutions themselves. These debates will continue with the EPI, however, as indicated by the current discussions over a higher education cost index. The EPI contains measures for graduation rates, default rates, tuition rates, and loan burdens, which all comprise the central concerns for the federal government (Duncan, 2015; Mitchell, 2016).

Legislators and agents might prefer national standards to further quantify student learning, but numerous critics have pointed out the flaws with one-size-fits-all measures, particularly for public entities or those that serve the public good (e.g., Harris, 2013; Piotrowski & Rosenbloom, 2002). On one hand, quality assurance promises to ensure effective learning, but on the other hand, focusing on evaluating the present day and maintaining basic measures does not encourage innovation or aspirational goals (Anderson, 2006; Barton, 2010; Ewell, 2008). Furthermore, the standard assessment instruments for evaluating student learning are flawed, causing biases in the results not related to what knowledge students do or do not possess (Ewell, 2008; Steedle et al., 2010). Faculty-developed rubrics are available through the American Association of University Professors (AAUP); however, their application to student artifacts remains inconsistent and non-comparable across institutions (Jonsson & Svingby, 2007; Kuh &

Ewell, 2010). As education leaders have suggested, the accreditation process helps address educational effectiveness with tolerance for institutional diversity (Crow, 2009; Wheelan & Elgart, 2016).

The federal government may not approve of the methods that accrediting bodies use to evaluate institutions (e.g., Mitchell, 2016, p. 8), but to achieve greater buy-in, more input is needed from other perspectives. As Crow (2009) has written, no other viable option has emerged to replace the accreditation process. He writes that the federal government has a narrow perspective on the role and purpose of accreditation, and the government may have to concede to the inclusion of accreditation outcomes.

Implications of the EPI for accrediting agencies

The implications of the EPI for accrediting agencies may alleviate some of the anxieties of these organizations, but may also add to those concerns. On one hand, the EPI allows accreditation to continue mostly unchanged as a method that encourages self-evaluation and peer-evaluation. These evaluations can be relative to the institutions' missions and can incorporate whatever assessment instruments deemed appropriate for the student body—whether qualitative or quantitative. On the other hand, in exchange for greater involvement in determining institutional performance, these agencies will also have to make some concessions.

The biggest point of contention for accrediting bodies would be allowing for greater transparency in the reaffirmation process. Complete confidentiality would prevent the accreditation score from being used in the EPI—unless the effectiveness score were presented to the public in an aggregate form. That is not to say that everything in accreditation would have to be open to public viewing, such as the off-site and on-site

reports. But perhaps the accreditation results could be more informative beyond public statements indicating an institution's continued accreditation or negative actions for cause. More conversations with accreditation and institutional leaders would have to occur before an accreditation metric could be added to a performance instrument.

One trend that has already begun to take place within SACSCOC involves a shift from quality assurance toward improved outcomes. Quality assurance focuses on the present state of programs, ensuring that certain benchmarks are achieved and reports are completed, while improvement focuses on future outcomes to reach an ideal (Wergin, 2005). As Brittingham (2009) described, accreditation has become less prescriptive and more future-oriented, so that institutions can be more aspirational in their ideals for student learning rather than focused strictly on process. This evolution involves greater training and information about the nature of evaluating student learning outcomes.

Ewell (2008) examined the extent to which the nation's institutions have initiated outcomes assessment activities and found that accreditation drives these exercises. Without the emphasis from accrediting bodies, institutions would not be justifying what their students know or do not know to the same extent. However, he and Kuh (2010) collaborated to evaluate the current student learning assessment practices, and found that much of what institutions are doing could not be called outcomes assessment because academic programs are not learning from the process what they could do better. But institutions also need the freedom to fail as long as they can justify how this failure leads to improvement in educational practices, and they need for the results of the assessment not to be tied directly to high-stakes performance agenda. Furthermore, not all accrediting

agencies require student learning outcomes to the same extent as others, and an unevenness is apparent in national assessment practices.

Finally, regional and national accreditation standards vary in a way that would make comparability difficult. These organizations would have to work together to identify which themes demonstrate effective educational practices. These standards would not have to be stated the same across all agencies and the methods of evaluation would not necessarily have to be applied exactly the same, but these agencies would need to agree on which aspects of education best exhibit effectiveness.

Implications of the EPI for academic ranking publications

Generating an educational performance index would not likely threaten the market for academic rankings, such as U.S. News and World Report. Ample research exists to suggest that regardless of all of the information and data available to the public, prospective students and their families continue to rely on these rankings to inform their decisions (e.g., Bastedo & Bowman, 2010; Hossler, 2000; Meredith, 2004). Furthermore, the EPI neither ranks nor identifies elite institutions, which are features of these types of publications and are in demand from potential students.

The EPI would not only fail to replace academic rankings, but it would also not prevent institutions from competing with one another in the rankings or for high-ability students. Rather, its intended purpose is to minimize pressures from performance-based policies that could adversely affect institutions with social equity missions. Although these rankings have their place and will continue to have a role in helping distinguish the most efficient institutions, the hope would be that neither the federal government nor the

accrediting agencies would ascribe too much value to competitive rankings that are heavily influenced by institutional characteristics and mission-based attributes.

Potential implications for other public services

With the incorporation of equity, the EPI has implications for other public services as well, which also face pressures for accountability in quantifiable manners. These entities would have to identify measures of efficiency, equity, and effectiveness and weigh them so that they form a sort of balanced scorecard. More work is needed in developing measures of effectiveness; however, equity measures could be available for other services.

Recommendations for Further Research

More research is needed to develop the EPI into a viable accountability instrument. In particular, more input is needed from higher education leaders, accreditation leaders, and policy experts. The effectiveness objective will need cooperation among the accrediting bodies in the country, because all other data have been standardized regardless of institutions' locations. This coordination will allow the EPI to expand beyond the southeastern region and provide even more data from which to draw conclusions. Aside from fostering dialogue among the many stakeholders, some other metrics would provide more clarity in the extent to which institutions perform in each of the subcategories.

First, IPEDS must begin collecting more and better social equity metrics. For example, a comparison between the gender of the students and faculty, as well as the race/ethnicity of students compared to the faculty, would provide more insight into how

the institutions represent the population. Although some of this information is available through IPEDS, these data are not required, and most institutions opt not to submit what is not required. Such metrics could replace the current proxy for proportions of minority students who graduate, which skews equity measures toward institutions that serve minority populations.

Second, metrics pertaining to low-income students would also assist in evaluating social equity. If the conclusions of Carnevale and Rose (2003) and others are correct that race/ethnicity differs from family income, then the EPI will need to accommodate those differences. The U.S. Department of Education (2006) recognizes that not all low-income students receive Pell grants, and in the absence of an identifier for low-income status, the proportion of Pell grants must serve as a proxy. Similarly, institutions must calculate and submit graduation rates disaggregated by gender and race/ethnicity; therefore, a graduation rate for students who receive Pell grants is also needed. Furthermore, it would be more telling to be able to combine all or none of these student attributes when comparing graduation rates, so institutions could track minority females versus males and so forth.

Another metric not included in the EPI but could be incorporated relates to distance education. IPEDS provides a few variables related to online or correspondence courses, but only in categorical format, so the magnitude to which distance education influences EPI scores could not be determined.

More research could also help explain some of the fluctuations in EPI scores for institutional control. What aspects of these different affiliations causes differences?

Could some of the differences be controlled for in calculating the EPI or should they be controlled?

More research is needed to explore within each institutional mission where the weaknesses and strengths are. Studying how institutions could improve their scores would provide more insight into performance. More investigations on equity and effectiveness are warranted for validation. Why are the equity subscores so low for the southeast, which has the highest proportion of institutions with social equity missions in the country? For example, could an institution simply begin admitting more minority or low-income students in an effort to raise its EPI score? Could better measures prevent institutions from gaming the data, or is data manipulation an inevitability whenever performance has high-stakes implications?

The lack of measurable student learning data remains a national dilemma. Although SACSCOC accreditation does begin to address student learning, not all of the regional and national accrediting bodies feature equivalent practices. Critics also lament the poor state of those student learning outcomes within the regions, including the southeast. Further investigation on best practices in evaluating student learning would help inform this aspect of accountability.

Finally, the policy arena surrounding higher education continues to evolve. SACSCOC has already begun discussions about further modifications to its principles. The EPI will have to identify educational themes that would apply to multiple accrediting agencies and be flexible enough not to be effected by occasional adjustments to the agencies' principles. Continuity in EPI calculations despite adjustments within variables is achievable as evidenced by the numerous scoring changes in academic rankings,

standardized testing, and even national outcomes. The EPI will need to remain dynamic and conversations remain ongoing for the instrument to be current to societal needs.

Limitations

Several limitations prevent the EPI from being generalizable or replicable for all higher education institutions. The primary limitation pertains to the restriction of data to the southeastern region of the country. Before the EPI could be considered for other regions, the initial sample using the SACSCOC data would test the necessity for the metric. The presence of SACSCOC as a variable does provide a unique perspective to the conclusions of the EPI. In this study, institutional missions accounted for less than 15% of the variance within accreditation scores. If the accreditation score had not had a significant impact on the overall EPI or if the other effectiveness measures accurately portrayed accreditation results, then the study would not need to involve the other accrediting agencies.

The institutions in the study were limited even within the southeastern area. Because accreditation standards changed in 2008, comparable data were not available prior to fall 2009. Therefore, several hundred four-year institutions within the SACSCOC purview were excluded from the study. However, those that were included in the study were representative of the various types of institutional characteristics (with the exception of for-profits, which are limited even within the entire population) of the region.

The accreditation data featured only the results of the on-site committee's review. Due to constraints in resources, collecting data for off-site, on-site, and Board of Trustees' reviews would have been difficult. In conversations with the staff at SACSCOC, it was settled that data from the on-site would have to serve as a starting

point for discussion. For the accreditation data to be even more meaningful, the entire accreditation process would have to be incorporated.

Finally, the lack of measurable student learning data remains a barrier in accurately evaluating American institutions. Without knowing the value added in the knowledge attainment at bachelor's, master's, and doctoral levels, the other metrics seem ancillary to the true outcomes of higher education. Although SACSCOC accreditation does address student learning, institutions within the region represent an unevenness in the degree to which schools measure that learning. As SACSCOC transitions away from the input and process focus to more aspirational outcome-related approaches, these assessment standards may be proxies to student learning.

Summary

The higher education system represents a polycentric approach to providing a good that benefits society. Institutions of higher education offer multiple missions, providing different entry points and different programs in which to attain postsecondary credentials. These multiple missions form the system's centricities. No one institution could serve all populations, and likewise, no one evaluation approach could measure every institution's success. Much research exists to indicate that in the current performance-driven era of accountability informed by theories related to New Public Management, higher education policies emphasize efficiency measures, such as graduation rates and default rates, as indicators of institutional success. Institutions with missions that seek to advance social equity are often adversely affected by performance targets that feature efficiency alone. This research developed an Educational Performance

Index—a tool that combines measures of efficiency, effectiveness, and equity—to serve as an evaluation instrument for higher education institutions.

The factor analysis substantiates the indicators and groups of indicators into the three domains of accountability. When all of the traditionally associate performance metrics were examined, ten of them proved to be the most relevant to the overall purpose of evaluation.

The results of the study indicated that social equity related missions do have a negative relationship to traditional performance metrics, and if educational policies continue to emphasize these metrics, then these institutions would be at a disadvantage. The composite EPI was not influenced by institutional characteristics, such as Carnegie Classification and attributes indicative of social equity missions. By controlling for these mission-related features, institutional performance can be measured more comprehensively. The introduction of social equity measures into the EPI leaves room for the collection of more appropriate metrics, such as identifiers for low-income students, minority faculty, and disaggregated graduation rates for Pell grant students.

This EPI does not constitute a “silver bullet” approach to evaluating higher education institutions. More work is needed to develop a nation-wide effectiveness objective. The limitations of incongruous accreditation standards across the country as well as limited student learning measures make the EPI a work in progress. However, the relationship between efficiency and equity does provide promising evidence that the EPI addresses the disparity among institutional missions. The work of this study contributes not only to the preservation of the many centricities in higher education (also known as institutional diversity), but it also supports Frederickson’s (2005, 2010) call for better

incorporation of social equity considerations in public policy. With more research in the measures and dialogue among education leaders and policymakers, the EPI could address some of the fundamental challenges to the need and desire for performance-based policies that do not disincentivize institutions from serving the public good.

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APPENDIX A

LIST OF INSTITUTIONS IN THE STUDY

IPEDS ID	INSTITUTION
222178	Abilene Christian University
133872	Adventist University of Health Sciences
138600	Agnes Scott College
134811	AI Miami International University of Art and Design
100654	Alabama A & M University
175342	Alcorn State University
100690	Amridge University
222831	Angelo State University
197869	Appalachian State University
219578	Aquinas College
138789	Armstrong Atlantic State University
100858	Auburn University
219602	Austin Peay State University
446048	Ave Maria University
132471	Barry University
219709	Belmont University
217721	Benedict College
100937	Birmingham Southern College
175430	Blue Mountain College
231554	Bluefield College
139199	Brenau University
198066	Brevard College
139205	Brewton-Parker College
231581	Bridgewater College
219790	Bryan College-Dayton
198136	Campbell University
156365	Campbellsville University
219806	Carson-Newman University
198215	Catawba College
217864	Citadel Military College of South Carolina
217873	Clafin University
139311	Clayton State University
217882	Clemson University
218724	Coastal Carolina University
217907	Coker College
217934	Columbia College
139463	Dalton State College
133386	Daytona State College
175616	Delta State University

IPEDS ID	INSTITUTION
198464	East Carolina University
220075	East Tennessee State University
133492	Eckerd College
248934	ECPI University
198507	Elizabeth City State University
198516	Elon University
133553	Embry-Riddle Aeronautical University-Daytona Beach
139658	Emory University
217998	Erskine College
385619	Everglades University
198543	Fayetteville State University
232089	Ferrum College
133669	Florida Atlantic University
433660	Florida Gulf Coast University
133881	Florida Institute of Technology
133979	Florida Memorial University
408844	Florida National University-Main Campus
133702	Florida State College at Jacksonville
134097	Florida State University
220215	Freed-Hardeman University
232186	George Mason University
156745	Georgetown College
139861	Georgia College and State University
139755	Georgia Institute of Technology-Main Campus
139931	Georgia Southern University
139764	Georgia Southwestern State University
367884	Hodges University
225399	Houston Baptist University
225548	Howard Payne University
225575	Huston-Tillotson University
134608	Indian River State College
175856	Jackson State University
101480	Jacksonville State University
134945	Jacksonville University
232423	James Madison University
225885	Jarvis Christian College
140234	LaGrange College
220598	Lane College
220604	Le Moyne-Owen College

IPEDS ID	INSTITUTION
220613	Lee University
140252	Life University
157216	Lindsey Wilson College
198862	Livingstone College
232566	Longwood University
159568	Louisiana College
159416	Louisiana State University-Shreveport
159647	Louisiana Tech University
232609	Lynchburg College
132657	Lynn University
198899	Mars Hill University
220710	Maryville College
220808	Memphis College of Art
140447	Mercer University
226806	Midland College
157377	Midway College
226833	Midwestern State University
101675	Miles College
175980	Millsaps College
176053	Mississippi College
176080	Mississippi State University
176035	Mississippi University for Women
176044	Mississippi Valley State University
157386	Morehead State University
218399	Morris College
199069	Mount Olive College
157401	Murray State University
218414	Newberry College
199193	North Carolina State University at Raleigh
136233	Northwest Florida State College
101912	Oakwood University
232982	Old Dominion University
227331	Our Lady of the Lake University
140720	Paine College
199306	Pfeiffer University
199412	Queens University of Charlotte
233277	Radford University
233301	Randolph College
136950	Rollins College

IPEDS ID	INSTITUTION
176318	Rust College
199582	Saint Augustine's University
160409	Saint Joseph Seminary College
137032	Saint Leo University
140960	Savannah State University
199643	Shaw University
140988	Shorter University
409315	South Texas College
139579	South University-Savannah
160612	Southeastern Louisiana University
137564	Southeastern University
221661	Southern Adventist University
228246	Southern Methodist University
228325	Southwestern Assemblies of God University
228343	Southwestern University
141060	Spelman College
228149	St Mary's University
137476	St Thomas University
228431	Stephen F Austin State University
137546	Stetson University
157793	Sullivan University
233718	Sweet Briar College
226152	Texas A & M International University
224554	Texas A & M University-Commerce
228705	Texas A & M University-Kingsville
228875	Texas Christian University
229115	Texas Tech University
229160	Texas Wesleyan University
229179	Texas Woman's University
222938	The Art Institute of Houston
100751	The University of Alabama
137847	The University of Tampa
221740	The University of Tennessee-Chattanooga
221759	The University of Tennessee-Knoxville
221768	The University of Tennessee-Martin
138354	The University of West Florida
157818	Transylvania University
221892	Trevecca Nazarene University
160755	Tulane University of Louisiana

IPEDS ID	INSTITUTION
157863	Union College
100663	University of Alabama at Birmingham
224323	University of Dallas
134130	University of Florida
139959	University of Georgia
157085	University of Kentucky
226471	University of Mary Hardin-Baylor
232681	University of Mary Washington
220862	University of Memphis
101693	University of Mobile
101709	University of Montevallo
159939	University of New Orleans
101879	University of North Alabama
199111	University of North Carolina at Asheville
199139	University of North Carolina at Charlotte
199148	University of North Carolina at Greensboro
199218	University of North Carolina Wilmington
157535	University of Pikeville
102094	University of South Alabama
218645	University of South Carolina-Aiken
218663	University of South Carolina-Columbia
218742	University of South Carolina-Upstate
137351	University of South Florida-Main Campus
448840	University of South Florida-St Petersburg
227863	University of St Thomas
225627	University of the Incarnate Word
101587	University of West Alabama
141334	University of West Georgia
234030	Virginia Commonwealth University
218919	Voorhees College
138275	Warner University
199865	Warren Wilson College
220206	Welch College
141325	Wesleyan College
157951	Western Kentucky University
229887	Wiley College
199272	William Peace University
218964	Winthrop University
160904	Xavier University of Louisiana

APPENDIX B
CODEBOOK

Institutional Characteristics (centricities)

Characteristic	Source	Code
Institutional Control	IPEDS	1 = public, non-profit 2 = private, non-profit 3 = private, for-profit
Carnegie Classification	IPEDS	0 = Special focus institutions (theological seminaries, health profession schools, schools of art, music, and design) (Basic: 24-30) 1 = Associate's (Basic: 3-14) 2 = Bachelor's (Basic: 21-23) 3 = Master's (Basic: 18-20) 4 = Research (Basic: 15-17)
Carnegie Undergraduate Profile	IPEDS	1 = Inclusive (Profile: 1-6, 9)* 2 = Selective (Profile: 7-8, 10-11) 3 = More selective (Profile: 12-13)
Land grant	IPEDS	0 = not a land grant 1 = land grant *
Population	IPEDS (historically black colleges and universities & tribal colleges) AAPIACU (Asian & Pacific Islander) HACU (Hispanic) WCC (Women's)	0 = serves a general population 1 = serves at least one of the underrepresented populations *

* indicates social equity mission

Index metrics and indicators

Raw Data	Metric	Source	Indicator Conversion
<i>Efficiency subscore</i>			
Cost of attendance	Same as raw data	IPEDS	Percentile rank of metric
Cost of attendance for low-income students	Same as raw data	IPEDS	Percentile rank of metric
Average loan amount	Loan as a proportion of total cost = (average loan amount / cost of attendance) * 100	IPEDS	Percentile rank of metric
Cost of attendance			
<i>Equity subscore</i>			
Graduation rate	Same as raw data	IPEDS	Same as metric
Pell-grant students	Same as raw data	IPEDS	Same as metric
Student default rate	Same as raw data	FSA	100% – default rate
Number of bachelor's degrees awarded	Proportion of bachelor's degrees to minority students = 100% – (degrees to white students / total number of degrees)	IPEDS	Same as metric
Number of bachelor's degrees awarded to white students			
<i>Effectiveness subscore</i>			
Accreditation results of 18 standards, coded as 1 if in compliance or 0 if not in compliance	SACSCOC grade = (sum of standards in compliance / 18) * 100	SACSCOC	Same as metric
Institutional support expenditures	Administrative expenditures = (institutional support / (total expenditures – hospital expenditures) * 100)	IPEDS	Percentile rank of metric
<ul style="list-style-type: none"> • GASB (public) • FASB (private & some public) • For-profit 			
Hospital expenditures			
Total expenditures			

Raw Data	Metric	Source	Indicator Conversion
Instructional expenses	Mission-related expenses = ((instructional + academic support + student support + research + outreach) / (total – hospital))*100	IPEDS	Same as metric
Academic support expenses			
Student support expenses			
Research expenses			
Outreach expenses			
Hospital expenses			
Total expenses			