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### State political culture and the affordability of higher education : a multivariate analysis of the impact of state higher education boards on the cost of attending college.

Sara Elizabeth Yount  
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STATE POLITICAL CULTURE AND THE AFFORDABILITY OF HIGHER  
EDUCATION: A MULTIVARIATE ANALYSIS OF THE IMPACT OF STATE  
HIGHER EDUCATION BOARDS ON THE COST OF ATTENDING COLLEGE

By

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B.A., The University of Kentucky, 1994  
M.P.A., The University of Louisville, 1997  
M.A., The University of Louisville, 2006

A Dissertation  
Submitted to the Faculty of the  
Graduate School of the University of Louisville  
in Partial Fulfillment of the Requirements  
for the Degree of

Doctor of Philosophy

College of Education and Human Development  
Department of Leadership, Foundations,  
and Human Resource Education  
University of Louisville  
Louisville, Kentucky

May 2007



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A Dissertation Approved on

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Dr. John F. Welsh, Dissertation Director

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Dr. Thomas Reio

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Dr. Paul Winter

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Carrie Donald, Esq.

## DEDICATION

To my father, Leonard A. Yount, who has an unequalled work ethic and has encouraged me to achieve my dreams, be my own person and not accept limits that others may try to set for me.

and

"Women should have equal pay for equal work and they should be considered equally eligible to the offices of principal and superintendent, professor and president. So you must insist that qualifications, not sex, shall govern appointments and salaries."

Susan B. Anthony, July 6, 1903

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ABSTRACT

STATE POLITICAL CULTURE AND THE AFFORDABILITY OF HIGHER  
EDUCATION: A MULTIVARIATE ANALYSIS OF THE IMPACT OF STATE  
HIGHER EDUCATION GOVERNING STRUCTURES ON THE COST OF  
ATTENDING COLLEGE

Sara E. Yount

May 12, 2007

The purpose of this study was to understand variance in state system performance of affordability using variables describing the state political environment and the structure of state higher education boards.

The researcher utilized the National Center for Public Policy in Higher Education's *Measuring Up* (2006) grade for the dependent variable. Three control variables were examined: (a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups. The independent variable was state higher education boards. Three levels existed for this variable: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency.

Through examining the independent variable and the control variables that impacted affordability across the 50 states, it was evident that the results did not support

research question one. Governance structure was not a significant predictor of affordability. The results of question two showed that professionalism of the state legislature was the most significant predictor of affordability across the three years in question, 2002, 2004, and 2006.

Based on the results of the study, the researcher anticipates that policy makers will now spend less time focusing on governance structure and more time shedding light on why professionalism is so important to affordability of higher education across the 50 states.

TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	ix
	CHAPTER
I. INTRODUCTION.....	1
Structure of State Higher Education.....	2
Declining Affordability.....	3
Challenges Facing Higher Education.....	4
Research Problem.....	8
Purpose of the Study.....	9
Research Questions.....	10
Definition of Terms.....	11
Significance of the Study.....	13
II. LITERATURE REVIEW.....	15
Financial Considerations.....	21
Student Considerations.....	34
Policy Considerations and Governance.....	60
Governance Structure.....	80
Leadership.....	95
Organizational Effectiveness.....	103
Resource Allocation.....	114

Accountability.....	126
Summary.....	146
III. METHODS.....	148
Theoretical Framework.....	148
Research Design.....	149
Participants.....	150
Independent Variables.....	150
Dependent Variable.....	158
Data Analysis.....	161
Pearson Product Moment Correlations.....	162
Hierarchical Regression Analysis.....	162
Limitations.....	163
IV. RESULTS.....	165
Descriptive Statistics.....	166
Pearson Product Moment Correlations.....	172
Hierarchical Regression Analysis.....	181
V. DISCUSSION.....	194
Discussion of the Results.....	195
Implications.....	202
Future Research.....	208
Conclusion.....	211
REFERENCES.....	212
APPENDIXES.....	225
CURRICULUM VITAE.....	244

LIST OF TABLES

TABLE	PAGE
1. Description of Variables, Measurements, and Sources.....	168
2. Descriptive Statistics ( $N = 50$ ).....	170
3. Intercorrelations of Var. for Affordability for 2002.....	174
4. Intercorrelations of Var. for Affordability for 2004.....	176
5. Intercorrelations of Var. for Affordability for 2006.....	179
6. Summary of Standard Regression Analysis for 2002.....	184
7. Summary of Standard Regression Analysis for 2004.....	185
8. Summary of Standard Regression Analysis for 2006.....	186

CHAPTER I  
INTRODUCTION

The American higher education system has experienced many changes, including increasing cost of pursuing higher education, since the passing of the Morrill Act of 1862. The rising cost of higher education in recent years has been compared to the "sticker cost" of buying a new car reminding everyone that higher education is a product, a service, and a life long investment to be bought and paid for like many others (National Commission on the Cost of Higher Education, 1998). Rising costs for consumers is real. Between the years of 1976 and 1996, the average tuition at public universities increased from \$642 to \$3,151 and the average tuition at private universities increased from \$2,881 to \$15,581. Public two-year tuitions increased from an average of \$245 to \$1,245 during this period (National Commission on the Cost of Higher Education, 1998).

The American college and university system is known worldwide for its unequalled strength. There are approximately 4,000 not-for-profit colleges and

universities which vary in size, geography, sector, selectivity, and mission. State flagship universities expand the boundaries of human knowledge. Four-year publics provide access at a low cost. Selective private universities and liberal arts institutions encourage intellectual development on an individual basis. Last but not least, the two-year community colleges offer everything from high school and transfer programs to technical training through an open admission policy (National Commission on the Cost of Higher Education, 1998).

Focusing on the two-and four-year public institutions, it is important to examine the state structure of higher education. Specifically, how states can improve performance and efficiency of their higher-education systems by finding new ways to balance the needs of government with the needs of colleges and universities. It is common for states to have one of the following three structures: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency. A study by Healy (1997) found that analysts who led a two-year study for the California Higher Education Policy center found that states where central boards have clearly defined authority, such as in Illinois and Georgia, respond better to state needs and goals and to budget pressure than do decentralized systems

or boards with limited authority as found in California and New York.

States and universities respond to the pressures of declining budgets within the state higher education system by charging more to students who attend. Tuition does not typically cover the full cost of attendance. Therefore, all students, no matter what their family income level and ability to pay, receive some type of discount. In 1995-96, 80 percent of full-time undergraduates at private four-year institutions received aid. For public institutions, 66 percent of full-time students at four-year institutions received aid and 63 percent for two-year institutions. Financial aid awards, typically based on financial need, tend to favor students from lower socioeconomic backgrounds (National Commission on the Cost of Higher Education, 1998). Other award types such as institutional based merit awards are available to students as well. These awards tend to favor students from higher socioeconomic backgrounds. Despite both need based and merit based financial aid awards being available, tuition discounts are not keeping pace with the rising costs of tuition (Education Commission of the States, 2006).

While public education remains available to the masses, policy makers and constituents question the

direction of higher education, both public and private. Affordability, and subsequently, access are in question as public colleges and universities are increasingly raising tuition to offset shrinking appropriations from state and federal legislatures and private institutions are raising tuition to increase revenue. The National Center for Public Policy and Higher Education identified five national trends in the latest publication, *Losing Ground*: (a) With increases in tuition, colleges and universities are less affordable for most American families; (b) despite good intentions, federal and state financial aid has not kept pace with increases in tuition; (c) students and families at all income levels are borrowing at higher rates than ever before to finance higher education; (d) the largest increases in public college and university tuition have occurred during the toughest economic times; and (e) while state financial support of higher education has increased, the increases have not kept pace with tuition increases (National Center for Public Policy and Higher Education, 2002). According to the authors of *The College Cost Crisis*, over the ten-year period ending in 2002-03, after adjusting for inflation, average tuition and fees at both public and private four-year colleges and universities rose 38 percent. In addition, over the last 22 years (since 1981),

the cost of a public four-year college education has increased by 202 percent, while the Consumer Price Index has gone up only 80 percent (Boehner & McKeon, 2003). Tuition, after adjusting by the rate of inflation versus actual average tuition, has increased by a ratio of two to one since 1982 when both measures were equal (Boehner & McKeon, 2003).

The significance of the five trends varies across the 50 states. Both higher education structure and state political culture vary as well. Identifying factors relating to state political culture and affordability is necessary. Key state leadership such as the governor, the professionalism of the state legislature and the impact of special interest group lobbying may be responsible for variance in affordability when examining the 50 states.

Higher education faces a long list of challenges moving into the new century. Market competition has stiffened; technology advances are outpacing resources; there is change and instability in state government leadership, a weakening consensus of the role of public higher education, and growing political criticism of state coordination and governance questioning the way higher education is structured (Education Commission of the States, 1997).

Research proved that states with higher average earnings per capita also have higher education attainment levels (National Center for Public Policy and Higher Education, 2002). Affordable higher education is extremely important to all constituents not only in a particular state but in the United States as a whole. Therefore, it is important to determine which variables impact how affordable higher education is in a particular state.

Currently, the only state by state comparison which provides an overall picture of state performance in affordability is the National Report Card for Higher Education (National Center for Public Policy and Higher Education [NCPPE], 2006). The purpose of the report card is to provide policy makers and citizens with information on how to improve higher education within each state. The report card provides a grade for the 50 states ranging between A and F (NCPPE, 2006). Each state has been given a grade in affordability for the years 2000, 2002, 2004 and 2006, providing an opportunity to determine if there is a correlation between years in reference to affordability.

The report card grade provided the measurement for the dependent variable, state performance in higher education affordability. How state higher education is structured can determine effectiveness. A study by Girdley (2003)

identified three control variables relating to state political culture and their relationship to the dependent variable, higher education affordability. The three control variables (a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups, had differing results on affordability. More decentralized governance structures were more affordable. The combination of political culture and governance structure did explain variance in the state affordability for higher education in both regression models.

Based on the results of the Girdley (2003) study, this longitudinal study will investigate further the type of governance structures and their impact on affordability by examining the years of 2002, 2004 and 2006. Structure of the state higher education board is the independent variable for this study. Therefore, it is important to break out the different types of governance structures across the 50 states to determine which types of governance structures are responsible for higher education being more affordable: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency.

The analysis may be useful to determine how much of the variation in affordability is explained by the

structure of the state higher education board with three state political culture dimensions: (a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups, examined across the years of 2002, 2004, and 2006.

### Research Problem

The American public understands the need for additional training beyond the public and private K-12 system. How and why students choose to attend college is an important issue for policy makers. Perhaps the most important factor in making the college decision choice is how affordable the education would be in a particular state, looking at both two- and four-year institutions, public and private. Many times students leave college with debt borrowed to finance their education. Therefore, there is increasing interest in the delivery and expectations of higher education.

State political leadership and culture are important factors in determining the role of higher education. If the political culture is not supportive of policy initiatives for higher education, little can be accomplished to increase affordability and access to citizens within a state.

Research addressing how the structure of the state higher education board relates to the affordability of higher education within a particular state is important to policy makers as they think creatively to improve coordination across the state. Equally important to success in achieving affordability is the role of the state political culture as measured by (a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups. In this study, the researcher examined the structure of the state higher education board and state political culture to determine their impact on affordability across the 50 states.

#### Purpose of the Study

The purpose of this study is twofold. First, the researcher identified if there is a statistically significant relationship between the structure of the state higher education board: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency, and affordability for the years of 2002, 2004 and 2006. Second, the researcher determined how much of the variation in affordability is explained by the structure of the state higher education board and affordability measured by the

control variables: (a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups, across the years of 2002, 2004, and 2006.

The independent variable addressed is structure of the state higher education board. The dependent variable is state higher education affordability. The *2006 Measuring Up* data provides the general public and policymakers with objective information needed to assess and improve higher education through each state's composite score.

Through examining the independent variable and the control variables that impact affordability across the 50 states, policy makers will be better equipped to make decisions on the structure of higher education to maximize opportunity for citizens seeking higher education services.

#### Research Questions

The review of the literature regarding how statewide coordination impacts higher education provided the basis for two research questions:

1. Is there a statistically significant relationship between the structure of the state higher education board and the affordability of higher

education across the years of 2002, 2004 and 2006?

If the relationship is statistically significant, how strong is the relationship?

2. How much of the variation in affordability is explained by the structure of the state higher education board when the dimensions that define state political culture, including a) institutional strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups, are taken into account for 2002, 2004 and 2006?

#### Definition of Terms

The following definitions of terms apply to this study:

1. Higher education governance structure - the formal framework used to determine how the higher education system is coordinated across the states. The typical arrangement includes either a governing, coordinating or planning structure.
2. Affordability - a combination of the price to attend an individual institution, the amount of

state financial aid available to meet a students' financial need and the students' personal or family income.

3. Strength of the governor - the level of power assigned to the top state official through three avenues: the state constitution, state statutes and voter referenda.
4. Professionalism of the state legislature - the degree of commitment required for the members of a state legislative body with regard to the length of legislative sessions, the scope of legislative responsibility, and salary.
5. Special interest groups - a group of individuals or organizations formed to intentionally influence public policy at the state level.
6. State political culture - aspects of the state policy environment determined by the balance of power and influence of the governor, legislators, political parties, lobbyists, and other key policymakers.

7. Consolidated governing board state - these states assign responsibility for coordinating most, sometimes all, postsecondary education to a board whose primary responsibilities relate to governing the institutions under its jurisdiction.
8. Coordinating board state - these states have established a state board that functions between the state government (executive and legislative branches) and the governing boards of the states' systems and individual colleges and universities.
9. Planning/service agency state - states with little or no statutory control with coordinating authority beyond a voluntary planning and convening role to ensure good communication among institutions and sectors. Some of these agencies also handle student aid administration and institutional licensure and authorization.

#### Significance of the Study

The NCPPHE National Report Card is the only state by state comparison in existence to determine how comparable

higher education is across the United States. The grade for affordability indicated how affordable and, in turn, accessible a college education is within a particular state.

An important piece of how affordable a state may be is the structure of the state higher education board within a state. States create policies and organizational structures to govern public colleges and universities and to coordinate statewide postsecondary education services (Education Commission of the States, 1997). There are three basic kinds of structures: (a) consolidated governing boards, (b) coordinating boards, and (c) planning/service agency (Education Commission of the States, 1997). As policy makers evaluate the effectiveness of higher education within their state, it is important to understand how this difference in governance structure coupled with state political culture can impact affordability.

The primary role of the state in higher education is to balance the needs of the institutions with the needs of the citizens (Braco et al., 1999). The ultimate accountability of a state to its citizens requires states to understand the policy environments, structures, and contextual factors that affect system performance.

## CHAPTER II

### LITERATURE REVIEW

Public higher education in the United States is structured in one of three ways at the state level: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency. How does a state's political culture influence its higher education structure? How that structure and political culture impact affordability relates directly to the economic success of each state and the nation.

In the early 1800's, many small private liberal arts institutions offered low tuitions and financial aid to help indigent students pursue an education and make a better life (Levine & Nidiffer, 1996). Public higher education for the masses began with the passing of the Morrill Act of 1862, which created land grant colleges and universities (Flower, 2003). Many states kept tuition low and provided class schedules that allowed students to work and earn money to help pay tuition to maintain access to higher education (Levine & Nidiffer, 1996). The next significant legislation providing educational opportunity was the G.I.

Bill of 1944. The G.I. Bill provided educational benefits to individuals who served in the armed forces. In the 1940s, students who attended college did so through having the personal or family economic means to pay for an education or through the educational benefits with the G.I. Bill. Today, students rely heavily on both institutional merit aid and federal and state aid programs to finance a college education.

The face of higher education has changed drastically since the early 1950s when there was virtually no federal student aid available for the masses of Americans who had not served in the armed forces (Hearn & Holdsworth, 2004). In 1965, federal legislatures passed the Higher Education Act which provided federal funding for public institutions for the first time (Minicozzi, 2004). The 1970s, referred to as "the golden era" in higher education, was a time of relatively high levels of consensus among policymakers (Hearn & Holdsworth, 2004). Federal student aid policy favored need-based grants rather than loans. The "golden era" did not last long. Between the years of 1976 and 1990, the annualized growth in the average level of tuition and required fees for undergraduate education was more than 8% per year, which exceeded price inflation in the general economy.

Until the mid-1990's, public subsidies to U.S. public higher education institutions were substantial, with students and their families paying tuition and fees that represented less than 20% of the direct costs of attendance (Heckman, 1999). Subsidies included public appropriations and private donations creating various subsidies, tuitions, and costs for higher education leaders to address. Selective universities, with large endowments and committed alumni donors, competed for students by offering subsidies and high quality academic programming. Public two- and four-year universities, facing decreasing state appropriations per student and mandated enrollment policies, increased tuition as a way to offset revenue losses (Winston & Zimmerman, 2000).

Since the 1990s, tuition has outpaced the rates of the Consumer Price Index (CPI) for inflation. "Between 1990 and 2000, after adjusting for the effects of inflation, tuition and fees at public 4-year institutions increased by 51 percent compared to 35 percent for private 4-year colleges" (Fethe, 2004, p. 602). During 2003, the average tuition and fees for in-state students at public four-year colleges and universities increased by over 14 percent (The College Board, 2003). Overall, college tuition outstripped the

consumer price index by 289.5% between the years of 1986 and 2006 (United States Department of Labor, 2007).

Tuition has increased for two reasons -- costs have risen, and subsidies have declined (Winston, 1998). As tuition increased, federal student aid drifted from a grant-based to a loan-based system, creating a shift in the way many students and families financed postsecondary education (Hearn & Holdsworth, 2004).

In an effort to keep pace with rising costs and become more competitive, the current financial aid climate for most colleges and universities is the offering of a high-tuition, high-aid financing strategy (Griswold & Marine, 1996). Advocates of the high-tuition, high-aid model champion the model for setting tuition that attempts to promote efficiency and equity by taking into account the relative costs and benefits of higher education to society and the individual (Hearn, Griswold, & Marine, 1996). Opponents of this type of model criticize higher education providers stating this type of leveraging of financial aid dollars rewards the middle and upper class restricting access to lower income students and diverse populations (Martin, 2004).

Students from all socioeconomic backgrounds must weigh the costs and benefits of attending a two or four-year

institution, public or private, and determine the outcomes of persisting to degree completion. One of the costs associated with attending college is the amount of debt a student must incur to complete a two or four-year degree (Minicozzi, 2004). Taxpayers and society, not just students, receive many direct and indirect benefits when our country's citizens have access to college (The College Board, 2005). Policymakers understand there is a strong correlation between the proportion of a state's population enrolled in college and its rate of economic growth (Zumeta, 2004). Equally important is the connection between an individual's level of education and success in the labor market. The National Center for Education Statistics cited in 1999 that the "college wage premium" in terms of earnings of college graduates compared to high school graduates (males aged 25-34) jumped from 19 percent in 1980 to 52 percent in 1995 (Zumeta, 2004). This has changed drastically since the 1970s when policymakers were questioning whether the American population was "overeducated" (Zumeta, 2004).

Because society as a whole benefits from students having access to college, why have federal and state governments been reducing education's share of revenues since the mid-1980s to both public and private institutions

(McPherson, 1997)? Taxpayers scream at the thought of paying additional taxes, but expect states to increase spending on K-12 education, medical care, and other top priority items (McPherson, 1997).

Policy leaders struggle with how to distribute appropriations. Should policy leaders examine structuring higher education differently? Has the current structure of governing and coordinating boards led to declining affordability?

If costs continue to rise, access to higher education will decline. Policy makers will lose support from constituents due to there being fewer college educated students to enter the workforce and fill positions needed to stimulate the economy (National Commission on the Costs of Education, 1998).

The purpose of the following literature review is to examine affordability and the policy issues that surround how affordable a college education is for approximately 14 million students enrolled at nearly 4,000 colleges and universities in the United States (Bogue & Aper, 2000). Identifying financial considerations such as financial aid leveraging models and college costs opens the door to other factors which lead to determining how affordable a college education is in a particular state. Students and parents

struggle to pay the rising costs of tuition across the 50 states. Student considerations such as access and persistence to degree attainment as well as student indebtedness play an important role in determining if a student will be successful and complete a college degree. Policy considerations such as the strength of key state leaders and the difference in having a state governing or coordinating board are important. The first area to examine is current financial aid practices among the states.

#### Financial Considerations

With college costs escalating, it is important to examine financial aid leveraging at colleges and universities across the United States. Hearn, Griswold, and Marine (1996) explored the differences and similarities of approaches to the pricing and discounting of student financial aid for undergraduate students across the 50 states. Policy makers and constituents have seen a decline in what was previously a nation of an abundant supply of low-tuition or no-tuition public institutions. The number of institutions that offer low-tuition or no tuition decline each year. More common today are public institutions which increase tuition on a yearly basis. Some critics of the tuition increases blame institutions for

becoming greedy and fostering inefficiency (Finn, 1984; Bennett, 1987) while others believe state legislative and bureaucratic process and structures are at fault (Hearn & Anderson, 1989). Hearn, Griswold, and Marine based the theoretical framework on the hypothesis that postsecondary financing approaches at the state level are associated with three interrelated sets of factors: region, resources, and reason. The research questions addressed were (a) How are postsecondary financing policies associated with region, social and economic resources, and governance factors? and (b) By controlling for confounding factors, which state characteristics are most closely associated with postsecondary financing policy?

Descriptive statistics and analysis of variance addressed the first research question, while the second question was addressed through multiple regression. The researchers collected data from 50 states through four secondary data sources: the National Center for Education Statistics (1992b), McGuinness (1988), Reeher and Davis (1999), and Halstead (1991). Six dependent variables were used in the statistical analysis: (a) undergraduate tuition and fees of four-year institutions, (b) undergraduate tuition and fees of two-year institutions, (c) the differential between two and four-year tuition levels in

the states' public systems in 1989-90, (d) average tuition for undergraduates in the state's public higher education system in 1989-90, (e) per-capita need based state-funded aid for all students in public postsecondary education in a state, and (f) tuition and aid "rationalization." The independent variables were region (constructed by a breakdown of Northeast, Midwest, Northwest, and Rockies/Plains regions), state size, and governance arrangements.

The researchers found that differences in tuition and aid programs were stronger than differences associated with governance arrangements. States in the Northeast were the highest in tuition and aid levels while states in the Midwest ranked second. The Southwest region was the lowest overall in tuition and aid. The four states with planning agencies were higher in tuition for public four year institutions and in average tuition paid by students for a public education. States with weak coordinating boards were those with the lowest tuition levels. Economically developed states were more likely to have low tuition levels for both two and four year institutions. Financial aid policies and tuition policies were only modestly connected. It was unclear as to whether region or an

influence such as state population had the most significant relationship to financing approaches.

Historically, low tuition, low financial aid models were prevalent. Hossler, Lund, Ramin, Westfall, and Irish (1997) examined the myths surrounding higher education financing. The conceptual framework, grounded by literature from three opposing views, provided the starting point for the study. Hearn and Longanecker (1985) argued the low-tuition, low-financial aid strategy pursued by most public colleges provided a subsidy to all students, including those with little or no need. When institutions keep the cost of a public education artificially low, subsidies typically are provided to middle and high income students based on merit. Merit based models shift resources away from offering need based grants to low-income students. Lopez (1996) and Griswold and Marine (1996) commented on the high-tuition, high aid strategy put into place in Minnesota. The study was the first systematic national examination of the links between state appropriations to public institutions, state financial aid programs, and public institution tuition levels. Last, Gumpert and Pusser (1994) provided a perspective of the market model for tuition pricing and financial aid. Gumpert and Pusser felt the reductions in appropriations led to large increases in

tuition in California and ultimately the privatization of public higher education.

To address these myths, Hossler et al. (1997) conducted a research study to answer the following research questions: (a) To what extent do the demographic, resource, political values, and policy making characteristics of states explain the current state funding allocation decisions for public institutions and for state financial aid programs? (b) Are state policy decisions regarding appropriations for public colleges and universities, state financial aid programs and setting of public college and university tuition rates linked or coordinated? and (c) Are the trends in questions 1 and 2 associated with state characteristics, attributes of the postsecondary education system, and state financial resources?

The researchers gathered data from three sources to create a database of the ( $n = 50$ ) states. The data sources included Grapevine data, annual surveys from the National Association of State Scholarship and Grant Programs, a recent State Higher Education Executive Officer survey of state financial aid policies, and data from *State Profiles: Financing Higher Education, 1978 to 1993*. The researchers created two surveys with 50 items each. Surveys providing critiques from the staff members of state governing boards

and directors of state scholarship programs addressed content validity. The researchers conducted telephone interviews with State Higher Education Executive Officers, state financial aid directors, policymakers and analysts in selected states.

The three sources of data collected included nominal, ordinal and interval variables. General funding and public policy trends were determined through frequencies. Three statistical procedures provided an analysis of the data: CROSSTABS, multiple regression and exploratory factor analyses. The independent variables for factors one, two and three in the analysis included (a) total enrollment in public and private institutions, (b) financial aid appropriations, (c) appropriations to public four-year institutions, (d) average tuition levels at four-year public colleges and universities, and (e) 10 other variables. The dependent variable was state characteristics and funding priorities. The results were not significant.

Multiple regression was utilized to find a significant factor; however, more non-significant findings occurred than significant. In response to the survey, 26.8% indicated discussions were occurring in their states to adopt a market approach to tuition at public sector institutions and state financial aid programs.

The findings suggested states monitor the relationship between college costs and available aid but there are few formal linkages and processes in place to help determine tuition and aid levels. The interviewees responded that institutional effectiveness and the use of technology and distance education in instruction were the issues that received the most attention rather than rising tuition costs and financial aid. Many of the interviewees had a misconception of how aid strategies worked and made contradictory statements of how their state was awarding financial aid to students. The results revealed no systematic relationship between appropriations for public sector institutions, public sector tuition levels and state financial aid appropriations.

In a race to become more and more strategic about making the freshman class, many institutions have gone to an institutional specific high tuition, high financial aid model. Martin (2004) describes a policy model for tuition discounting that eliminates the financial pitfalls in the administration of institutionally funded scholarships. Current tuition discounting models are structured to do the following: (a) reward students from higher socioeconomic backgrounds, (b) provide less aid for students with high financial aid need, (c) discourage higher socioeconomic

students and families to pay the cost of higher education, and (d) reduce society's total investment in education.

Martin utilized data from the National Center for Education Statistics (NCES) to identify the most important discounting mistakes and offer an alternative system that avoided the problems mentioned above. The sample included all Carnegie I and II liberal arts colleges for the 1994-1995 and 1995-1996 academic years. The sample totaled ( $N = 1,068$ ) of which ( $n = 308$ ) were Carnegie I institutions and ( $n = 760$ ) were Carnegie II institutions.

Descriptive statistics showed approximately 31% of the institutions ran deficits during these two academic years. The budget surplus or deficit per student averaged \$238 for the total sample under investigation. There was a significant difference among the institutions in reference to discount rates. Carnegie I institutions averaged 27%, while Carnegie II institutions averaged 20%. Multiple regression determined the predicted average variable cost. The dependent variable was average variable cost and the independent variables were (a) enrollment, (b) student-faculty ratio, (c) faculty salaries, (d) average faculty benefits, (e) seven regional dummy variables, (f) athletic expenditures per student, and (g) Carnegie classification.

The findings suggested the average variable cost increased as faculty salaries, benefits, and athletics expenditures increased when the institution is located in an urban area and is classified as a Carnegie I institution. Average variable costs declined as the student-faculty ratio increased. For institutions to operate without a deficit, endowment must be grown and costs lowered to prevent additional tuition increases.

The high tuition, high aid model was put to the test in the State of Indiana. St. John, Hu, and Weber (2001) examined the impact of financial aid on within-year persistence of undergraduate students in the State of Indiana. Since the 1990's, the public higher education system has been under attack. National studies revealed a reduction in access to higher education, especially four-year colleges (McPherson & Schapiro, 1998). This erosion of access led to taxpayers wavering on supporting public colleges, resulting in tuition rising faster than inflation and the reduction in affordability (Callan & Finney, 1997; Slaughter & Leslie, 1997). Due to the current environment of higher education, the researchers hypothesized that if students could maintain their enrollment in public colleges and universities in the State of Indiana, it would be a good indicator of affordability.

A random sample of full-time undergraduates ( $N = 11,601$ ) from three academic years 1990-91 ( $n = 3,939$ ), 1993-94 ( $n = 3,890$ ), and 1996-97 ( $n = 3,772$ ) provided data for the study. Logistic regression determined the impact of the independent variables: student background (age, ethnicity, dependency and income), college experience (grades, type of institution, year in college), and student aid (financial aid package, no financial aid package) on the dependent variable, persistence. Each independent variable had two levels and was coded as a dichotomous variable (1 = yes, 0 = no). Delta- $p$  statistics determined the effect of each independent variable on the dependent variable.

Over the seven-year period, there was only a slight change in the within-year persistence rate from 91.5% in 1990-91, to 90.6% in 1993-94, to 89.9% in 1996-97. Student characteristics remained stable while the percentage of students enrolled in two-year colleges declined. There were substantial changes in financial aid packages including a decrease in the percentage of students receiving grants only and a substantial increase in the number of students receiving loans only. Total grant awards did increase slightly but did not keep pace with the rising cost of tuition. Loan amounts increased substantially overall.

Last, the State of Indiana increased appropriations for higher education in 1996-97. Sequential logistic regression allowed the researchers to examine the effects of the independent variables on persistence. Despite the investment of the State of Indiana and the high tuition, high aid model, there was only a slight decline in the opportunity to persist. The State has been able to maintain grant levels sufficient for students to persist in the public higher education system.

Another state that has implemented the high tuition, high aid strategy is Washington. St. John (1999) examined the effect of the high grant, high tuition strategy of state funding of higher education on within-year persistence in the State of Washington. St. John analyzed three freshman cohorts, 1991-92, 1992-93, and 1993-94 in Washington's public four-year colleges and universities. Framed by previous research of national persistence models, this study assessed the effects of a student aid package on a student's likelihood of re-enrolling for a subsequent semester. The sample included ( $n = 13,003$ ) from the 1991 cohort, ( $n = 14,299$ ) from the 1992 cohort, and ( $n = 14,938$ ) from the 1993 cohort. The dichotomous dependent variable was within-year persistence. The independent dichotomous variables included family background, achievement and

college experience. Family background included 11 variables including males (coded as 1) and females (coded as 0). Student achievement and college experience included four dichotomous variables each. The researchers utilized financial need, family income and academic achievement as control variables. Similar to other studies, St. John used logistic regression as the statistical procedure for this study.

The background characteristics for the three student cohorts changed minimally. Changes in financial aid did occur for the three cohorts. The average grant award increased by \$430 between fall 1992 and fall 1993 while the average loan award increased by \$1,230. The percentage of students receiving grants remained stable, 21%, but the percentage receiving loans increased in 1993, from 25.3% to 29.6%. The average increase in grants and loans awarded in fall 1993 was greater than the tuition increase. As net tuition dropped, affordability improved for the average aid recipient. In the fall of 1993, the State of Washington increased its investment in need-based financial aid, increasing the number of students receiving grants. During that time, the total percentage of students receiving grants did not increase. The state grants served as a supplement of grant aid to students already receiving need-

based grants and increased within-year persistence for recipients. This study proves it is possible to assess the effects of state grant programs. State and federal policy makers should utilize this information in making policy decisions.

Hearn, Griswold, and Marine (1996) found differences in tuition and aid programs were stronger than differences associated with governance structures. The states in the Northeast were highest in tuition and aid while states in the South were the lowest. States with weak coordinating boards had the lowest tuition levels and overall, economically developed states were more likely to have a low tuition level and be more affordable. There was no systematic relationship between appropriations for public sector institutions, public sector tuition levels and state financial aid appropriations. Martin (2004) found that in order for institutions to operate without a deficit, endowment must be grown and costs lowered to prevent additional increases in tuition and decrease reliance on high tuition, high aid models. St. John, Hu and Weber (2001) focused on within-year persistence associated with high tuition, high aid policies and found that there was a substantial change in financial aid packages including a decrease in the percentage of students receiving grants

only and a substantial increase in the number of students receiving loans only. St. John (1999) found the average increase in grants and loans exceeded the increase in tuition in the fall of 1993.

Since the creation of the 1965 Higher Education Act, the policy environment and financing of higher education has changed dramatically. Policy makers need to be conscious of the pitfalls of high tuition, high aid strategies and how these policies impact not just various socioeconomic classes but differing genders and races. The next section will focus on the effects of policy decisions related to affordability of higher education.

#### Student Considerations

Students thinking of attending a particular college have a number of choices to make. What type of institution do they want to attend? Where is the institution located? How much does it cost to attend? The latter is perhaps the most important in the college selection process for many students. Therefore, researchers have done extensive reviews of the cost of attending college and the variables which influence if a student has access, persists and completes a college degree. How much student indebtedness a student accumulates in order to persist to degree

completion is an important consideration. Last, but certainly not least, are the policy considerations surrounding how affordable a college education is for students.

In an effort to determine how policy shifts in financial aid are impacting students directly, Hu and St. John (2001) examined student persistence in a public higher education system to determine the impact of the decreasing state support for public colleges and universities during the 1980's and 1990's. Decreasing state support for appropriations forced colleges to realign the cost burden to students and parents which led to an increase in high tuition/high aid policies. The study assessed the impact of policy shifts in financial aid in a state higher education system on within-year persistence by different racial and ethnic groups. The researchers were addressing the following questions: (a) Did changes in the combination of federal and state aid programs affect the adequacy of financial aid awarded to students from diverse groups in persisting in the state higher education system? and (b) Were there other factors that could help explain the disparity in aggregate persistence rates among racial and ethnic groups?

The researchers pulled data from the Indiana Commission for Higher Education's State Information System (ICHE-SIS). The system provided information on three full-time cohorts in Indiana's four-year public institutions for the academic years of 1990-91 ( $n = 3,540$ ), 1993-94 ( $n = 4,882$ ), and 1996-97 ( $n = 4,828$ ). The overall sample included ( $N = 13,250$ ). A random sample included data for African Americans, Hispanics and Whites. The independent variables used were student background (age, ethnicity, dependency status, and income), college experience (college grades, type of institution attended, housing status, and year in college), and financial aid (effect of receiving or not receiving a financial aid package). The dichotomous dependent variable was student persistence (yes = 1, no = 0). Logistic regression determined which variables influenced the probability that a student would persist. College experience, a control variable, assessed the direct effects of student aid.

The researchers found the overall persistence rates across the three years slightly declined for African Americans, Hispanics and Whites during the years under review. This could be due to the increase in tuition facing all students, including non-aid recipients. Hu and St. John found non-aid recipients responded negatively when high-

tuition, high aid policies were in place. When college grades and other college experience variables were included the significant differences in probability of persisting for different racial and ethnic groups disappeared suggesting that policy makers must be aware that focusing on financial affordability is important; however, it is not the entire solution to increasing college and university persistence rates.

St. John and Starkey (1995) examined the influence of cost of higher education on within-year persistence through comparing three alternative ways of specifying price variables in a within-year persistence study: net price (tuition minus grants), net cost (total cost minus total student aid), and differentiated prices (tuition, grants, loans and work). The researchers used the National Postsecondary Education Student Aid Survey of 1986-87 (NPSAS-87) to compare different approaches to assessing the effects of prices on persistence. Dichotomous variables cited in previous research determined the dependent variable, persistence. Independent variables included (a) ethnicity, (b) gender, (c) mother's education, (d) high school experience, (e) financial background, (f) college characteristics, (g) year in college, (h) grades, (i) aspirations, and (j) prices (yes = 1, no = 0). Descriptive

statistics provided an overview of the study participants. Approximately 60% came from upper-middle and upper-income families (above \$30,000), approximately 13% from low-income families (below \$11,000), and about 16% from lower-middle income families.

The researchers analyzed the difference in the three price models, net price, net cost and differentiated price through logistic regression. Ten variables were significant in all three models. Being a male, being older, having a general education diploma (GED) and attending a private college were consistently significant and positively associated with persistence. Attending full time, being a junior or senior, and having a grade point average lower than a B were consistently significant and negatively associated with persistence. Having short-term aspirations was consistently significant and positively associated with persistence, whereas having long-term aspirations (advanced degree) was consistently significant and negatively associated with persistence. When comparing the three pricing models, six variables changed in significance. A student who was older, married, from an upper-middle income family, and from an upper-income family was more likely to persist when net price or net cost was considered, but they were not more likely to persist when multiple price

variables were considered. Net price and net cost were significant and negatively associated with persistence. A difference of \$1,000 in net cost or net price decreased the probability of persistence by less than 0.1 percentage point.

The study findings suggested policy makers should be aware that students respond to a number of factors within a pricing structure rather than a single net price. Also, students may respond differently on persistence decisions versus initial enrollment choices.

Titus created another study related to affordability and how students persist. Titus (2006) examined the influence of the financial context of institutions on student persistence at four-year colleges and universities. The theoretical framework utilized resource dependency theory and incorporated components of two conceptual models. The models included Bean's (1990) student attrition model and the Berger-Milem (2000) organizational behavior-student outcomes college impact model. The research questions addressed were (a) Which student variables explain college student persistence within a four-year institution? (b) What revenue patterns explain differences between four-year institutions in the probability of student persistence? and (c) After taking into account

student-level predictors of persistence and other institution-level variables, is student persistence influenced by an institution's expenditure patterns?

Student level data were drawn from the 1996-1998 Beginning Postsecondary Students, a longitudinal database sponsored by the NCES, and the NCES's Integrated Postsecondary Education Data System (IPEDS) Fall 1995 and Fiscal Year 1996 Finance surveys. The sample included ( $N = 4,951$ ) first-time freshman that were degree seeking undergraduate students attending ( $n = 367$ ) four-year institutions. The dependent variable was persistence. The independent variables used were (a) measures of student characteristics, (b) college experiences, (c) student attitudes, and (d) environmental pull variables such as financial need and work responsibilities. Student background characteristics which were included were pre-college academic performance, gender, race/ethnicity, and socioeconomic status (SES). Hierarchical generalized linear modeling (HGLM) was the statistical procedure used to address the research questions.

The results of the model showed the odds of persisting in a four year college or university related to (a) college academic performance, (b) declaring a major, (c) living on campus, and (d) involvement in college. The researchers

found that persistence did not relate to the following student level variables: (a) pre-college academic performance, (b) gender, (c) race (d) socioeconomic status, (e) satisfaction with the campus climate, (f) unmet financial need, (g) the number of hours worked per week, (h) working off-campus, or (i) number of missing data items. Titus did find that attending a highly selective institution increases the likelihood of persistence. The researcher found that after controlling for total expenditures per full-time student, a higher percent of expenditures on administrative costs is associated with lower odds of persistence.

Paulsen and St. John (2002) examined how the student choice perspective aligns with the financial nexus between college choice and persistence among diverse groups of students. The financial nexus model established two important aspects of student enrollment behavior, college choice and persistence. College choice and persistence are considered to be parallel factors that influence persistence including (a) students' perception of financial aid, and (b) measurable dollar amounts in reference to financial variables such as tuition, financial aid, and living costs. The model is also able to examine cross-group comparisons if a group is sufficiently diverse.

Building on previous research using the nexus model, the researchers used the National Postsecondary Student Aid Survey of 1987 (NPSAS-87) as the primary data source. Using logistic regression, the independent variables (effects of student background, financial reasons for choosing a college, college experience, current aspirations, and finances) predicted the amount of variance each contributed to the variance in the dependent variable (persistence).

First, 15 variables related to student background were coded to become dichotomous (e.g., mother completed less than high school, college degree, master's degrees, and advanced degree) (1 = yes, 0 = no). Second, two design sets of dichotomous variables measured the perceptions and expectations about college costs (e. g. private, four-year, on campus, full-time) when a student made their college choice (1 = yes, 0 = no). Third, 10 variables related to the college experience (mostly A, B average, mostly C, and not reported) were coded (1 = yes, 0 = no). Fourth, four dichotomous current aspiration variables (complete vocational qualification, some college, master's degree, or advanced degree) were coded (1 = yes, 0 = no). Last, five variables were treated as actual dollar amounts. Grants, loans, work study, and tuition charges combined with living costs for food and housing were the last variables used. By

combining the values, the researchers were able to provide a complete picture of how costs interrelated with a student's perception about the cost of college attendance. Each variable included two levels (1 = yes, 0 = no). Sequential logistic regression analysis determined the ways in which the various sets of variables were interrelated to persistence. Delta-p statistics, which reports the percentage increase or decrease in the probability a student will persist, measured the change in probability of persistence attributed to a one unit change in each independent variable.

Cross-class comparisons of descriptive statistics in reference to educational attainment showed that lower-income students are less likely than higher-income students to attend private colleges, four-year colleges, attend full-time, or live on campus. Women who lived in poverty were less likely than men to maintain continuous enrollment, a contrast not evident for working or middle class groups. Poor students with nontraditional pre-college educational experiences and those with general educational diplomas were more likely to persist than those with high school degrees. The analysis by social class proved African Americans in the poor and working classes, not middle or upper income levels, were more likely to persist than their

White peers. Also, poor Asian Americans were less likely than other race (particularly White) students to persist. Last, cross-class comparisons of descriptive statistics of educational attainment showed poor and working class students were more likely than middle and upper income students to earn A grades, but aspired to lower levels of postsecondary education attainment overall.

Access and persistence are important indicators for success in college. Socioeconomic class and racial group provide additional success indicators. St. John, Paulsen, and Carter (2005) examined the role student financial aid played in promoting postsecondary opportunity for diverse groups. The researchers used the financial-nexus model to assess the effects of student financial aid on college choice and persistence by African Americans and Whites. The nexus model approach integrated the influence of perception of finances with the effect of costs and financial aid, using a differentiated price-response model that overcame the limitations of the net price approach. Through the nexus model, the researchers examined how student background, finance-related reasons for choosing a college, college experience, current aspirations, prices and subsidies, and living costs influenced persistence among African Americans and Whites.

The researchers used results from the NPSAS-87 as the data source for the study. Sequential logistic regression determined the influence of the independent variables (student background, college choice, college experience, current aspirations, and financial support) on the dependent variable (persistence). First, 16 dichotomous variables related to student background were coded for two levels (1 = yes, 0 = no). Second, two design sets of dichotomous variables were added related to the financial reason determining college choice and coded for two levels (1 = yes, 0 = no). Third, 10 variables related to college experience were included in the analysis and coded for two levels (1 = yes, 0 = no). Fourth, aspirations were coded as dichotomous variables with (1 = yes, 0 = no). Fifth, four dichotomous price related variables were added: (a) grant amount, (b) loan amount, (c) work study amount, and (d) tuition charges (actual, \$1,000). Sixth, annual food and housing costs indicated living costs. Delta-*p* statistics assessed the impact of a unit change in the independent variable on the probability of persisting.

The findings suggested diverse patterns of educational choice both across and within racial groups. Family backgrounds and public policies influenced student choice patterns. Tuition and student aid played a substantial role

in the college choice process for African Americans, while grants and tuition had a substantial and direct influence on persistence. Whites, more economically advantaged than African American students, also made college choice decisions based on tuition and student grants.

In order to increase college persistence among African Americans, policymakers must realize the need to continue offering federal grants and create policy to make higher education as affordable as possible.

Students from diverse racial groups are dependent on financial aid to provide access to college. Kim (2004) analyzed the impact of financial aid on students' college decisions with an emphasis on differences by racial group. The researcher's study questioned the social justice agenda of financial aid and if financial aid promoted equal opportunity for all students regardless of their racial differences. The specific questions were (1) What were the impacts of the different types of financial aid (loans only, grants only, and the combination of grants with loans) on students' college choices? and (2) To what extent did the impact of specific types of financial aid vary by racial groups?

The variables for the study were determined based on the college choice model. The dependent variable was the

probability of attending the first-choice institution. The independent variables included (a) gender, (b) race, (c) family income, (d) father's education level, (e) mother's education level, (f) academic ability, (g) number of colleges applied to, and (h) financial aid packages.

Kim utilized a sample from the Freshman Survey of 1994, collected by the University of California. The sample ( $N = 5,136$ ) included only students that entered a four-year institution in the fall of 1994. The sample was broken into two groups of students. Students who attended their first choice institution ( $n = 3,931$ ) were group one and students who did not attend their first-choice institution ( $n = 1,183$ ) were group two. Ethnic representation included 85% White, 6% African American, 5% Asian, and 3% Latino. Twenty-five percent did not receive financial aid. Seven percent received loans only. Twenty-seven percent received grants only, while 41% received some combination of loans with grants.

Chi-square tests determined if there were significant differences in attending a first-choice institution in addition to the types of financial aid packages received across racial differences. Sequential logistic regression models examined the effect of specific types of financial

aid on the probability of attending a first-choice institution.

The findings revealed students who received some type of grant or the combination of grant and loan had a positive impact on the student attending their first college choice. Financial aid did have different effects on students by racial differences in deciding to attend their first-choice institution. The probability of attending a first-choice institution increased for White and Asian students if they received grants or loans. White students tended to choose their first-choice institution when offered grants, while Asian American students tended to choose their first college choice if funds were available to borrow. There was no significant effect for African American and Latino students on attending first-choice institutions. These findings were consistent with previous literature, which explained the significant effect diminished when background and academic characteristics were included. This explained limited knowledge about the importance of financial aid and the positive impacts of attending a first-choice institution.

Students make a college decision based on the type of financial aid package they receive, including grants and loans. Minicozzi (2004) provided the first study of the

effect of debt burden on a college student's job decisions for four years following graduation. The passage of the Higher Education Act of 1965 established the Guaranteed Student Loan Program (GSL), which over time has come to include the Stafford Loan Program, means tested grant programs, and the Pell Grant program. Minicozzi used results from the 1987 National Postsecondary Student Aid Survey, NPSAS-87, to comprise a sample ( $N = 1,006$ ) males under the age of 35 that had completed post-secondary training and had received a guaranteed student loan. Of the sample participants, 86% were White and 50% received a baccalaureate degree. The dependent variables were wages in the first and fifth year post graduation. The independent variables included (a) age, (b) bachelor degree, (c) tenure at first job, (d) total educational debt, (e) school ranked in top quartile, and (f) United States unemployment rate in first year post attendance.

The linear regression determined wages are higher for men who were older, White, completed a bachelors degree, attended a higher quality college and went to work in an economy with low unemployment. For each additional \$1,000 of debt, there was a 1% salary increase while on the job after the first year of graduation and two-tenths of a percent of salary increase over the next four years. The

findings also suggested that men with larger debt were more likely to find employment in the first year after graduation. Those who were unemployed displayed higher wage growth once employed.

In order for a student to understand the importance of investing in a college education, there must be an outcome of earnings to entice them to persist to degree completion. Donhardt (2004) analyzed the relationship between academic achievement in postsecondary education and the financial success of baccalaureate recipients in the workplace during the first three years of their careers. Donhardt framed the study by reviewing Cognitive Skills Theory (Human Capital) grounded by the assumption made by employers that students who do well in academic programs will be productive on the job (Baird, 1985; Jencks, 1979; Solmon, Bisconti, & Ochsner, 1977) and Certification Theory which says employers use educational attainment as a filter to reduce applicant pools (Pascarella & Terenzini, 1991).

Donhardt answered two research questions: (a) Does academic success, measured by college grade point average, predict success in earnings? and (b) Does achievement in college, measured by grade point average, predict growth of earnings over-time for traditional age students? The researchers compiled data from a Carnegie Research

Extensive University, state unemployment insurance files, university student enrollment files and the university degree file. The sample included ( $N = 7,140$ ) students after merging duplicate records.

Multiple regression and analysis of variance provided the statistical analysis needed. In the regression model, the dependent variable, quarterly earnings, regressed on the independent variables: grade point average, age, registration type, major, gender, race, and industry. The amount of variance explained in the model ranged between 17% and 29% over the 13 quarters. The significance level was ( $\alpha = .05$ ). Surprisingly, grade point average showed significance only in two quarters.

A two-way ANOVA examined earnings in the three years after graduation. Mean earnings of high achievers ( $n = 77$ ) and low achievers ( $n = 72$ ) were analyzed. Significant between-group effects did not occur. Donhardt found no significant difference between earnings of high and low academic achievers in the first three years of their careers and no significant interactive effects between grade point average and quarterly earnings. A rise in earnings occurred in the 5<sup>th</sup>, 9<sup>th</sup> and 13<sup>th</sup> quarters after graduation.

While college graduates may not see significant gains in income immediately following graduation, an important component to a student being successful and persisting to degree completion is the quality of education and instruction that a student receives. Donald and Denison (2001) examined the quality assessment process and the role of the student. Institutions utilized quality assessment, historically, in response to external pressures for accountability. Donald and Denison suggested that if the assessment is to be useful, administrators, faculty members, and students need to have an understanding of the criteria and guidance to facilitate improvements in day to day operations of the university.

The purpose of this study was to examine students' perceptions of quality criteria. Stakeholders identified indicators of quality in postsecondary education through a national survey. The researchers planned to answer the following questions: (a) To what extent would a representative sample of students in the same postsecondary institution view the criteria as important indices of student quality? (b) Would students link certain criteria together and discriminate between others? (c) Do students perceive the importance of quality criteria as constant across their undergraduate years? and (d) What are the

effects of gender, program, and cohort on student perceptions of student quality?

The researchers chose one research university in the fall of 1994 to survey undergraduate students ( $N = 400$ ) from arts and sciences, education, and engineering. Students ranged in age from 18 to 24 years of age. Twenty-five percent of the students were attending college for the first time and had never participated in a study. Forty-one percent had graduated from high school and participated in a pre-university college program while the remaining 34% were upperclassmen.

The researchers administered a questionnaire designed to examine student learning during the third week of classes. Students were asked to respond to 25 criteria on a 5-point Likert type scale (1 = "not at all important," 5 = "extremely important") to indicate how important they felt each criterion was for evaluating the quality of their college experience.

To assess consistency among the student responses and the stakeholders, only the results from those respondents in the original study who specifically indicated they were rating the criteria in reference to university students ( $n = 93$ ) were used for comparative purposes. Commitment to learning, ability to analyze, synthesize, think critically,

and general academic preparedness were the most important criteria for the stakeholders and students. To determine the relationship among the criteria, a principle components analysis of the composite ratings including a varimax rotation extracted five factors, accounting for 57.3% of the variance in the dependent variable, student quality. The researchers found that student perceptions of the criteria were consistent with previous research results on input and output and that students viewed quality in more comprehensive terms than faculty.

Quality is a consideration for students at all touch points in the education process. Students may choose a two-year community college to begin their education versus a four-year institution. Hilmer (1997) analyzed the effect that attending a community college has on a student's future. Based on the theory that college choice is a tradeoff between quality and cost, Hilmer identified and answered two research questions: (a) How well did the student perform after transferring from the community college? and (b) How did attending a community college affect the quality of the university to which the student transferred? The researcher used data from the High School and Beyond (HSB) survey conducted by the National Center for Education Research.

A survey, utilizing two cohorts of randomly chosen sophomores and seniors from 1980, provided the information for the study. The two data sets were combined for a total of ( $N = 13,350$ ) observations in which ( $n = 1,690$ ) chose to attend a community college before transferring to a university while ( $n = 5,218$ ) went directly to a four-year university. The researchers determined quality choices by estimating equations by ordinary least squares for the subsamples. Hilmer explained that cost of attendance is one of the primary determinants of a student's quality choice and for this reason controlled for cost in the quality equation. The dependent variable used was quality, while the independent variables were (a) ethnicity, (b) college preparatory curriculum, (c) region of the United States, (d) family income, (e) extracurricular activities, (f) test scores, (g) self reported high school grades, (h) family income, test scores and grades (both high and low); (i) SAT scores; and (j) university access, community college access, university fees and community college fees.

Hilmer found males chose higher quality institutions than females when attending college directly from high school. There was no difference in the quality chosen by males and females who started in community colleges. Blacks chose lower quality universities than Whites if they

transferred, while Hispanics did not choose statistically different qualities than Whites regardless of the path. The researchers found that academic performance had a larger impact than income for both paths. Students who had low test scores and/or poor high school grades were able to negate these values by attending a community college and transferring.

Ability and performance were more important factors than wealth in determining if a student would ever attend a university. Low income students were one and three-quarter times more likely to attend than low ability and low performance students, while high income students were one-third less likely to attend than high ability and high performance students. Overall, the low cost of community college attendance benefits all students, even those with high levels of family income.

St. John (2001) found that when high tuition, high aid policies were in place, persistence rates declined for African Americans, Hispanics and Whites. Non-aid recipients were impacted greater than those receiving aid when high tuition, high aid policies were in place. When college grades and other experience variables were included the significant difference in probability of persisting for different racial and ethnic groups disappeared suggesting

that policy makers must be aware that focusing on financial affordability is important but not the entire solution to increasing college and university persistence rates.

St. John and Starkey (1995) examined the influence of the cost of higher education on within year persistence through comparing three alternative ways of pricing. The researchers found that students respond to a number of factors within a pricing structure rather than a single net price and that students may respond differently on persistence decisions versus initial enrollment choices.

Titus (2006) examined the influence of the financial context of institutions on student persistence at four-year colleges and universities. Titus found attending a highly selective institution increased the likelihood of persistence. After controlling for total expenditures per full-time student, a higher percentage of expenditures per full-time student and a higher percentage of expenditures on administrative costs was associated with lower odds of persistence.

Paulsen and St. John (2002) examined how the student choice perspective aligns with the financial nexus between college choice and persistence among diverse groups of students. Poor students with nontraditional pre-college educational experiences and those with general educational

diplomas were more likely to persist than those with high school degrees. Cross-class comparisons of descriptive statistics of educational attainment showed poor and working class students were more likely than middle and upper income students to earn A grades, but aspired to lower levels of postsecondary education attainment overall.

St. John, Paulsen, and Carter (2005) examined the role student financial aid played in promoting postsecondary opportunity for diverse groups. Family backgrounds and public policies played a substantial role in the college choice process for African Americans, while grants and tuition had a substantial and direct influence on persistence. More economically advantaged Whites made college choice decisions based on tuition and student grants. Kim (2004) examined the impact of financial aid on a students' college decision with emphasis on differences by racial group. Students who received some type of grant or the combination of grants and loans had a positive impact on the student attending their first college choice. Financial aid did have different effects on students' by racial differences in deciding to attend their first choice institution.

Minicozzi (2004) explored the effect of debt burden on students' job decisions for four years following

graduation. Men with larger debt were more likely to be employed in the first year after graduation. Students unemployed displayed higher growth once employed. Donhardt (2004) analyzed academic achievement in postsecondary education in the financial success of baccalaureate recipients in the workplace during the first years of their careers. Donhardt found no significant difference between earnings of high and low academic achievers in the first three years of their careers and no significant interaction effects between grade point average and quarterly earnings. Donald and Denison (2001) researched the role of a students' perception of quality assessment and found that students viewed quality in more comprehensive terms than faculty.

Hilmer (1997) examined the effect of attending a community college and found that ability and performance were more important factors than wealth in determining if a student would ever attend a university. Low income students were more likely to attend than low ability and low performance students while high income students were less likely to attend than high ability and high performance students. Overall, the low cost feature of community college attendance benefits all students, even those with high levels of family income.

All students, regardless of their socioeconomic status, have seen a shift of cost burden from the taxpayer to the individual since the 1990s. In doing so, have policy makers turned their back on certain groups of constituents? Has this policy shift compromised the quality of education students are receiving? To examine these issues further, the next section will examine policy considerations which impact affordability of higher education including (a) governance structure, (b) leadership, (c) organizational effectiveness, (d) resource allocation, and (e) accountability.

#### Policy Considerations and Governance

There are many components to creating a successful higher education delivery system within and across the United States. The structure of higher education within the state is important, but of equal importance is the leadership within each state including the governor and key legislatures. Leadership within the institution is important as leaders determine resource allocation. Resource allocation is determined on the perception of improving institutional effectiveness and holding faculty and staff accountable.

Politics at the federal and state level impact higher education policy and ultimately appropriations to institutions. Gittel and Kleinman (2000) provided a comparative case study of the impact of state politics and culture on higher education policy. Three states, California, North Carolina, and Texas, provided examples for the research. Divided between the modernist and traditionalists, North Carolina's political environment proved a challenge. California's environment proved a long tradition of populist reforms and an accepting electorate. Texans believed in individualism of politics. To understand just how policy was developed within these three states, the researchers looked at the higher education regimes and its membership including (a) campus presidents, (b) business leaders, (c) public officials, (d) bureaucrats, (e) faculty, and (f) the role of private institutions. The researchers found regime leaders typically included the governor, lieutenant governor (Texas), key state legislators and the system heads of the major four-year college systems.

Gittel and Kleinman explored the impact of regimes on access and economic development in the three states. The education pipeline, a measure of a state's ability to move residents through the K-12 system and into the college or

university system, determined access. A cross-state analysis revealed all three case study states showed evidence of leaks within the pipeline. Many students, especially minorities, did not progress on to the next level at various points within the system. The researchers intended to assess the general links between public colleges and economic development but, after cross-state analysis, no linear connection existed. The most significant findings proved political leaders, especially the governor and top elected legislative officials, play a significant role in the design and implementation of policy reforms.

While state political leaders play a significant role in policy reforms so do the media that critique their performance. McLendon and Peterson (1999) analyzed the 1995 appropriations conflict between the University of Michigan and Michigan State University to gain insight on the impact of the media on higher education policy decisions. Researchers grounded the study by the theory of news construction from mass communication literature to predict and interpret press coverage of the historic event. The purpose of the study was to determine if local newspapers gave preferential treatment to their local universities creating bias in how the information was presented to

policy makers. The two local newspapers in question were the *Ann Arbor News* and the *Lansing State Journal*. The theoretical framework provided by Herbert Gans (1980) broke story construction into two processes: (a) determining the availability of the news sources and relating journalists to their sources, and (b) determining the suitability of news and tying a journalist to their audience. Gans believes these two factors are primarily responsible for the type of news stories that are constructed.

The study produced five hypotheses: (a) The *Journal* would provide more news coverage and more prominent news stories of the university appropriations conflict than the *News*; (b) the *News* would devote more coverage to the University of Michigan than to Michigan State University, while the *Journal* would provide more coverage to Michigan State University than it would to the University of Michigan; (c) each paper would rely on sources affiliated with the university located within its primary readership; (d) sources quoted would be positive for the paper in their local area; and (e) news themes would be positive for the university in their local area.

To test the five hypotheses, the researchers pulled news stories from both the *Journal* and *News* during the time period from January to July of 1995. Through content

analysis, researchers were able to determine if there were any emerging themes from the ( $N = 67$ ) articles that focused on the appropriations issue. The findings were consistent with the hypotheses. The *Ann Arbor News* and the *Lansing State Journal* published polar opposites in their coverage of the event. Each paper represented the issue in a tone and manner that was supportive of the university in their area.

The media chooses to support or criticize policy makers based on the advantages that higher education can provide to the local, state or federal economy. Gittel and Sedgley (2000) provided an analysis of the benefits to states for funding and supporting public higher education through looking at economic outcomes from states known to have high technology industry. The purpose of the study was to provide insight on important policy issues in public higher education and suggested useful lines of future research, including identifying other factors to consider in future studies.

The conceptual framework, based on the work of Robert Solow (1957), suggested that an economy's ability to prosper and generate well-paying jobs directly related to its capability in high technology industries. This occurred at both the supranational, national and subnational levels.

To explore the relationship between state higher education policy and high-technology employment, the researchers used the percentage of state employment in high-technology industries as the dependent variable. Expenditures on higher education and average annual growth in expenditures by state and local governments per full-time equivalent student were the independent variables. Ordinary least squares regression revealed a negative association between expenditures and an increase in high-technology employment.

The authors determined uncertainty over the relationship between state support for public higher education and high-technology employment. Concern stems from complications such as public higher education priorities, the starting position of the state economy and population, the degree of concentration of higher education activity, the role of private higher education and federal support of higher education on high-technology employment, the quality of life factor by state, and finally, the closed economy and limited geographical mobility across states. Public higher education has a role in economic growth and these complications are important considerations for future state and federal policy. Policy makers should

make recommendations on how intellectual property concerns at two- and four-year institutions are developed.

Welsh (2000) addressed intellectual property concerns of both faculty and administrators in the field of higher education. The conflict over intellectual property refers to who retains ownership or copyright over technology-based course materials created by faculty when faculty have used institutional resources, are commissioned by the university to do so, and the product is believed to have considerable market value (Hawkins, 1999; Thompson, 1999). Most campuses have not clearly defined policies covering how intellectual property, conflict of interest, and revenue sharing will be addressed (Hawkins, 1999). With an increasing focus on capitalism by universities, administrators and faculty members are in conflict over who should benefit from intellectual property.

A review of the literature proved that administrators seek more control and discretion in decision making over the use of instructional technologies and the revenue it generated. The researchers found faculty tried to maintain control over their work and the instructional process and seek autonomy from institutions and their managerial control. The two opposing viewpoints brought the researcher to address the following questions: (a) What is the policy

process that created the changes? (b) What conflicts occurred in its course? (c) How are the policy problems being defined? and (d) Who has the power and authority to define them?

To address the four research questions, Welsh conducted a case study. Welsh researched how the Kansas Board of Regents, a consolidated statewide governing board, and the six public universities it governed, restructured their intellectual property policies which included the development of ownership policies for technology-based course materials. In November of 1998, the Board reached a consensus on a system-wide intellectual property policy. With advice from three advisory groups: (a) Council of Chief Academic Officers (COCAO), (b) the Council of Faculty Senate Presidents (COFSP), and (c) the Student's Advisory Committee (SAC), a compromise was made and the Board voted to appoint its own Task Force to recommend policies for the Kansas Regents system.

The outcome, viewed as a victory for the chief academic officers of the system and their definition of the policy problem, proved to assert institutional ownership over software and technology-based course materials developed by faculty and approved by the system's policy making body. After approval of the policy, the conflict

between the faculty and administrators resurfaced. COFSP began lobbying that faculty felt their autonomy and academic freedom were compromised with the new policy. With the passing of the policy, it was clear that a new relationship is developing between academia, industry, and the state.

Private institutions help fuel the economic engine of the local, state, and federal economy just as public institutions do. Thompson and Zumeta (2001) examined the relationship between key state policy variables: relative public-private tuition prices, state student aid funding and public institution density, and the competitive position of private colleges and universities. The conceptual framework used was from a study by Astin and Inouye (1988) in which they took the individual institution as their basic unit of analysis and focused on the relationship between state policy variables and institutional enrollments and enrollment demographics stratified by market segment.

The primary explanatory variables were statewide private-public tuition gap, various measures of state spending on student aid per full-time equivalent student, and per-student dollar amounts of state funds going to private institutions. The sample population came from the

Higher Education General Information Survey (HEGIS) and the Cooperative Institutional Research Program (CIRP). The researchers replicated the study done by Astin and Inouye but made modifications such as using the HEGIS sample of over ( $N = 1,000$ ) private institutions.

The initial dependent variable used was institutional undergraduate full-time equivalent enrollment, substituting full-time freshman enrollments as the second dependent variable. The researchers utilized the original independent variables mentioned earlier. Using stepwise multiple regression, the researchers found similar results to Astin and Inouye. Public tuition change is positively associated with private institution enrollments. State spending on private college student aid was significantly associated with private institution enrollments. The public tuition change variable was both positive and significant in the analysis of percentage of Hispanic enrollments at all private institutions, while only in medium selectivity private institutions for Asians. Overall, changes in state aid over the 1980-85 period were positively associated with the number of low-income and middle-income students among private institutions' first-time, full-time freshman population.

All students, despite socioeconomic status, are eligible to attend a two-year community college and transfer to a four-year public or private institution upon meeting admission requirements. Ehrenberg and Smith (2003) analyzed the importance of state two- and four-year institutions and their ability to provide a smooth transition for transfer students within the system. "Public higher education institutions enroll about 80% of American college and university students. In the fall of 1996, 55% of freshmen enrolled in public institutions and 42% of full-time freshmen in public institutions began their study at two-year colleges" (p.13). Based on these statistics, it is important for policy makers to understand the critical mass of students that could potentially transfer and graduate from a four-year public or private institution.

To date, researchers have found no evidence of research that states the optimal way to organize public higher education in a state to facilitate transfer. Ehrenberg & Smith relied on data from the State University of New York (SUNY) system, consisting of ( $n = 64$ ) institutions. The researchers compared three cohorts: (a) students who graduated by the fall of 1998 or in the fall of 1999, (b) students still enrolled in the fall of 1998 or in the fall of 1999, (c) students who dropped out by the

fall of 1998 or in fall of 1999. The sample included ( $N = 13,383$ ) transfer students.

To determine which students were more likely to complete a four-year degree, the researchers used ordinary least squares regression. The dichotomous dependent variable was receiving institutions within the SUNY system. The dichotomous independent variables were average annual wage (three-year average) at former institution, average annual wage (three-year average) at receiving or transfer institution, distance to the college, AA/AS degree completed, AAS/AOS degree completed, and certificate of program completion. Coding descriptions of the dichotomous variables were not included.

The researchers found that students who transferred with a two-year degree (AA or AS) had a 0.20 higher probability of receiving their four-year degree, a 0.07 lower probability of still being enrolled in the four-year institution and a 0.13 lower probability of having dropped out of the four-year institution by the fall three-years later than students who transferred before earning any degree or certificate of program completion with other variables held constant. Transfer students that had earned an AAS or AOS degree had a 0.15 higher probability of receiving their four-year degree within the three-year

period, a 0.04 lower probability of still being enrolled, and a 0.12 lower probability of having dropped out of the four-year institution.

In order for transfer students and other degree seeking students to be successful in completing a two- or four-year degree, students need to experience quality undergraduate teaching. Colbeck (2002) conducted a qualitative study to determine the effects of two state policies with the same goal: improve undergraduate teaching and learning. The conceptual framework integrated literature on policy instruments and policy implementation. Colbeck compared and analyzed (a) administrators' and faculty members' responses to mandates and inducements, (b) how other state policies influenced implementation of the mandate and inducement policies, (c) how state policies and consequent administrators' strategies affected faculty efforts to improve instruction, and (d) the similarities and differences in management strategies and faculty responses across institutions to two different policies designed to improve undergraduate education.

Case studies, completed at two public flagship universities and two regional comprehensive universities, provided a total of ( $N = 170$ ) interviews with administrators and faculty. The researchers' questions

explored responses to the Ohio faculty workload mandate and the Tennessee performance funding initiative. Colbeck found similarities in the implementation of the Ohio faculty workload mandate and the Tennessee performance funding initiative. Despite the impact on faculty and undergraduate teaching and learning, administrators provided their states with evidence of compliance with the new policies. Staff changed how they reported faculty time, but there was little impact on improving student-teacher interaction or learning. The researcher suggested state policy makers, if concerned about improving teaching and learning, should consider the political systems in which teaching and learning occur.

One way for policy makers to guide performance in undergraduate instruction is by mandating instructional procedures. Mills (1998) examined how the state coordinating board of Oklahoma, the Oklahoma State Regents for Higher Education (OSRHE), created and implemented a statewide mandate on remedial education. The mandate called for state four-year institutions to no longer offer remedial courses pushing all remedial course work to the two-year community college system. The OSRHE is a constitutionally established, regulatory coordinating board with a full range of responsibilities including planning

and coordination, program approval, and recommendation and allocation of consolidated budgets for the state's public colleges and universities.

The study focused on the issue of how people in three institutions made sense of the OSRHE's policy mandate and stance on remedial education. The study addressed the following questions: (a) How do faculty and staff members understand the policy and define the policymakers' intent and its relevance to the institution? (b) Are there tensions between the institutional traditions, values, and practices and the policy mandates? Do the institutions change to fit the policy or is the policy massaged and redefined at each institution? and (c) How do faculty and staff reconcile their own sense of themselves in the face of the policy mandate?

In this qualitative study, Mills identified three separate institutions in Oklahoma as case studies: Langston University, a historically black college; Tulsa Community College, an open access college; and the University of Central Oklahoma, a comprehensive university. Both Langston and the University of Central Oklahoma had admission requirements and were moving away from offering remedial courses.

Through advice from administrators on staff, Mills identified individuals who were involved in developing and implementing procedures for placement testing and remedial instruction and services. Mills interviewed a group of ( $N = 50$ ) that included institutional assessment staff, academic support service staff, full-time faculty teaching remedial courses, and chairs and members of the departments most directly affected, science and math. The groups were composed of ( $n = 15$ ) from both Langston and Tulsa Community College and ( $n = 20$ ) at the University of Central Oklahoma. Through semi-structured interviews, Mills was able to identify key findings of the policy implementation process and how the culture changed within each institution.

The new policy increased the number of students who took remedial courses. All three institutions used the implementation process as an opportunity to revamp their placement test procedures and to reconsider the secondary placement tests used. Despite the opportunities the mandate provided, the faculty and staff members of all three institutions had little or no respect for the role of the OSRHE in policy making. This study was an example of how public higher education has become a bureaucratic hierarchy operating in a top-down fashion to enact mandates and accomplish policy objectives.

Just as policy makers have the authority to mandate instructional requirements, they also have the ability to influence a student's college choice through policy. Perna and Titus (2004) empirically tested the hypothesis that state public policies influence the type of college or university that high school graduates attend, after controlling for student level predictors of enrollment. The researchers reviewed the literature, which suggested that four kinds of state public policies can influence the type of college that individuals in the state attended: (a) direct appropriations to colleges and universities, (b) financial aid to students, (c) tuition, and (d) policies related to academic preparation at the elementary and secondary school levels.

The researchers structured a theoretical framework based on a combination of economic theoretical approaches and traditional economic perspectives on why students decide to attend college. The research questions addressed were (a) What is the relationship between state public policies and the type of institution that high school graduates attend after controlling for student level predictors of college choice and other state characteristics? and (b) How do the college enrollment patterns of high school graduates vary by socioeconomic

status after taking into account measure of state public policies and other state characteristics?

Student data for the study were gathered through the National Educational Longitudinal Study (NELS, 92/94), which is sponsored by NCES. The sample included ( $N = 10,148$ ) high school graduates in ( $n = 50$ ) states. Data for the state level indicators were collected from IPEDS, Digest of Education Statistics (NCES, 1993, 1994), State Comparisons of Education Statistics: 1969-70 to 1996-97 (NCES, 1998), National Association of State Scholarships and Grant Programs (NASSGAP), and the U.S. Census Bureau's Current Population Survey (CPS). Multilevel modeling was used to address the following research questions: (a) What is the relationship between state public policies and the type of institution that high school graduates attended after controlling for student level predictors of college choice and other state characteristics? and (b) How did the college enrollment patterns of high school graduates vary by socioeconomic status after taking into account measures of state public policies and other state characteristics?

The dependent variable was type of institution attended with five categories: (a) not enrolled, (b) enrolled at an in-state public two-year college, (c) enrolled at an in-state public four-year institution, (d)

enrolled at an in-state private four-year institution, and (e) enrolled at an out-of-state institution. The independent variable was enrollment status at two levels: (a) student level, and (b) state level.

The first finding was that low socioeconomic (SES) high school graduates were less likely to enroll in any type of college or university in the fall after graduating from high school. Second, state public policies do not explain SES differences in college enrollment but measures of all four types of state public policies (direct appropriations to higher education institutions, tuition, financial aid, and K-12) relate to the enrollment patterns of high school graduates. Third, this research highlights the importance of viewing the effects of state public policies on a state's higher education system as a whole. The analysis showed that appropriations, tuition, aid and the quality of K-12 education influence the distribution of college enrollments within a state. Fourth, state need-based financial aid and institutional financial aid promoted student choice among different types of colleges and universities. Fifth, increasing direct appropriations to colleges and universities in the state reduced "brain drain." After controlling for student and state level predictors, the likelihood of enrolling in an out-of-state

higher education institution declined as the share of total appropriations to colleges and universities in the state increased. Last, college enrollment patterns mirrored the composition of a state's higher education system.

A review of the literature surrounding policy considerations and governance structure pointed to the significant role the governor and top elected officials play in the design and implementation of policy reforms. The media will support the mission and vision of the institution in their area if given the opportunity. There is no defined relationship between higher education policy and high technology employment. However, public higher education has a role in economic growth and the complications surrounding high technology. Policy makers should examine high technology and intellectual property concerns to determine future opportunities. Due to the importance of key state policy variables such as relative public-private tuition prices, state student aid funding and public institution density, and the competitive position of private colleges and universities, state policy makers need to be conscious of who is attending college and where they are attending. Two-year community colleges provide an opportunity for students to complete two years of college at a low cost before transferring. Ehrenberg and

Smith (2003) found that students who transferred with a two-year degree were more likely to complete a four-year degree and to do so in a three-year period. Perna and Titus (2004) tested the hypothesis that state public policies influenced the type of college or university that high school graduates attended and found that low socioeconomic (SES) high school graduates were less likely than their peers to enroll in any type of college or university in the fall after graduating from high school. The analysis showed that appropriations, tuition, aid and K-12 education influenced the distribution of college enrollments within a state.

While it is important for policy makers to encourage institutions to become more efficient and effective in teaching and learning, they must be careful about the message delivery to faculty and staff. Mills' (1998) findings from the study of the Oklahoma State Regents for Higher Education (OSHRE) that mandated policy changes on remedial education provided opportunities to accomplish policy objectives but not without alienating faculty and staff members.

Policy makers play a vital role in helping shape the future of citizens within their state through the appropriate use of media, high technology opportunities,

providing choice to public and private institutions, and creating policy mandates on teaching and learning. The next section will review the role that governance structure plays in higher education outcomes.

### *Governance Structure*

Governance in higher education is extremely important to helping institutions reach the goals or outcomes set for the individual institution and the state as a whole. In order for institutions and states to reach goals, policy makers must work together and understand the “big picture” as to why states have an interest in the type and quality of education citizens receive which leads to the overall economic viability of the state and nation.

There are two types of governance structures in the higher education system, either governing or coordinating board. Marcus (1997) studied government reform of higher education over a five-year period from 1989 to 1994 looking at shifts in governing and coordinating structures and centralization versus decentralization in both structural forms. The purpose of the study was to determine if there were factors which predict enactment of proposals for the restructuring of the governance structures. Since the G.I. Bill and the post-World War II baby boom, states have

expanded their higher education system to serve as many constituents as possible. Since the 1970s, the predominant theme has been to centralize efforts across both two and four-year institutions.

Models of higher education structure vary between coordinating boards and statewide governing boards (Hearn and Griswold, 1994). Marcus' study identified determining factors in restructuring governance of higher education. The researchers surveyed 49 state higher education officers (SHEEOs) in reference to proposals made between the five-year span of 1989 to 1994 to restructure higher education governance. The survey identified the initiation of the proposal along with the structure. Respondents indicated proposal implementation. The researcher received 39 surveys from the first contact. Of the 10 remaining in the original sample, eight responded to follow up mail surveys a few months later. Telephone interviews were conducted with state officials for the remaining two states for a total sample of 49.

Results from the survey indicated 49 proposals for restructuring governance had been initiated in 29 states between the five-year period under question. Full implementation occurred with 38 of the proposals. Legislatures initiated 25 of the 49. Implementation

occurred in 48% of the proposals. Full implementation occurred in six of nine of the Governors' proposals. State-level higher education authorities implemented 10 proposals in eight states. This last group had the highest implementation rate at 80%. There were six emerging themes as to why the policies were implemented: (a) the desire to reduce or contain costs, (b) call for increased accountability, (c) improve coordination, (d) improve institutional autonomy, (e) increase authority of the governor and/or legislature over higher education, and (f) power. Clearly, if states are interested in how to best serve constituents through higher education, they will attempt to break down the barriers between higher education and politics and focus on a shared vision.

In an attempt to improve governing boards, Martinez (1999) analyzed the higher education governance system from the state perspective through a survey commissioned by the Association of Governing Boards. The purpose of the survey was to address the following questions: (a) What are the expectations of governing, and how well are those expectations being met? and (b) What is the composition, selection, and responsibility of governing boards? The survey, in-depth telephone interviews, included 12 questions from Educational Systems Research. All questions

(5 point Likert type scale) covered topics related to university governance and trusteeship (1 = "not important at all," 5 = "very important"). The purposive sample included 25 state legislatures from 18 states. Respondents included legislators whom colleagues considered to be the most knowledgeable, insightful, and influential state policymakers. The researchers coded all interviews with the consent of the interviewee. Descriptive statistics and chi-square determined significance of the individual responses.

Martinez found that the most important factor in enhancing lay governance structures is trustees need to have a broader view and understand the "big picture" of running a university system. Trustees must learn how to balance their role as advocate and guardian and understand the "big picture." Eighty-eight percent of the respondents mentioned areas in which trustees must consider looking beyond the individual institution they represent such as (a) how the institution fits into the state's total system of higher education, (b) how the governance board works with K-12 to promote a seamless transition to higher education, and (c) how the board views its role in helping to address larger social problems or state needs. Thirty-two percent of the respondents said that higher education institutions must work together to see how each institution

contributes to local, state, national, and international needs.

Another important finding was legislators made clear they believe, in order for higher education governance structures to be successful, collaboration must exist among the most powerful players such as (a) the governor, (b) the governing board(s), (c) the coordinating body (if existed), (d) the administration, and finally; the (e) citizens of the state.

Citizens are typically the most vocal constituents and should have a voice in the structure of higher education in their state. Bracco, Richardson, and Callan (1999) sought to understand how differences in the design of state governance structures affect higher education performance and how structure affects leadership strategies that state policy makers use to encourage institutions to respond to new state priorities. A new conceptual framework suggested constitutional powers of the governor, the role of the legislature and state higher education agencies, and the role of the two- and four-year universities in the state would help define the structure of the state higher education system. System design or structural environment created a second dimension for the conceptual framework. States make four sets of decisions when systems of higher

education are created: (a) Decisions about governance structures establish lines of authority and accountability between state government and providers; (b) work processes define responsibility and characteristics; (c) decisions about mission divide responsibility for achieving higher education goals among various types of institutions; and (d) capacity determines the availability and quality.

The researchers used three states, Illinois, Georgia and Michigan, as case study examples. Size, diversity, and differences in governance structures determined the criteria for the chosen states. For each case study state, researchers collected documents, examined archived information and conducted interviews to obtain as much information as possible about context, system design, governance structure and performance. Based on long term stability of its governance structure, Illinois served as the pilot case study. During the study, over ( $N = 200$ ) individuals were interviewed including governors, their staffs, state legislators, and university presidents and staff.

The case studies suggested that system design, policy environment, and the degree of compatibility between design and environment all influence the performance outcomes and the leadership that will be effective in each structure.

Statewide governance of higher education is most effective when there is interaction between the policy environment and system design. Government strategies to achieve balance among professional values and the use of market forces in the system design determined provider responsibilities, capacities, and relationships to each other and elected officials.

Martinez and Richardson (2003) studied the conceptualization of the higher education market and how specific state governance and finance arrangements define and ultimately influence the market and outcomes of higher education. Through the use of case studies, the researcher grounded model linking policy to higher education. Bracco, Richardson, Callan, and Finney (1999) defined four state policy roles that could shape the relationship between higher education and the market: (a) provider, (b) regulator, (c) consumer advocate, and (d) helmsman. In state policy environments where the market dominates, price is a function of demand. In a regulatory environment, the state controls price. States have the ability to use a combination of market forces and governance or policy authority to affect higher education performance.

The researchers used outcomes from a three-year study through the Alliance for International Higher Education and

Policy Studies (AIHEPS) to help understand the link between public policy and state higher education performance. The goal of the study was to connect policy and performance in the state higher education system. In-depth case studies of ( $n = 2$ ) U.S. States along with ( $n = 1$ ) case study of federal higher education policy created a starting point for the project. The researchers chose both New Jersey and New Mexico because higher education policy differs between the states but both have state-level coordinating boards. The major components of the conceptual model were (a) policy environments, (b) rules of the game, (c) system behaviors, and (d) performance.

The researchers found that the rules of the game and the policy environment influenced system behavior. System behavior, in turn, influenced performance. If structured properly, the rules of the game produced system behavior that was sensitive to public policy priorities. Literature suggested one must understand the relationship between higher education, the state, and the consumer to understand the higher education market. The state governance structure of a given state typically determines how higher education and the state cooperate. Policy leaders should strive for a balanced market in which influence between the three entities (higher education, the state, and the consumer) is

not disproportionate. Financing of higher education should contribute to the distribution of aid. Information should be fluid between the three subjects to continue collaboration. New Jersey is an example of how, if a balanced market exists within a state, consistent performance across multiple indicators can be accomplished.

Balance did not exist for the State Legislature of North Carolina when the issue of access to the higher education system arose. Frost, Hearn, and Marine (1997) studied how the State Legislature of North Carolina and the University of North Carolina public college and university system struggled to limit out of state student enrollment into public colleges and universities during a time of political and financial uncertainty. Proponents of limiting out of state student enrollments emphasized serving the needs of state citizens rather than the needs of those from other states. Opponents suggested increasing out of state enrollment would provide an opportunity for public colleges and universities to increase out of state tuition and benefit financially.

The researchers conducted a qualitative study framed by organization theory. Bureaucratic-rational theory, decision theory, and organizational-development literature were used to frame the study. The research questions

addressed included (1) Who has been making the central decision concerning the out-of-state enrollment issue in North Carolina's university system? (2) How have decisions been made? and (3) How have the enrollment policies been implemented and institutionalized over time? The researchers collected data through "semi-structured" personal interviews and document mining. Triangulation validated the data through gathering, coding, and looking for similarities among the data.

Frost, Hearn, and Marine discovered an admission limit of 18% for out of state students. The limit, created by the legislature and system officials, had arbitrarily been set with little formal or informal discussion among University of North Carolina at Chapel Hill constituents or constituents and higher level policy makers. Despite student, faculty, and administrators being opposed to the 18% limit, there was no active group protesting the limit. Therefore, political forces in the legislature ultimately made the decision on the imposed limit and supported citizens' rights within the state. Emotions proved to be the foundation for the enrollment policies and procedures versus research results over time. Factual information in reference to graduation rates of out of state students and the economic impact these students had provided upon

graduation by working in the state were not considered in the decision making process. After implementing the limitation policy, administrators determined that transfer students would not be included in the count since they served as replacements once attrition occurred.

Transfer students, minority and otherwise, should not go unnoticed in the higher education market. Welsh (2004) addressed the role of state governing and coordinating boards to increase minority student access and achievement in higher education. Quality, performance, and accountability of higher education have received increased attention since the mid-1980s. State higher education agencies have professional staff responsible for oversight and coordination of the executive, budgetary, and governmental functions of the state agency and institutions. Two types of state-level higher education boards exist: (a) governing boards which have direct legal control over multiple institutions in the system, including the authority to hire and review the chief executive officer, and (b) coordinating boards which typically do not have direct authority over chief executive officers, but do have authority to create state higher education policy and direct state-level programs.

To examine the role of governing and coordinating boards in improving minority student access and achievement in higher education across the U.S., Welsh conducted a national survey of the ( $N = 50$ ) state higher education agencies. Welsh addressed two research questions: (a) What is the role of the state and higher education in the promotion of equity and social justice? (b) What is the impact of race and ethnicity in large-scale organizations? In 1987, SHEEO issued policy recommendations to improve minority student access and achievement in higher education to the 50 state higher education agencies in the United States. Welsh used the recommendations in his study.

SHEEO recommended the following: (a) State higher education boards should make the issue of minority student achievement a top concern for the higher education community; (b) State higher education boards should put in place a formal planning and reporting process dedicated to improving minority student access and achievement; and (c) State higher education boards should be creative and persistent in their search for resources to support minority student programming, including efforts to pursue cooperative ventures in support of this goal.

Welsh created profiles of state policies and initiatives to enhance minority student access and

achievement in higher education based on interviews with the state higher education agency's chief academic officer, chief research officer, and/or the principal policy analyst focusing on minority or diversity issues in the 50 states. The chief academic officer of each SHEEO agency identified the population of the sample. A pilot study, including questions from existing research on state policies and initiatives to enhance minority student access and achievement in higher education, provided insight prior to the telephone surveys. The researchers conducted telephone interviews including other officers at times. For additional information on planning efforts and initiatives to enhance the diversity of institutions, the researcher referred to websites for 20 of 50 states.

The researcher collected data through document mining, internet resources and telephone interviews. Triangulation of the data occurred through coding the data and creating a matrix with a summary of responses including a state by state comparison. Welsh separated and reported only the activities which occurred at the state level to uncover specific initiatives by state higher education agencies.

Welsh's findings after the coding were as follows. First, of the 50 states, only 20% of state higher education boards had articulated policy objectives, while 38% had

implemented initiatives to improve minority student access and achievement in higher education. Second, almost all states had student information systems that enabled them to measure minority student success and academic progress at institutions within their states. Last, despite states having the technological infrastructure to measure minority progress and assess state efforts, very few states used the data collected on minority students to measure progress to create an equitable higher education system within their state.

Research showed that government reform initiated from state-level higher education authorities had the highest implementation rate. When improving governing boards, policy makers must be conscious of the "big picture" and how their decisions impact outcomes of higher education. Leaders within institutions must work together to see how each institution contributes to local, state, national and international needs. Collaboration must exist among the most powerful players in the state such as the governor, governing boards and administration. Case studies suggested that system design, policy environment, and the degree of compatibility between design and environment all influence the performance outcomes and the leadership that will be effective in each structure. Leaders must understand the

relationship between higher education, the state, and the consumer to understand the higher education market and how college can be made more affordable for constituents.

To make college more accessible and affordable for all U.S. citizens, states need to examine the effectiveness of coordinating versus governing boards and how the current system design is performing against other benchmark states. This type of dramatic change would force policy leaders to work together to achieve balance among the players and would call for leadership from top state leaders such as the governor.

### *Leadership*

As seen in previous studies, state leadership influences both governance structure and affordability of higher education. If the governor is unwilling to work with the legislature and the governing or coordinating board officials, higher education policy initiatives, including affordability, may suffer. The most influential political figure in a state is the governor. Dilger, Krause, and Moffett (1995) addressed the causes of gubernatorial effectiveness by creating indices for gubernatorial institutional powers, gubernatorial enabling resources, and state legislative professionalism. The researchers focused

on the effectiveness of governors and the factors that led to their peer's perception of their effectiveness. The researchers hypothesized that both institutional and environmental factors had a significant impact on gubernatorial effectiveness.

The independent variables were (a) state legislative professionalism, (b) gubernatorial institutional powers, (c) gubernatorial enabling resources, (d) the partisan control of the state legislature, and (e) state economic growth. The dependent variable utilized was gubernatorial effectiveness.

Factor analysis determined the relative importance of each independent variable. To operationalize the dichotomous dependent variable, a survey was designed to study the nation's most effective governors in comparison to their peers. A review of the literature provided a basis for operationalizing state legislative professionalism. Construction of an index included compensation, staff resources, operating expenses and length of legislative session. Factor analysis was used to determine the consistency of the six indices found in the Beyle gubernatorial powers index including measuring gubernatorial tenure potential, appointment and removal powers, budget-making authority, legislative budget-

changing authority, veto powers, and political party strength. After loading the factors, the researchers found a relationship between tenure potential and veto powers related to gubernatorial institutional powers. A review of the literature provided a basis for operationalizing seven gubernatorial enabling resources. Factor loadings revealed that five of seven related to gubernatorial enabling resources including staff, fiscal support, composition of the state cabinet, appointment and removal powers, and budget document deadline.

Logistic regression proved that state legislative professionalism played a significant role in determining gubernatorial effectiveness. Institutional powers had a significant impact on gubernatorial effectiveness in office. Reformers interested in strengthening gubernatorial effectiveness should strive to improve institutional powers and provide resources at the same time. It was also found that partisan balance of power in the state legislature did not have a significant impact on gubernatorial effectiveness in office suggesting that effective governors work with their state legislature in a cooperative manner to achieve their goals.

New Governors would be wise to work cooperatively with long time "professional" legislators in their state since

these individuals would most likely be part of the political process for years to come. King (2000) examined professionalism in the U.S. State Legislature. King described "Professionalism" as, "legislators spend too much time securing their positions in office or seeking advancement to higher levels of government and too little time attending to the public interest" (p. 327).

King proposed to address the following research questions: (a) To what extent have state legislatures become more professionalized? (b) Are all state legislatures more professionalized? and (c) If the changes are not uniform across states, what factors account for changes in the level of professionalism in state legislatures? King utilized Squire's index to operationalize legislative professionalism.

Starting in the 1960s and using four legislative sessions spanning three decades, 1973-74, 1983-84, and 1993-94, King calculated a modified version of Squire's index. The correlation index included three characteristics of state legislatures and congress including (a) compensation, (b) days in session, and (c) expenditures for services and operations (minus legislator compensation) per legislator (in constant dollars). Overall, state legislatures have become more professionalized since the

1960s. The researchers found seven states consistently ranked among the 10 most professional legislatures in each decade - Alaska, California, Illinois, Massachusetts, Michigan, New York, and Pennsylvania. Between 1983-84 and 1993-94 expenditures for support and operations per legislator in constant dollars increased in 43 states.

To address the third question, multiple regression explained the change in dependent variable, legislative professionalism. Five independent variables were associated with impacting professionalism: (a) change in population level, (b) change in population heterogeneity, (c) change in restrictions on the length of legislative sessions, (d) the difference between professionalism of other states in that region and the particular state at that time, (e) and the prior level of professionalism in the state.

King found the initial level of professionalism affected subsequent year levels. States that experienced population growth devoted more resources to the legislature. States which removed restrictions on the length of legislative sessions increased professionalism by allowing the assembly to meet more days, which, in turn, increased legislator compensation. As states in the region became more professional, it impacted the entire region. Today, nearly three-fourths of the resources of the

national legislature is controlled by the state legislatures versus less than half in the 1960s.

Governors and legislatures are key leaders in determining the appropriation levels for public two- and four-year institutions. Internal funding decisions made by senior leadership are important once appropriations are sent to the individual institutions. Strong leadership is a key to an organization running effectively and efficiently. Smart (2003) examined the extent to which community college administrators and faculty perceived organizational effectiveness to be related to their perceptions of the cognitive and behavioral complexity of the organization's culture and the leadership role performed by senior leadership. Research findings suggested the leadership of campuses and the nature of the campus culture are powerful predictors of organizational effectiveness for both two- and four-year institutions (Cameron, 1986; Cameron & Tschirhart, 1992; Winn & Cameron, 1998).

Smart framed the study with the competing values framework, which included a ( $n = 39$ ) indexes of organizational effectiveness (Quinn and Rohrbaugh, 1983). The judgment of respondents was broken down into three categories: (a) internal or external focus on the well-being and development of the organization, (b) did the

organization focus on flexibility or stability? and (c) did the organization focus on planning and goal setting to emphasize productivity and efficiency? To complement the organization type, the researchers addressed leadership characteristics of senior leadership. Classifications of senior administrators included (a) motivators, (b) vision setters, (c) task masters, and (d) analyzers.

Based on data from a survey of full-time faculty and administrators in a statewide system of 14 community colleges, the sample included ( $N = 2,716$ ) from which ( $n = 1,423$ ) were completed and returned. Response rates for the various campuses ranged from 36% to 87%. Analysis included examining the relationship between perceptions of the levels of the cognitive complexity of the overall campus culture and the behavioral complexity of the institution's senior leadership. A 4-point Likert-type scale was used to measure categorical variables ranging from (0 = "little or no complexity," 4 = "high complexity"). The researcher used a 5 x 5 x 2 multivariate analysis of variance (MANOVA) procedure to assess the extent to which respondents' perceptions of the organizational effectiveness of the community colleges related to the cognitive complexity of their overall campus culture and the leadership role of the President. The independent variables were (a) level of

cognitive complexity evident in their overall campus culture (0 = "little or no complexity," 4 = "high complexity"), (b) level of behavioral complexity evident in the leadership role of the president (0 = "little or no complexity", 4 = "high complexity"), and (c) employment category of the respondents (administrator, faculty member). The dependent variable was level of leadership role complexity. The chi-square value of 598.10 was highly significant (df = 16;  $p < .001$ ), indicating a strong relationship between complexity of overall campus culture and the senior leadership role.

The MANOVA results showed no significance between the perceptions of organizational effectiveness and the complexity of the leadership role by the president. The main effects for both leadership role complexity and overall campus culture were significant. The findings demonstrated a positive linear relationship between perceptions of the complexity of community colleges' overall campus culture and the leadership role performed by the president and the perception of institutional effectiveness performance on eight of the nine effectiveness dimensions. Strong senior level leadership proved extremely important in fostering organizational effectiveness on college campuses.

Leaders within the state higher education systems (governors, legislatures, and campus presidents) must look at how they are individually contributing to the success of their state. Are there means through "professionalism" in which an individual and a state higher education system can benefit? Today, nearly three-fourths of the resources of the national legislature is controlled by the state legislature versus less than half in the 1960s. State higher education officials and institutional leaders need to be aware they must be active at the state and federal level in lobbying for support of higher education initiatives to create a win-win. Successful lobbying will not occur if higher education officials are not working with key policy makers to create the win-win. Campus presidents must be strong leaders to implement policy objectives from the state and national level and create a more efficient and effective campus environment. The next section will examine organizational effectiveness and why this is a policy issue for higher education leaders.

### *Organizational Effectiveness*

In a time of declining appropriations and changing student demographics, institutions must utilize the available resources to the best of their ability. Some

states have mandated regulatory practices to improve efficiency and effectiveness, while others have created performance funding models to increase accountability within institutions.

Many times, faculty and administrators hear talk of institutional effectiveness but do not understand the motivation behind the change initiative. Welsh, Petrosko, and Metcalf (2003) conducted a study to assess faculty and administrator support for institutional effectiveness activities in two-year colleges. Literature in this area suggested four variables help explain faculty and administrator support for institutional effectiveness activities: perceived motivation, perceived depth of implementation, perceived definition of quality, and level of involvement. The independent variable used was the research status of the respondent, faculty or administrator. The respondents reported that institutional effectiveness activities are important leading to the creation of the dependent variable, perceived importance of institutional effectiveness.

The population sample, faculty and administrators at 58 associate degree granting institutions which were reviewed by evaluation teams of the Southern Association of Colleges and Schools (SACS), completed the review between

September 1998 and May 2000. The sample included (a) full-time faculty who had served on accreditation steering committees, and (b) academic administrators at the dean's level or higher at associate degree granting institutions that had been evaluated by SACS. The respondents ( $N = 358$ ) were mailed a survey, which included five indices designed to yield information about the five variables included in the two research questions. A total of ( $n = 112$ ) faculty and ( $n = 90$ ) academic administrators responded to the survey. Based on results of the power analysis, the response rate exceeded 50% with ( $n = 135$ ). A panel of six postsecondary education professionals who specialized in institutional effectiveness at their respective institutions addressed content validity. A pilot study of ( $n = 30$ ) academic administrators and ( $n = 48$ ) faculty members (excluded from the final sample and analysis) tested the reliability of the instrument.

Hierarchical multiple regression determined the relationship between the independent and dependent variables. The regression demonstrated that the four control variables - perceived motivation, perceived depth of implementation, perceived definition of quality, and level of involvement - significantly related to the dependent variable, research status of the respondent,

faculty or administrator. There was no significant difference in the dependent variable, faculty or administrator. In summary, the implementation of institutional effectiveness activities at two-year colleges is not likely to be successful without support from a variety of constituents within the two-year college system.

Done under the wrong pretense, excessive regulations and state level mandates at two- and four-year institutions can have an adverse effect on institutional effectiveness. Volkwein and Malik (1997) investigated if regulatory practices in higher education in the past decade have made a difference in flexibility and campus effectiveness. In the past 30 years there has been an increase in state and federal regulations and reporting requirements related to affirmative action, Americans with disabilities, athletics, clean air, and campus crime.

Public colleges and universities are under attack to be accountable to constituents for institutional effectiveness. Volkwein and Malik addressed four research questions: (a) What are the dimensions of state control and administrative flexibility among public universities, and what changes have occurred between 1983 and 1995? (b) Does state regulation of public universities appear to be the product of the economic, political, and social

characteristics of the 50 states? (c) Do particular organizational characteristics of public universities seem to attract different amounts and types of regulation? and (d) Do varying degrees of regulation and autonomy exert influences on measures of university quality? The questions determined the impact state regulation and management flexibility, state characteristics, and campus characteristics had on public colleges and universities.

The researchers collected data from NCES, IPEDS, the U.S. Census, the National Research Council study of doctoral programs (1995), the Graham and Diamond Research Center at Vanderbilt (1996), Volkwein's 1983 survey, and the 1980 Carnegie telephone survey. The target population was Carnegie Foundation classified Research I or II universities.

During data collection the researchers reduced data through using *SPSS* and conducted a principle component analysis to provide dimensions for regulation and flexibility, state attributes, and university characteristics. The results produced factor scores. Once exported, the researcher utilized the factor scores in a multiple regression analysis. Descriptive statistics produced Pearson correlations, which were compiled into a

flexibility grid of high, medium, and low on both academic flexibility and financial and personnel flexibility.

Some states rated high/low, while others rated low/high. New York and Virginia were high on academic and low on administrative flexibility. Since the 1980s, the aggregate data suggested that a significant number of states have delegated increased authority to their campuses.

An ordinary least squares regression was run using the two overall flexibility measures (academic and financial and personnel characteristics) as the dependent variables and the state measures (state and campus characteristics) as independent variables. The researchers tested the hypothesis that administrative and academic controls were created through political, economic, and social character of each state. State size was the only significant variable explaining only 12% of the variance. The researchers found the smaller the state, the greater the university flexibility in administration. Overall, there was minor evidence of a relationship between a state's characteristics and the administrative controls imposed on public universities.

The final hypothesis to be tested was that administrative and academic controls were stimulated by

university behavior. The researchers found that a greater percent of minority students is associated with less flexibility and more regulation. Also, faculty and student quality are influenced significantly by each other and by institutional size and financial support. Neither academic nor administrative flexibility provided a significant influence on the two measures of quality.

In addition to state regulations, governors and legislatures have the ability to mandate change within the public higher education system to achieve strategic outcomes. Serban (1998) investigated the opinions and attitudes of those involved in the design, planning, implementation, and evaluation of performance funding and those directly impacted. In late 1996, Serban created a survey and mailed it to state policymakers and campus representatives in the nine states with performance funding models in place: (a) Arkansas, (b) Colorado, (c) Florida, (d) Kentucky, (e) Minnesota, (f) Missouri, (g) Ohio, (h) South Carolina, and (i) Tennessee.

Governors, higher education aides to governors, chief state budget officers, legislators, state higher education finance officers and executive officers, chairs of system governing boards, and system administrative officers were included in the state policy maker group of respondents.

Campus representatives included presidents, vice presidents for academic affairs, vice-presidents for finance, academic deans, and chairs of faculty senate and governance bodies. The survey consisted of ( $n = 23$ ) questions.

The purpose of the survey was to determine the perceptions of and attitudes toward performance funding in their particular state. The questionnaire was mailed to ( $N = 1,813$ ) individuals from the constituent groups in the nine states. Nine hundred eighteen respondents completed the survey for a response rate of 50.6%.

Serban found that respondents were typically only familiar with performance funding in their respective state. Deans and chairs of faculty were the least familiar with performance funding in their state and others. Respondents felt success criteria and performance indicators had been subjected to interstate influences. Budget priorities such as current costs and enrollment levels topped the list. Campus groups felt external accountability was the main reason for performance funding, but they wished institutional improvement topped the list. Many respondents, except for Tennessee and Missouri, considered legislators and the governor the most important in the performance funding development process, while community leaders and students were the least important.

Respondents believed the main advantage of performance funding was the ability to improve higher education and increase accountability. Difficulty in measuring outcomes in higher education was considered the main disadvantage.

While performance funding provided an opportunity for state leaders to improve higher education, there remained a disparity across performance funding models. Burke and Modarresi (2000) evaluated the stable from unstable performance funding programs and provided insight on what made the stable programs successful. Performance funding for public colleges and universities was born out of the need for accountability. Since the 1980s, the climate in higher education moved from accounting for expenditures to demonstrating performance. State allocations directly related to prescribed levels of campus outcomes on designated performance indicators. Performance funding contained six major components: programs goals, performance indicators, success standards, funding weights, funding levels, and funding sources.

Previous studies identified 11 performance funding assumptions. The researchers surveyed state and campus leaders to test the validity of the 11 assumptions. Through the survey, the researchers determined signals of

characteristics of stable and unstable performance funding models.

In 1996 the researchers mailed surveys to state officials and campus leaders in nine states with performance funding: Arkansas, Colorado, Kentucky, Minnesota, Florida, Missouri, Ohio, South Carolina, and Tennessee. Four states comprised the unstable group (Arkansas, Colorado, Kentucky, and Minnesota) due to later dropping performance funding as a model. Only two of the remaining five states comprised the stable group (Missouri and Tennessee).

The Higher Education Program at the Rockefeller Institute developed the survey instrument. Twelve higher education policy and finance experts reviewed the survey for content validity. Survey responses were coded and a multivariate model, which included discriminate analysis, identified and ranked the independent variables by their relative contribution to the two dependent variables, stable and unstable performance funding model. The model classified correctly 79% of the respondents into either the stable or unstable category.

The stable group appeared to be much more positive about achieving program goals than the unstable group. Improving higher education (-0.45) was the highest ranked

independent variable between the two groups. Demonstrating accountability (-.32) and increasing state funding (-0.26) were next in importance. The stable programs exhibited the following characteristics of importance: (a) important input by state coordinating boards and their officers; (b) a sense of achieving the goals of improving higher education, demonstrating accountability, and increasing state funding; (c) policy values stressed quality more than efficiency; (d) sufficient time for planning and implementation; (e) a limited number of performance indicators; (f) prediction of a long-term future; (g) stable state priorities; (h) budget stability; and (i) low costs of implementation. A key difference between the stable versus unstable programs showed that unstable programs had significantly more input from stakeholders outside of higher education such as legislators, governors, and business leaders, while stable programs sought more input from boards and officers of coordinating agencies within higher education.

In a time when taxpayers are asking for cutbacks for higher education, leaders of institutions must find a way to stretch resources and become more effective. Policy mandates and performance funding are just two ways in which policy makers have responded to citizens' requests.

Performance funding models would not be in existence if there were not resources to distribute based on performance outcomes. The next section will explore the role resource allocation plays in affordability of higher education.

### *Resource Allocation*

At a time when state appropriations are shrinking and budgets are getting tighter, higher education leadership must look at resource allocation at the state and institutional level. Berger and Kostal (2002) identified a significant shift of higher education resources from state appropriations to student paid tuition and fees. The researchers created a two-stage least squares model of the demand for and supply of enrollment of higher education to help understand the consequences of the policy shift across states at public colleges and universities under the changing financial framework in the 1990s.

The independent variables included (a) average wage, (b) income, (c) wage difference, (d) unemployment, (e) education, (f) non-White, (g) urban, (h) state appropriations, and (i) other revenue. The dependent variable was enrollment, both public and private. To control for flexibility and state regulation of the public university sector, the researchers used dummy variables for

financial and administrative flexibility (both high and medium).

The researchers used data for the 48 continental states between the years of 1990 through 1995. Most data came from the Digest of Education Statistics. Survey data from the United States Bureau of the Census and from Volkwein and Malik (1997) were included. All variables in financial terms were inflation-adjusted by the 1995 consumer price index (CPI-U).

Ordinary least squares regression determined demand for higher education in the U.S. The coefficient of the direct-cost variable tuition (public) was highly significant. The model predicted that with each \$100 increase in tuition at public colleges and universities enrollment decreased 0.63 percentage points. Average wage was significant and impacted the enrollment rate as well. A \$1,000 increase of production workers' wage led to a 0.58 percentage increase in the enrollment rate. Private institutions were not a direct substitute for public institutions. Tuition did not relate significantly to capacity at public colleges and universities. Both state appropriations and other revenues had significant, positive impacts on enrollment. Overall, tuition proved to be the most significant variable. As tuition increased the

enrollment rates decreased across the 48 states under investigation.

Declining enrollments are not an outcome higher education leaders strive to achieve. Therefore, leaders must look for ways to increase enrollments and ensure that students persist to graduation. One way to address persistence is to explore the quality of teaching students are experiencing. Brown (2001) examined the relationship between student measure of teaching quality and institutional revenue sources among public and private institutions in the United States. The dependent variables used were professors interesting and accessible. The independent variables used were sources of funds available, institution type, and institution age.

Brown utilized survey results from the 1997 *Student Advantage Guide* that reported data from the previous academic year (1995-1996) for ( $N = 310$ ) colleges determined by *The Princeton Review* to be the best on teaching quality and other qualities. All financial data (revenues, expenditures, and tuition) came from the United States Department of Education's annual survey called the *IPEDS* report from the 1994-1995 academic year in which ( $N = 299$ ) colleges were included.

Multiple regression was used to regress the dependent variables, professors interesting and accessible, on the independent variables, sources of funds available, institution type, and institution age. The results indicated there is a greater reliance on private sources of income ( $p < .01$ ). Endowment income showed a positive impact on the dependent variables, measures of teaching quality ( $p < .01$ ). State and federal funding related negatively to the teaching quality variables ( $p < .01$ ). Funds received from auxiliary enterprises and other sources showed a positive and significant effect on teaching quality ( $p < .05$ ). Liberal arts colleges were higher than specialty schools and doctoral granting institutions in teaching ratings ( $p < .01$ ). Age of the institution was not a significant predictor. The average tuition paid by students significantly related to teaching performance ( $p < .01$ ). As suggested in the literature, a relationship existed between revenue sources and teaching quality. Institutions which relied on private funding and endowment income did not experience lower teaching quality ratings among students.

To further examine the relationship between revenue sources and degree attainment, Ryan (2004) explored the relationship between institutional expenditures and degree attainment at baccalaureate colleges. Ryan focused on

institutional expenditures on six-year cohort graduation rates at ( $N = 363$ ) Carnegie classified baccalaureate I and II institutions that participated in *IPEDS*.

The CSRDE (Consortium for Student Retention Data Exchange, 2002) reported only 58% of students earn a bachelors degree. Ryan purported that researchers and practitioners cannot dismiss the personal, social, and financial costs incurred by the low level of success in completion and focused on the relationship between institutional expenditures and degree attainment. Ryan created a conceptual framework for the study, which began with financial resources devoted to various functional and program areas within a college or university, in part, reflected institutional priorities, purpose history, culture, and budgetary constraints through persistence/degree attainment.

The study addressed (a) the relationship between expenditures and persistence to degree completion, (b) Did support for student services, academic support, and instruction help to explain variations in completing a degree? (c) Did the findings suggest contradictory claims about expenditure effects? (d) Did researchers need to conduct further research needed? and (e) What theories resulted from the findings which surrounded degree

completion, institutional decision making, and public policy? Ryan tested the non-experimental, applied research design with the ordinary least-squares (OLS) regression method. The dependent variable used was graduation rates. The control variables were used for certain characteristics and institutions including (a) academic preparation, (b) gender, (c) ethnicity, (d) age, (e) institutional size, (f) living on campus, (g) institutional affiliation, (h) institutional control, and (i) institutional size. Due to moderate multicollinearity, tuition was not included in the model. The researcher found the model explained 72.5% of the variance in cohort graduation rates. The ANOVA yielded an  $F$ -test statistic = 70.719 ( $p < .000$ ).

The analysis revealed no apparent problems with normality of the error distribution, multicollinearity, or heteroskedasticity. Two cases appeared to be outliers, cohort and graduation rates. As suggested by the literature, SAT scores, institutional control, and instructional expenditures had a positive and significant effect on graduation rates ( $p < .001$ ). Institutional size, living on campus, and academic support expenditures contributed significantly to graduation rates ( $p < .001$ ). Variables which contributed with a negative effect included percentage of minorities and average age ( $p < .001$ ).

Institutional support expenditures impacted graduation rates negatively, but the result was not significant ( $p = .732$ ). Student service expenditures provided a similar, insignificant effect ( $p = .649$ ).

One important component of universities, and therefore, departments having resources, is the ability to provide research and be competitive in the grant process. Grants provided dollars for undergraduate and graduate research which benefits the entire university. Powers (2004) used the resource-based view of the firm as the theoretical framework to understand the impact that resource flows have on a university and the technology transfer program. Literature in this area suggested four sources of research and development to examine: federal, industrial, state and institutional. Each area was an independent variable. Other areas of interest in the literature were number of faculty, venture capital, faculty quality, and technology transfer office size. The dependent variables examined were average number of small and large firms in which a university had licensed a technology between 1996 and 1998.

The sample included doctoral extensive and intensive institutions in the United States ( $N = 104$ ) that had been respondents to the annual licensing surveys of the

Association of University Technology Managers (AUTM) between 1991 and 1998. The researchers obtained additional data from the National Science Foundation's annual report on academic research and development. Other sources cited included the National Academy of Sciences, the Venture Economics database, and *Peterson's Guide to Colleges and Universities*.

Means, standard deviations, and a correlation matrix rounded out the utilized statistics. For universities that had worked with small companies, the average number of licenses between 1996 and 1998 was 12.5 of universities that had partnered with large companies, the average was 7.78. "The average university had \$79.97 million in federal R & D revenues, \$8.95 million in industry-sponsored research, \$10.79 million in state R & D revenues and \$24.5 million in institutional R & D dollars" (Powers, p. 11). The mean level of venture capital in a state was \$262 million with an average faculty quality rating of 2.87 on a 5 point Likert scale (anchors not included) and 4.58 full-time equivalent of staff devoted to technology transfer. The average faculty size was ( $n = 949$ ). The correlation matrix resulted in slightly high independent variable correlations. The results showed multicollinearity was not significant.

The researcher used a block-step regression to explain the relationship between the independent and dependent variables. In the partial model, faculty size and log venture capital were found to be significant predictors of the dependent variable, small firms with licenses ( $p = .001$ ). The full model for small firms with licenses showed only institutional research and development and technology transfer office size to be significant ( $p < .001$ ). Both the partial and full model for large firms with licensing showed fewer variables with significant results. Faculty size was significant ( $p < .001$ ) for the partial model, while there were no significant results for the full model ( $p < .001$ ). The  $F$  value proved significant for both small and large firms with the partial or full model ( $p < .001$ ). Based on the results, institutions with larger amounts of federal research and development support outperformed institutions with less support.

Volk, Slaughter, and Thomas (2001) examined the way in which departments receive allocation of funds and why it is important to the success of higher education in today's changing environment. Resource allocation shapes hiring in a department and how much and whom they teach, which ultimately impacts the quality of the learning environment and outcomes of the institution. The researchers identified

two theories to ground the study, the rational/political and the critical/political theory. Rational/political theorists are a small constituency at the heart of the institution that emphasize the functional use of resources to maintain and enhance institutional efficiency and effectiveness (Morgan, 1983). Rational/political theorists explain resource allocation by productivity and merit criteria in which departments receive funds based on the department being central to the institution's mission and workload, are productive in terms of student credit hours, grants, contracts, faculty scholarship, and providing high quality.

The critical/political and rational/political theories were tested in a case study example of a single Research I university using all departments ( $N = 70$ ) except the medical and law schools. Ordinary least squares multiple regression provided the relationship between the ( $n = 30$ ) independent variables and the effects on the dependent variable, internal allocation of state dollars to departments. Data were determined through internal documents from the Office of Institutional Research, from the Sponsored Projects Office, the Office of Student Affairs, the Affirmative Action/Equal Opportunity Office, and from a 1992 University-Wide Quality Review.

The critical/political variables included two levels (diversity, faculty and student resources). Rational/political variables included four levels (centrality, workflow, grants and contracts, and department quality). Closeness to market provided another independent variable. The findings from the regression did not fully support either the critical/political or the rational/political theory but was successful based on the mission of the institution. When market variables were included, the interpretation grew more difficult. The positive slopes in the regression coefficients supported the rational/political model. On average, for every \$1,000 in state grants, a department received an extra \$222 from state appropriations. Departments viewed by faculty as central to the university mission and as being of high quality received an extra \$628.49 in resources. There was a sizable difference in the resources allocated for completion of undergraduate and graduate degrees.

For every undergraduate degree completed, the department received \$1,368 on average versus \$17,469 for a graduate degree completed. This again supported the rational/political model as graduate education is more expensive than undergraduate education. Two variables were associated with the critical/political model, percentage of

female and minority faculty, which confirmed the theory that departments with large numbers of women and minorities received fewer resources than other departments. While neither the critical/political or rational/political theory fully explained resource allocation to departments, more research is necessary to improve internal funding in reference to the mission and market of institutions.

Effectiveness of senior level administration of an institution is paramount to success, but administrators must be aware of the political forces surrounding policy decisions. Griswold (1999) interviewed 11 student aid researchers questioning (a) their work, (b) analyzing the life cycle of the Education Commission and political changes that limited the scope of the questions addressed and reported, and (c) reduced the effects of research on policy-making. The findings suggested "the interaction of social players in the ideological battles of the time directly limited the collection and use of information in a number of ways" (p. 151). The researcher found political agendas manipulated the creation and use of findings.

The shift in public and private universities from appropriations to rising tuition to cover costs has required policy makers and institutional leaders to rethink resource allocation. Performance indicators such as

enrollment, degree completion, and research grant dollars are just a few ways in which institutions are responding to policy changes to stay viable in the competitive marketplace. Resource allocation relates to student success and ultimately economic success within each state. Without optimization of resources, administrators will raise tuition rates to help offset increasing costs leading to declining affordability across the states. Accountability is required of policy makers and higher education leaders to continue making higher education accessible and affordable.

#### *Accountability*

Increased interest in outcomes related to higher education has turned the focus to holding institutions and state policy makers accountable for policy decisions related to higher education. Focus is now on not just making higher education accessible to qualified students but also on outcomes such as persistence to a degree. Faculty members are accountable not only for the quality of teaching but also the amount of money secured based on research outcomes. Student and faculty success relates directly to affordability of higher education within a

state through economic viability of the economy and state appropriations.

Policy makers and constituents are now asking for more accountability on behalf of public two- and four-year institutions. Robst (2001) estimated a frontier cost function to examine if the difference between the institution's excess costs compared to the share of revenues from state appropriations determined whether shifting from state appropriations to tuition revenue affected efficiency within the institution. Data derived from the 1991 through 1995 *IPEDS* served as the sample. Sample institutions were limited to four-year public institutions with a Carnegie Classification of Research, Doctoral, Masters, and Baccalaureate. The sample ( $N = 440$ ) had an average general and educational expenditure of over \$129 million per academic year, which included a minimum of \$55 million from state appropriations. The purpose of the article was to show the shift from state appropriations to tuition revenue.

Robst determined the results of the study using stochastic frontier estimation and ordinary least squares regression. The dependent variable was university minimum potential cost. The independent variables were (a) undergraduate student enrollments, (b) graduate student

enrollments, (c) research expenditures, (d) faculty average compensation, and (e) Carnegie classification. Findings suggested public institutions with a smaller state share of appropriations are not more efficient than institutions with large appropriations. Between the period of 1991 through 1995, most institutions received fewer dollars through appropriations, but smaller institutions increased their efficiency more than larger universities with decreased appropriations. These findings suggest policy makers should be aware size is an important factor when trying to persuade universities to become more efficient.

As policy makers seek greater accountability, the question arises, "Are for-profit institutions more efficient?" Should the public be paying the price for higher education? Laband and Lentz (2004) tested the hypothesis of whether not-for-profit organizations had higher production costs per unit of output than for-profit organizations. The researchers framed the study with the theory of position competition. Positional competition forces colleges and universities, due to internal and external forces, to continuously upgrade services and facilities to maximize their position within the marketplace (Winston, 1999; Ehrenberg 2000). The dependent variables examined were (a) public, (b) private for-profit,

and (c) private not-for-profit institutions. The independent variables included (a) total expenditures, (b) average annual salary for faculty, (c) research status, (d) undergraduate enrollment, (e) graduate enrollment, and (f) research output.

The researchers used data from the 1995-1996 *NCES*, which included data on institutional finances, enrollments, and compensation. The sample included 3,520 responses from ( $N = 3,520$ ). Respondents included ( $n = 1,450$ ) from public institutions, ( $n = 1,492$ ) from private institutions, ( $n = 176$ ) from for-profits and ( $n = 1,316$ ) from not-for-profit institutions. Differences occurred between the three types of institutions in reference to the types of services each provided. Using ordinary least squares regression, the researchers found no statistically significant cost difference between the private, for-profit institutions and the private, not-for-profit institutions.

State policymakers must evaluate their role in the success of higher education in a number of ways. Martinez, Farias, and Arellano (2002) broadened previous research on state higher education performance in five areas: (a) preparation, (b) participation, (c) affordability, (d) completion, and (e) benefits through analysis of the "Measuring Up 2000" data done by the National Center for

Public Policy and Higher Education (NCPPE). Researchers created an empirical study to investigate (a) the relationship between the five report-card categories in the 2000 data, and (b) to determine if a relationship existed between the report-card grades and various elements in the state's higher education environment. A correlation analysis investigated the relationship among the five category grades. Backward stepwise regression provided the researchers with the variables most likely to provide "goodness of fit" regarding research question two. The report card categories used as independent or predictor variables were preparation, participation, affordability, completion, and benefits. The researchers chose these variables based on the need to provide an empirical study rather than test a hypothesis. The dependent variable was grade.

Findings for the Pearson correlation included no strong correlation between affordability and preparation. State aid, college expenses, and measures of income were components of affordability but were not found to be significantly correlated to preparation. Participation correlated more to preparation than completion, although both were significant. Preparation yielded a more robust correlation than expected. Affordability, not correlated to

participation, showed a negative correlation to completion. Completion failed to show correlation to benefits but participation was significant.

The findings for the backward stepwise regression proved preparation accounted for 56% of the variance in preparation grades. Participation accounted for approximately 25% of the grade distribution. The affordability model yielded two significant predictors with the opposite effects. States with higher tax revenue earned a higher affordability grade. Completion depended on price, subsidy, and minority enrollment. The benefits model explained the least of all five models. "Percentage of Children in Poverty" was statistically significant but explained only 16.6% of the variance in benefits.

Conflict between universities and policymakers continues as each want to control the public higher education system. Sabloff (1997) explored the relationship between public universities and state legislatures and the resulting struggle by public universities for the ability to act autonomously in reference to the regulation of teaching, research, and administration. Reasons for the struggle included states calling for greater accountability (Berdahl, 1978; Millard, 1978) along with state institutions being unable to resolve inter-institutional

disputes without outside assistance (Carnegie Foundation, 1982; Mingle 1983) and states trying to find the appropriate way to evaluate nonprofit institutions (Carnegie Foundation, 1982; Mingle, 1983). Sabloff examined how the state political process changed by state and the effect it had on regulation and autonomy of public universities. Political scientists explained "professionalization" occurred in Congress (Polsby, 1975; Squire, 1992). Professionalization is defined as "shifting patronage away from political party organizations to legislative leaders (caucus leaders), constituents, and political action committees (PACs)" (p.143). The increased professionalization has created an environment in which legislatures are creating and passing more laws that restrict university autonomy.

Sabloff used a one-way ANOVA and Pearson correlation to determine the relationship between the dependent variable, number of laws passed by state, and the independent variables: (a) impact of interest groups; (b) strength of the Democratic and Republican parties, which was broken into three levels (weak state but strong local party, strong state but weak local party, and strong state and local party organization); (c) scholarly research on strength of party; and (d) authority of state boards with

three levels (governing boards, coordinating boards, and higher education planning agencies).

The findings indicated there was no correlation between the impact of interest groups, strength of Democratic and Republican parties, or the authority of state boards at any level. The researcher followed up the statistical analysis with a case study of Pennsylvania to determine if a similar result would follow. Sabloff conducted semi-structured interviews with five legislators in 1990 to determine what, if any, effect the changing legislative environment had on public universities. The interviewees reported autonomy from the party meant direct responsibility to their constituents. Two years following the in-depth interviews, Sabloff conducted structured interviews ( $N = 30$ ) with a stratified sample of legislators to determine whether regulation was related to patronage. The results indicated voters' opinions outweighed the importance of university autonomy.

As policy makers continue to realize the importance of keeping constituents content, they must also realize the impact of their decisions on the outcomes associated with the public higher education system. Lowry (2001) conducted a study to determine the effects of state political interests and campus outputs on public university revenues.

The framework, grounded in public choice theory and strong efficiency rationale, assumed state government funding for public universities is determined by the political costs and benefits to state government officials from responding to important state constituencies and tuition rates and fees can depend on the preferences of decision makers.

The researchers collected data from ( $N = 428$ ) individual campuses in 50 states. Lowry (2001) estimated a system of four equations in order to determine the effects of political interests and campus outputs on revenues. Revenue equations for state government appropriations, grants and contracts, and net tuition and fee revenues were created. The dependent variable for the study was the dollar amount of state government appropriations, grants, and contracts per 100,000 voting age residents in the state. The researchers budgeted spending on research and public service to non-academic constituencies separately.

The researcher used an experimental design to two-stage least squares regression. Study findings indicated state government funding is significantly higher in states with more tax revenues. State government funding is lower in states with many elderly residents or large private higher education sectors. Consistent with the hypothesis, quasi-public goods targeted toward specific state

constituencies are likely over-funded, despite broadly distributed public goods being underfunded. Differences in state government funding lead to partially offsetting differences in net tuition and fee revenues, but not the reverse.

In an effort to control costs and embrace accountability, Tennessee created a performance funding model to increase efficiency in the state public higher education system. Banta, Rudolph, Van Dyke, and Fisher (1996) studied the Tennessee performance funding model for state higher education. The research was necessary to assess the effectiveness of the model, which originated in 1979 and was midway through the third five-year plan for implementing the accountability initiative.

The researchers addressed three questions: (1) What has contributed to the longevity of the program? (2) What are the strengths and weaknesses of the third five-year plan compared to previous versions of performance funding policy? and (3) Can the Tennessee experiment suggest which specific performance indicators seem to hold most promise for stimulating improvements on college and university campuses? The participants in the study were Tennessee's performance funding coordinators. Located at each campus, respondents provided a grade of A, B, C, D, or F for three

groupings. The first grouping, "measure of quality of education," required a response. The second question asked the value of the standard in promoting improvement, and the third grouping consisted of open-ended questions on institutional effectiveness.

Respondents rated peer review of undergraduate programs highest with a B+ average as a measure of quality. Master's reviews or placement received a B+ as well. Accreditation, improvement actions, and student and alumni surveys rounded out the top five with student and alumni receiving a B- grade. Major field tests, mission specific goals, general education tests, and retention and graduation goals received a C+ and C, while minority and other enrollment goals received the lowest rating for measure of quality, D+.

The participants rated accreditation the highest for perceived effectiveness in promoting improvement, as opposed to third in measure of quality. After accreditation, the responses in order were master's review or placement, improvement actions, student and alumni surveys, major field tests, peer review of undergraduate programs, mission specific goals, general education tests, minority and other enrollment goals, and retention and graduation goals.

Campus assessment coordinators responded with a C (2.38 on the 5-point Likert type scale) as an overall rating to improving institutional effectiveness. This grade was slightly higher than the 1987-92 average grade of C minus (1.67 of 5). The scale anchors were not included. Open-ended responses to questions yielded a lukewarm endorsement of the performance funding model as well.

While the State of Tennessee is an example of how one state took measures to become more efficient and effective, it is important to understand how state systems work. Martinez (2002) conducted a qualitative study to investigate the applicability of an existing higher education system framework to a case-study state not formerly used. Martinez sought to determine if Richardson's existing framework could shed light on understanding policymaker roles, governance structures, and higher education performance while applied to a different setting.

The study answered the following: (a) Did the framework aid in the creation and analysis of the case study? and (b) What could be confirmed about the framework and what could be extended, modified, or refined to aid future research?

Martinez used a case study of the state of South Dakota, sponsored and funded by the *NCPPE*, served as the

conceptual framework. In cooperation with *NCPPE* staff, Martinez gathered empirical case data before completing a site visit to gain knowledge of South Dakota's context. Case data included state documents, state higher education generated data, and newspaper articles. The preliminary data served as a reference to compare interview results.

The researcher conducted ( $n = 11$ ) in-depth interviews on site along with three telephone interviews of policymakers who had a record of interest and activity in participating or initiating legislative changes in higher education. Martinez took notes, transcribed and coded the data. The researcher found the state's role in higher education issues has become more involved over the last five years. Skeptics exist on articulation and system quality efforts. Based on analysis of case study facts, Martinez found that (a) Six unified higher education institutions dominate South Dakota's higher education landscape, and (b) twin citizenship was evident in the case study interview results and among the presidents.

One important legislative initiative is to transition students who complete a two-year Associate degree to a four-year public or private institution to complete a bachelor's degree. Cheslock (2004) studied transfer enrollment of four-year institutions with a focus on the

differences in public versus private institutions. The conceptual framework identified two factors for a difference in transfer enrollment between public and private institutions. Cheslock defined the differences as the institution's need for the benefits associated with transfer students and the student's direct attendance.

The independent variables utilized were (a) attrition rate, (b) percentage of applicants accepted, (c) percentage of state undergraduates enrolled in two-year institutions, (d) previous and current cohort size, (e) percentage of freshman living on campus, (f) tuition and fees, (g) average undergraduate enrollment, and (h) comprehensive, liberal arts (two levels, I & II). The dependent variables were the transfer enrollment rates for both private and public institutions.

The researcher utilized the College Board's *Annual Survey of Colleges* that contained data on the number of transfers and first-time freshman attending college between 1984 and 1997. The HEGIS and IPEDS supplemented the data source for a total sample of ( $N = 816$ ). The sample included ( $n = 412$ ) private institutions and ( $n = 402$ ) public institutions.

Descriptive statistics proved transfer students became increasingly concentrated at four-year public institutions

between 1984 and 1997. The regression resulted in a one point increase in the attrition rate to a 0.29% increase in transfer enrollment rate for privates and a 0.06% increase for publics. Based on a student's intended major, there was a positive and statistically significant relationship with the transfer enrollment of privates but a negative and significant relationship for publics. Freshman living on campus was a negative determinant of the transfer enrollment rate for both public and private institutions. Transfer enrollment rates declined as a student became interested in a more selective private institution, but this was not the case for public institutions. The relationship between a school's transfer student enrollment and the attrition rate was stronger for private institutions than for public institutions. Policy makers must be conscious of this issue and expect this could have significant implications for four-year public institutions.

Legislative changes are imperative to the success of transfer policies. Transfer policies are crucial in creating a seamless access system for students who completed a two-year associate degree and aspired to complete a four-year bachelor's degree. Welsh (2002) assessed the transfer function among the 50 states and Puerto Rico to determine best practices for state higher

education agencies. The best practices, based on benchmarking methodology, provided a roadmap for state higher education agencies wanting to improve the transfer function within their state. A nationwide survey of transfer student information systems in state higher education in the U.S. provided the necessary data for the best practices.

Welsh based the qualitative study on interviews of agency chief academic officers and chief research officers and/or policy analysts assigned to transfer student issues for each of the fifty states and Puerto Rico. A 1999 SHEEO study appendix provided the source for interviewees. Staff members for each agency participated in phone interviews to gain more information on the use of the student information systems. A pilot study validated the interview questions: (a) purpose of the information system, (b) structure of the information system, (c) scope and content of the information system, (d) uses of the information system, and (e) impact of the information system. Coded by response type, the responses provided the framework for the "best practice principles."

The researcher suggested the following best practices: (a) The purpose of the information system must be clearly articulated with policy objectives to improve the

environment for transfer students, which includes the collection and use of data so transfer students are monitored in meeting their educational goals; (b) the structure of the information system must be comprehensive so there is an ability to track transfer students among all post-secondary institutions in a given state on a continuous basis; (c) academic progress must be assessed routinely through elements of transfer data; (d) information systems must be accessible across institutions so information is easily accessible to institutions as students may transfer in and out during their academic career; and (e) the data collected through the inter-institutional system must be used to make improvements to academic instruction, curriculum, services and policy recommendations. If states allocated resources toward the improvement of transfer services, there could be a significantly positive economic impact on our nation.

States must support transfer policies in order for the transition to be seamless for transfer students. Transfer databases are an important component of tracking degree completion for transfer students. Welsh and Kjørlien (2001) answered four research questions as to the usability of databases to track the educational success of students who transfer from community colleges or four-year institutions.

Literature suggested, "Few databases at the state and system-wide levels have been established to facilitate student tracking from program to program, or from institution to institution, on through the attainment of the baccalaureate degree" (Ahumada, 1993, p.143).

The researchers used a national survey to address five questions. First, what state policy objectives were addressed? Second, do these databases permit tracking of individual student mobility and progress from institution to institution? Third, what type of data elements were included within the systems? Fourth, were data used? Fifth, what evidence is there the databases have an impact on the state environment for transfer students?

Data for the study came from two sources: (a) the SHEEOs, and (b) telephone interviews of the chief academic, research, or information officers of the state higher education agencies in the 50 states and Puerto Rico. The SHEEO study appendix provided the respondents for the study. The questions were previously pilot tested through an interview approach on five dimensions. The five dimensions included the following questions: (a) purpose of the information system, (b) structure of the information system, (c) scope and content of the information system,

(d) uses of the information system, and (e) impact of the information system.

The interviews revealed that 43 states, plus Puerto Rico, have some form of information system which includes specific data elements pertaining to transfer students. Seven states did not maintain a student database. The interview results differed from the SHEEO study on the number of states with a database system. Welsh and Kjorlien found seven states with a database while the SHEEO study resulted in nine. In addition, the researchers suggested four observations in reference to the databases: (a) State higher education agencies have created broad functions for transfer databases; (b) the most common use of the databases reported was supporting institutional and state planning; (c) providing student outcomes data; and (d) providing positive effects on the collection of information on transfer students. The priorities and objectives of state higher education offices significantly impacted the priorities and initiatives of institutions, ultimately impacting the overall success of transfer students in their quest to attain a baccalaureate degree.

Critics of the two-year community college system hypothesized attending a community college has a negative effect on student educational aspiration. Leigh and Gill

(2004) examined two opposing viewpoints, diversion effect and democratization, to determine whether community college attendance has a direct effect on changing a student's educational aspirations. The independent variables were increase in desired schooling, decrease in desired schooling, change in desired schooling, and desired schooling in 1979. The dependent variables utilized were changes in desired education, started in two-year college, started in four-year college, still in high school, and not in school.

The researchers obtained information on student educational aspirations through the National Longitudinal Survey of Youth (NLSY) from 1979 and 1982 including only respondents between the ages of 14 and 18. The sample was comprised of ( $N = 6,608$ ). Twenty-six percent of respondents increased their aspirations versus twenty-four percent that decreased their aspirations. For students who changed their aspirations, the average time was 2.56 years for increases and 2.63 years for decreases.

The result of the regression of the full sample indicated a negative community college "differential aspirations effect" of approximately -0.6 to -0.7 of a year. This figure dropped to -0.4 when desired years of schooling was measured during the critical first two years

of college. In reference to "democratization," the estimate indicated a more substantial "incremental aspirations effect" for the disadvantaged sub-samples than the comparison group. For the comparison group, which were white students with one parent that attended college, the findings resulted in community colleges have a substantial effect on expanding a student's educational opportunities.

Accountability has many dimensions for higher education. Constituents should hold leaders at the federal and state level as well as the institutional level accountable for the success or failure of higher education. However, accountability starts with each individual citizen demanding that leaders in their local and state governments pursue policy changes that will benefit all U.S. citizens.

#### Summary

The higher education system has evolved since the 1890s (Golden & Katz, 1999). Competition among providers, both public and private, along with dwindling federal and state appropriations has "changed the game" (Heller, 1997). During the days of low tuition, providers focused on need based aid. Today, in an effort to increase institutional

revenue and attract the best and brightest students, the strategy is high tuition, high aid (Ehrenberg, 2000).

To determine the factors that have led to the current high tuition, high aid model, research on the role that state higher education governance structure plays in how affordable higher education is in a particular state is critical. The next chapter will discuss how the relationship between the state political culture and the structure of state higher education boards relate to affordability of higher education across the 50 states.

## CHAPTER III

### METHODS

The purpose of this study is to understand variability in affordability using variables describing structure of the state higher education board among the 50 states. The researcher examined the variables of interest in Chapter II of this document. This chapter describes the methodology which will address the two research questions listed in Chapter I.

#### Theoretical Framework

This study examines the structure of state higher education boards, specifically (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency, and the relationship with affordability. The researcher based the theoretical framework for this study on three qualitative studies related to governance structure and affordability of higher education.

Marcus (1997) studied government reform of higher education over a five-year period from 1989 to 1994 looking at shifts in governing and coordinating structures and

centralization versus decentralization in both structural forms. Martinez (1999) analyzed the higher education governance system from the state perspective through a survey commissioned by the Association of Governing Boards. Bracco, Richardson, and Callan (1999) sought to understand how differences in the design of state governance structures affected higher education performance and how structure affected leadership strategies that policy makers used to encourage institutions to respond to new state priorities.

The above studies provided a starting point in examining variance in state political culture and structure of the state higher education board in determining affordability across the 50 states.

#### Research Design

The study design will be an *ex post facto* correlational research design. The secondary data source, *Measuring Up 2006*, provides a composite score for each of the 50 states. Therefore, the data set is complete. A correlational design using Pearson product-moment correlation coefficient will be appropriate to address the research questions concerning degrees of association among the study variables (Hinkle, Wiersman, & Jurs, 2003). Data

collection began after the project received approval from the Human Subjects Protection Program office at the University of Louisville (P.K. Leitsch, personal communication).

### Participants

All 50 states in the United States ( $N = 50$ ) were utilized for this study. No sampling procedures were necessary because the population was small and data were available for every state.

### Independent Variables

Three control variables and one independent variable apply to this study. Three control variables describe how much of the affordability in higher education is explained by state political culture: (a) strength of the governor, (b) professionalism of the state legislature, and (c) impact of the special interest groups. Structure of the state higher education board is the independent variable explaining if there is a statistically significant relationship between the structure of the state higher education boards and the affordability of higher education. There are three levels to the independent variable, state

higher education board: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency.

This study used previously published secondary data from political science literature and the NCPPHE National Report Card database. The following section discusses each variable data source, measurement, and measurement scale.

#### *Strength of the governor*

This study will use the Beyle (1999) scale for the institutional strength of the governors (see Appendix B). The scale is a composite score of six indicators of gubernatorial power: (a) separately elected executive branch officials, (b) tenure potential of governors, (c) governor's appointment powers in six major functional areas, (d) governor's budgetary power, (e) governor's veto power, and (f) gubernatorial party control (Gray, 1999).

The first item, separately elected officials, was an interval scale representing decreasing numbers of officials elected by the citizenry (1 = *governor with seven or more process and several major policy officials elected*; 1.5 = *governor with six or fewer officials elected, but two are major policy officials*; 2 = *governor with six or fewer officials elected, including one major policy official*; 2.5 = *governor with six or fewer officials elected, but none*

*are major policy officials; 3 = governor/lieutenant governor team with process officials, and some major and minor policy officials elected; 4 = governor/lieutenant governor team with some process officials elected; 4.5 = governor or governor/lieutenant governor team, with one other elected official; 5 = only governor or governor/lieutenant governor team elected).*

The next individual item in the Beyle scale, tenure potential measurement, was an interval scale representing increasing years allowed in office (1 = *two-year term, only terms permitted; 2 = two-year term, no restraint on re-election; 3 = four-year term, only two terms permitted; 4 = four-year term, only three terms permitted; 5 = four-year term, no restraint on re-election).*

The third individual item, measurement of the governor's appointment power, measured appointment power in six major functional areas: (a) corrections, (b) K-12 education, (c) health, (d) highways/transportation, (e) public utilities regulation, and (f) welfare. The approach used by Beyle included totaling, then averaging, the six individual office scores, and then rounding to the nearest .5 for the state score. Beyle's result was an interval scale representing increasing responsibility/privilege for appointment in major state functions (1 = *someone else*

*appoints, no approval or confirmation needed; 2 = someone else appoints, governor and others approve; 3 = someone else appoints, governor approves or shares appointment; 4 = governor appoints, a board, council or legislature approves; 5 = governor appoints, no other approval needed).*

The next item, measurement for the governor's budgetary power, was an interval scale representing increasing responsibility (1 = governor shares responsibility with other elected official, and legislature has unlimited power to change executive budget; 2 = governor shares responsibility, and legislature has unlimited power to change executive budget; 3 = governor has full responsibility, and legislature has unlimited power to change executive budget; 4 = governor has full responsibility, and legislature can increase special majority vote or subject to item veto; 5 = governor has full responsibility; legislature may not increase executive budget).

The fifth item in the Beyle scale, measurement for governor's veto power, was an interval scale representing increasing veto privilege (1 = no item veto, only a simple legislative majority needed to override; 2 = no item veto, with a special legislative majority needed to override it; 3 = has item veto with only a majority of the legislators

*present needed to override; 4 = has item veto with a majority of the legislators elected needed to override; 5 = has the item veto and a special majority vote of the legislature is needed to override a veto).*

The sixth and final item, gubernatorial party control, was an interval scale representing increasing personnel from the governor's party in the state legislature (1 = governor's party is 25% less in both houses; 2 = simple majority in both houses, or a simple minority of 25% or less in one and a substantial minority of more than 25% in the other; 3 = split party control in the legislature or a nonpartisan legislature; 4 = a simple majority in both houses of less than 75%, or a substantial majority in one house and a simple majority in the other; 5 = governor's party is 75% or more in both houses).

To create a composite score, the researcher summed the individual score and divided by six to create the Beyle scale for strength of the governor.

#### *Professionalism of the state legislature*

State legislatures are often categorized based on the length of sessions, the size of legislative operations, and the amount of legislator salaries (Hamm & Hedlund, 1990).

For this study, these characteristics define the professionalism of the state legislature.

Squire (1992) developed a state legislative professionalism index, which compiled 1986-88 data on member pay, staff members per legislator, and total days in session and compared these scores against the same measures for Congress. Building on the method used by Girdley (2003), this study took each of the three state scores and converted to percentages. The three percentages were totaled and divided by three to create a composite score ranging between 0 to 1. Each composite score was equally weighted.

Mooney (1994) addressed the reliability of the Squire (1992) index based on the pairwise correlations. The researcher documented that the Squire index was the best measurement for replication, because it only involved three nationally documented variables, legislator pay, staff per legislator, and total days in session. Mooney also observed that the Squire index was valid as a measure based on high correlations with other, more comprehensive indices ( $r = .82$  to  $.87$ ), Morehouse, Citizens Conference on State Legislatures, and Bowman and Kearney.

King (2000) updated the Squire index by substituting expenditures for services and operations per legislator as

a measure of staff size. King modified the Squire items because Squire had used a one-time study for number of staff members, and accurate data were not available for other years. King found the correlations between staff data during the 1970s, 1980s and 1990s and expenditures for services and operations per legislator for the same period were as follows: 1970s ( $r = .868$ ), 1980s ( $r = .921$ ), and ( $r = .922$ ). This study utilized the professionalism of state legislature measure (see Appendix B).

#### *Impact of special interest group*

Thomas and Hrebendar (1999) provided the most comprehensive comparative study and classification of the overall strength of interest groups (SIGs) on policy in the United States (Hill, 1997) for the Girdley (2003) study. Studies of state interest groups over the past twenty years were included. States were classified into five categories of their influence on policy formation with each category representing a stronger impact.

Thomas and Hrebendar (1992) developed a conceptual framework of five categories that affected the development, makeup, operating techniques, and influence of interest groups in the American states. The five categories were (a) available resources and extent of socioeconomic

diversity, (b) state political environment, (c) governmental institutional capacity, (d) intergovernmental and external influences, and (e) short-term state policy-making environment.

As a result, the researchers created an interval, categorical scale describing interest group strength on state policy formation. Hill (1997) addressed the reliability and validity of the Thomas and Hrebenar index and found the data to be valid based on the replication of the study for the 50 states, the collaboration by multiple researchers, and the consistency of periodic updates.

Sabloff (1997) utilized the Thomas and Hrebenar (1992) classification scale in a study of state politics and higher education. The correlation study required a conversion of the Thomas and Hrebenar ordinal classification into a continuous variable with four levels, representing increasing amounts of influence (1 = *complementary/subordinate*; 2 = *complementary*; 3 = *dominant/complementary*; and 4 = *dominant*). Sabloff did not use the subordinate category, because no states qualified for that classification. The Girdley (2003) study followed the Sabloff (1997) precedent by using the Thomas and Hrebenar (1992) classification converted to a continuous

scale with four levels. This study followed the same methods (see Appendix A).

#### *State higher education governance board structure*

The measurement for governance structure utilized the McGuinness (1997) approach (see Appendix C). As discussed in the higher education literature review in Chapter II, the McGuinness classification was utilized as a variable in numerous studies. The McGuinness index has proven to be stable over time and across comparative state studies which speaks to reliability of the index.

In correlation studies, numerous researchers converted the original nominal scaled description to continuous scales representing increasing centralization of coordination. In this study, the nominal variables were converted to continuous scaled variables. There are three levels to state higher education governance structure: (a) consolidated governing board, (b) coordinating board, and (c) planning/service agency.

#### Dependent Variable

The National Report Card for Higher Education (NCPHE, 2006) affordability grade provided the measurement for the dependent variable: state performance in higher education

affordability (see Appendix D, E, & F). The data set, *Measuring Up 2006*, graded states, not students or individual colleges or universities on their performance in higher education. Within the state grade, family ability to pay for higher education was determined by the economy of the state. A composite score determined the final grade for financial characteristics including (a) the family ability to pay at community colleges, public and private 4-year institutions; (b) the amount of state aid focused toward lower income families as a percent of federal Pell Grant aid to low-income families; (c) the share of income needed by lower income families to pay for tuition at lowest-priced institutions; and (d) the average loan indebtedness for students each year.

A committee created by the National Center on Public Policy and Higher Education, created a step by step process to compute the composite score. First, the committee chose the individual indicators or measures by determining reliability of public sources practicing approved data collection techniques. The indicators were comparable across all 50 states and used to measure performance results. Second, the committee assigned mathematical weights to each indicator based on importance to the performance category. The following weights were

determined: (a) family ability to pay for college, based on the type of institution they attend and the financial aid received along with their income, figured 50%; (b) the amount of need-based state aid figured 20%; (c) low-priced colleges figured 20%; and (d) average student debt figured 10 percent. The third step for the committee was the conversion of the raw scores to an index. The committee indexed the results for each individual item to a scale of 0 to 100. The top five states were benchmarks. The performance of the top five states in the early 1990s set the benchmark for the current performance in this category. Fourth, to achieve the affordability score, the committee multiplied the indexed scores for each item by the assigned weight and added the scores to achieve the affordability category score. Last, the committee indexed the raw affordability composite score to a scale of 0 to 100 with the top performing states being the benchmark. This type of grading scale is common in many high school and college classes.

The National Center for Higher Education Management Systems (NCHEMS) reviewed the data and methodology of the grades before finalizing the grades. The review created an understanding in the relationships among indicators and between indicators and the overall performance of the

grades (NCPPE, 2006). NCPPE determined the scores provided a fair and accurate comparison of state performance. Because the composite score contained both additive and discounted measures, the committee determined that formal scaling analyses were inappropriate for the affordability grade. The analysts addressed reliability by indicating that correlational analyses guided the selection of the final indicators. The NCHEMS analysts assessed the validity of the affordability measure and determined the methodology and the scores accurately reflected current research (NCPPE, 2006).

#### Data Analysis

The data analysis for this study included (a) descriptive information for all variables, (b) Pearson Product Moment correlations to determine relationships between all variables, and (c) hierarchical regression analysis to explain the variability in the dependent variable as predicted by the control variables and independent variable. *SPSS* is the statistical software used for all procedures.

Random sampling and inferential statistics did not apply to this study because the entire population of the 50 states was available (Field, 2005). This study focused on

(a) amount of systematic variance, (b) measures of effect size, and (c) proportion of variance accounted for by statistical models.

#### *Pearson Product Moment correlations*

To determine if a relationship existed between the independent, control and dependent variables, the researcher relied on Pearson Product Moment Correlations. The researcher was interested in the relationship between the two variables and if changes in one variable were met with similar changes in the other variable (Field, 2005). The correlations allowed the researcher to measure the linear relationship between variables and determine the direction of the relationship.

#### *Hierarchical regression*

The researcher utilized hierarchical regression to determine the relationship between two or more independent variables and the dependent variable (Cohen & Cohen, 1975). In hierarchical selection, the researcher determines the order of entry of the variables, based on theory and research. *F*-tests determined the significance of each added variable or set of variables to the explanation reflected in  $R^2$ . The hierarchical procedure is an alternative to

comparing betas for purposes of assessing the importance of the independent variables (Pedhazur, 1997).

The most important statistical results for hierarchical regression are  $R^2$ , adjusted  $R^2$  and change in  $R^2$ . The result for  $R^2$  is the proportion of variance in the dependent variable, affordability, by the linear combination of the independent variables. The result addresses the research question regarding the combined effect of governance structure on affordability.

Unique variance in the dependent variable, accounted for by each independent variable, is explained through  $R^2$  change. This statistic provided the amount of unique variance of each predictor after the correlation or variance accounted for by other independent variables is removed. Adjusted  $R^2$  tells the researcher how much variance in affordability would be accounted for if the model had been taken from the sample population (Field, 2005).

#### Limitations

There are three primary limitations to this study. First, across the 50 states, no two states are exactly the same. Each of the 50 states have a different economy, population, governance structure and coordinating as well as elected officials making it hard to generalize and find

single predictors of comparison. Second, this study used secondary data. Therefore, the researchers did not create this data set to specifically address these research questions. There are several limitations associated with secondary data such as (a) secondary information related to the research topic is either not available or only available in insufficient quantities, and (b) some secondary data may be of questionable accuracy and reliability (Steppingstones Partnerships, Inc., 2004). While these limitations exist for secondary data in general, this does not apply to this data set. The National Center for Higher Education Management Systems (NCHEMS) reviewed the data set and found it to be a fair and accurate comparison of state performance. Analysts for NCHEMS addressed both reliability and validity of the affordability measure and determined the methodology of the scores accurately reflected current research (NCPPE, 2006).

Last, this study used a national data set that allowed the researcher to draw conclusions in reference to the affordability of public, not private non- or for-profit institutions.

## CHAPTER IV

### RESULTS

The purpose of this study was to examine higher education affordability using variables defining the state political environment and the higher education governance structure. The first research question addressed the relationship between the structure of the state higher education board and the affordability of higher education within the state for the years of 2002, 2004, and 2006. The second research question addressed how much of the variation in affordability was explained by the structure of the state higher education board when the factors that define state political culture, including institutional strength of the governor, professionalism of the state legislature, and impact of the special interest groups, were taken into account for the years of 2002, 2004, and 2006.

This chapter reports the results of the statistical analysis examining research questions in three sections: (a) descriptive statistics, (b) Pearson Product Moment

Correlations, and (c) results of the hierarchical regression analysis.

### Descriptive Statistics

Data collection for this study proceeded as outlined in Chapter III. Higher education and political science literature provided theoretical support and data measurement for the dependent variable and all independent variables for all 50 states.

Table 1 presents the description of the variables, measurements, and sources for the study. Table 2 presents the descriptive statistics for the participants. The researcher used number (*n*) and percentages (%) to describe the categorical variables. The range, mean and standard deviation (*SD*) describe interval-level variables.

The descriptive statistics demonstrate that the average affordability score declined from the creation of the data set in 2002 from 66.44 to 52.16 in 2006. The average affordability score for the 50 states was 66.44 with a range of 43 to 100 for 2002 and a standard deviation of 10.51. In 2004, the average affordability score for the 50 states was 55.48 with a range of 41 to 83 and standard deviation of 8.41. By 2006, the average affordability score

declined again for the 50 states at 52.16 with a range of 39 to 71 and standard deviation of 7.61.

Table 1

*Description of Variables, Measurements, and Sources*

Variable	Code/Measure	Source
<u>Predictors</u>		
SIG.		Thomas and Hrebentar (1992)
Complementary/subordinate	1	
Complementary	2	
Dominant/complementary	3	
Dominant	4	
SGS.		McGuinness (1997)
Consolidated governing	1	
Coordinating	2	
Service/planning	3	
SOG.	Composite	Beyle (1999)
SEP	0-5	

Table 1 (continued)

*Description of Variables, Measurements, and Sources*

Variable	Code/Measure	Source
<u>Predictors</u>		
PRO.	Composite	King (2000)
Salary/living exp.	0-100	
Session length		
Staff expenses		
<u>Dependent</u>		
AFF.	Composite	NCPPE (2000)
Ability to pay	0-100	
Low student debt		
Financial aid		
Low-priced colleges		

Note: AFF. = Affordability  
 SIG. = Special Interest Groups  
 PRO. = Professionalism of State Legislature  
 SOG. = Strength of Governor  
 SGS. = State Higher Education Governance  
 Board Structure  
 SEP. = Separately Elected Powers

Table 2

Descriptive Statistics ( $N = 50$ )

Variable	<i>n</i>	%	Range	Mean	<i>SD</i>
<u>Predictor Variables</u>					
SIG.					
1 = Dominant	5	10			
2 = Dominant/comple.	25	50			
3 = Complementary	16	32			
4 = Complementary/sub.	4	8			
SGS.					
1 = Con. governing bd.	19	38			
2 = Coord. boards	25	50			
3 = Plan./Serv. agencies	6	12			
PRO.			.06-0.90	.26	.15
SOG.			2.70-4.10	3.41	.45

Table 2 (continued)

Descriptive Statistics ( $N = 50$ )

Variable		<i>n</i>	%	Range	Mean	<i>SD</i>
<u>Dependent Variable</u>						
AFF.	2002	50	100	43-100	66.44	11.58
AFF.	2004	50	100	41-83	55.52	9.34
AFF.	2006	50	100	39-71	52.16	8.18

Note: AFF. = Affordability  
 SIG. = Special Interest Groups  
 PRO. = Professionalism of State Legislature  
 SOG. = Strength of Governor  
 SGS. = State Higher Education Governance  
 Board Structure

Three control variables were employed in this study. The researcher coded the first variable, impact of special interest groups, with a range of one to four. The mean of the three variables was 1.74 with a standard deviation of .664. With a small standard deviation such as .664, it represented the data points were close to the mean. The second control variable, professionalism of the state legislature, ranged from .06 to .90 with the mean of .26 and standard deviation of .175, signifying the data points are closer to the mean than for the three variables. The final control variable, strength of the governor, ranged between 2.70 and 4.10 with a mean of 3.41 with a standard deviation of .439. This variable had the largest standard deviation, signifying the mean may not be an accurate of a representation of the data as the other variables. The independent variable, state higher education governance structure was coded between one and three with a mean of 1.74 and standard deviation of .664. This variable had a small standard deviation relative to the value of the mean.

#### Pearson Product Moment Correlation Analysis

The researcher loaded the dependent and independent variables into *SPSS*. An analysis of the data allowed the

researcher to answer research question one. The results showed there is no statistically significant relationship between the structure of the state higher education board and the affordability of higher education across the years of 2002, 2004, and 2006.

#### Pearson Product Moment Correlations (Research Question One)

##### *Model for 2002*

The Pearson Product Moment correlations for 2002 are presented in Table 3. Affordability and special interest groups had a negative correlation at  $-.054$  and not found to be statistically significant. Professionalism of the state legislature and affordability showed the strongest correlation. The variables were correlated at  $.480$  and significant at ( $p = .01$ ). Special interest groups and professionalism of the state legislature were correlated at  $.014$  but not statistically significant. Strength of the governor and affordability showed a negative correlation at  $-.059$  and were not statistically significant. Strength of the governor and special interest groups showed a correlation of  $.166$  and was not statistically significant. Strength of the governor and professionalism showed a correlation of  $.023$  and were not statistically significant as well.

Table 3

Intercorrelations Among Research Variables and  
Affordability for 2002

Variable	1	2	3	4	5
1. AFF.	--	-.054	.480**	-.059	.071
2. SIG.		--	.014	.166	.132
3. PRO.			--	.023	.184
4. SOG.				--	-.050
5. SGS.					--

Note:  $N = 50$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

The relationship between state higher education governance board and affordability showed a correlation of .071 and were not statistically significant. The correlation between state higher education governance board and affordability was stronger at .132. However, the correlation between state higher education governance board and affordability was even stronger at .184. The only negative correlation between state higher education governance board and a variable was strength of the governor. Strength of the governor showed a correlation with state higher education governance board of  $-.050$ . The correlation was not statistically significant.

#### *Model for 2004*

The Pearson Product Moment correlations for 2004 are presented in Table 4. In 2004, the correlation between affordability and special interest groups changed from a negative correlation to a positive .137, but was still not statistically significant. Affordability and professionalism of the state legislature had the strongest correlation again at .577, and was statistically significant at ( $p = .001$ ). Affordability and strength of the governor had a negative correlation for 2002; however, in 2004, they showed a positive correlation of .106.

Table 4

Intercorrelations Among Research Variables and  
Affordability for 2004

Variable	1	2	3	4	5
1. AFF.	--	.137	.577***	.106	.101
2. SIG.		--	.014	.166	.132
3. PRO.			--	.023	.184
4. SOG.				--	-.050
5. SGC.					--

Note:  $N = 50$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

Statistical significance was not present. The last variable to compare with affordability was state higher education governance board and the correlation was stronger than 2002 at .101. It was not statistically significant.

In 2002, special interest groups and professionalism of the state legislature showed a correlation of .014 and was not statistically significant. It remained the same for 2004. Special interest groups and strength of the governor remained unchanged for 2004 showing a correlation of .166. The correlation between special interest groups and state higher education governance board was .132 for 2004 did not change and was not statistically significant.

The 2004 results for professionalism of the state legislature and strength of the governor were unchanged from 2002 at .023 and were not statistically significant. Professionalism of the state legislature and state higher education governance board structure showed a correlation of .184 but was not statistically significant. The last correlation, strength of the governor and state higher education governance board structure showed the same negative correlation of  $-.050$  as 2002. The results were not statistically significant.

*Model for 2006*

The Pearson Product Moment correlations for 2006 are presented in Table 5. The correlation between affordability and special interest groups declined slightly from 2004 at .132 and was not statistically significant. For the third and final year of analysis, affordability and professionalism of the legislature showed the only significant correlation at .446 at ( $p = .05$ ). The correlation between affordability and strength of the governor was not as strong at .084. The relationship was not statistically significant. The correlation between affordability and state higher education governance board structure rose slightly to .105 and was not statistically significant.

The results of the correlation between special interest groups and affordability declined slightly at .132 and was not statistically significant. The correlation between special interest groups and professionalism of the state legislature remained the same .014 for all three years. The correlation was not statistically significant. Special interest groups and strength of the governor remained unchanged over the three years under analysis at .166. However, it was not statistically significant.

Table 5

Intercorrelations Among Research Variables and  
Affordability for 2006

Variable	1	2	3	4	5
1. AFF.	--	.132	.446*	.084	.105
2. SIG.		--	.014	.166	.132
3. PRO.			--	.023	.184
4. SOG.				--	-.050
5. SGC.					--

Note:  $N = 50$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

A slight decline occurred in the correlation between special interest groups and state higher education governance board structure at .132 and was not statistically significant.

While the correlation between affordability of professionalism of the state legislature was statistically significant, the correlation between professionalism of the state legislature and strength of the governor was not as strong at .023. It was not statistically significant. A stronger correlation existed between professionalism of the state legislature and state higher education governance board structure. The last variable, strength of the governor and state higher education governance board structure, showed a negative correlation at  $-.050$  and was not statistically significant. This occurred consistently over the three years studied.

The results of the Pearson Product Moment correlations allowed the researcher to answer research question one. State higher education governance board structure was not a significant predictor of affordability of higher education across the years of 2002, 2004, or 2006.

## Hierarchical Regression Analysis

Research question two addressed how much of the variation in affordability is explained by the structure of the state higher education board when the dimensions that define state political culture, including institutional strength of the governor, professionalism of the state legislature, and impact of the special interest groups are taken into account for the years of 2002, 2004 and 2006. Hierarchical regression analysis provided the predictive potential of the combination of independent variables for the dependent variable. Statistical analysis provided by *SPSS* indicated that the cases in this study met the assumptions for hierarchical regression.

### Hierarchical Regression Results (Research Question Two)

The ordering of research variables into *SPSS* was determined based on the research hypothesis that one variable may have more influence than others in the set of predictors on the dependent variable. In this study, the order of entry included the three control variables in step one: (a) impact of special interest groups, (b) professionalism of the state legislature, and (c) strength

of the governor, with the independent variable, and step two, (d) state higher education governance board structure, loading last.

Table 3 presents the results of the Pearson Product Moment, correlational analysis among the criterion variables and the predictor variables for 2002. First, Pearson Product Moment correlations were conducted to examine the strength and direction of the relationship between the research variables. Table 3 shows the strongest correlation to be between affordability and professionalism of the state legislature at .480, ( $r^2 = .237$ ), followed by the state higher education governance board structure and professionalism of the state legislature at .184, ( $r^2 = .184$ ). In 2004, there were similar results. Table 4 shows the result of Pearson Product Moment correlations among the criterion variables and the predictor variables for 2004. Again, affordability and professionalism of the state legislature showed the strongest correlation at .577, ( $r^2 = .354$ ) with professionalism of the state legislature at a distant second with .184, ( $r^2 = .355$ ). While the correlation was the strongest again for professionalism of the state legislature, interestingly, the correlation increased by .097 over the results from 2002.

The final year under analysis was 2006. There was little change in the results. Table 5 shows the result of Pearson Product Moment correlations among the criterion variables and the predictor variables for 2006. The correlation for affordability and professionalism of the state legislature was not as strong as 2004 at .446, ( $r^2 = .218$ ), while the correlation between professionalism of the state legislature and structure of the state higher education governance board structure remained unchanged for 2006 at .184, ( $r = .218$ ) meaning there was no change over the six-year period covered in the study.

Tables 6, 7, and 8 display the results of the hierarchical regression analyses. The tables include the three control variables and one independent variable as well as the dependent variable, affordability. The tables include the ( $p$ ) values, unstandardized regression coefficients ( $B$ ), the standard errors of regression coefficients ( $SEB$ ), the standardized regression coefficients, adjusted  $R^2$ ,  $\Delta R^2$ , and  $F$  values.

Table 6

Hierarchical Multiple Regression of Control and Predictor Variables on Affordability for 2002

---

Variable	<u>Affordability</u>				
	<i>b</i>	<i>SEB</i>	$\beta$	<i>Adj. R<sup>2</sup></i>	$\Delta R^2$
<i>Step 1</i>					
SIG.	-.70	1.94	-.05		
PRO.	31.97	8.74	.49**		
SOG.	-1.65	3.49	-.06		
Block				.188**	.237**
<i>Step 2</i>					
SGS.	-.263	2.34	-.02		
Block				.000	.001
Total R <sup>2</sup>				.188**	.238**

---

Total Model of R<sup>2</sup> and Adjusted R<sup>2</sup>

Note: N = 50, \*p < .05, \*\*p < .01, \*\*\*p < .001

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

Table 7

Hierarchical Multiple Regression of Control and Predictor Variables on Affordability for 2004

Variable	<u>Affordability</u>			Adj. $R^2$	$\Delta R^2$
	<i>b</i>	<i>SEB</i>	$\beta$		
<i>Step 1</i>					
SIG.	1.40	1.44	.120		
PRO.	30.67	6.49	.58***		
SOG.	1.53	2.59	.07		
Block				.312***	.354***
<i>Step 2</i>					
SGS.	-.24	1.73	-.02		
Block				.000	.001
Total $R^2$				.312***	.355***

Total Model of  $R^2$  and Adjusted  $R^2$

Note:  $N = 50$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

Table 8

Hierarchical Multiple Regression of Control and Predictor Variables on Affordability for 2006

Variable	<u>Affordability</u>			Adj. $R^2$	$\Delta R^2$
	$b$	SEB	$\beta$		
<i>Step 1</i>					
SIG.	1.18	1.38	.12		
PRO.	20.55	6.26	.45**		
SOG.	1.02	2.49	.06		
Block				.167**	.218**
<i>Step 2</i>					
SGS.	.146	1.67	.01		
Block				.000	.000
Total $R^2$				.167**	.218**

Total Model of  $R^2$  and Adjusted  $R^2$

Note:  $N = 50$ , \* $p < .05$ , \*\* $p < .01$

AFF. = Affordability

SIG. = Special Interest Groups

PRO. = Professionalism of State Legislature

SOG. = Strength of Governor

SGS. = State Higher Education Governance Board Structure

### *Model for 2002*

The standardized Beta coefficients in the regression model provided the relative contributions of the three control variables and one independent variable. For 2002, professionalism of the state legislature had the highest Beta coefficient ( $\beta = .485$ ), followed by state higher education governance board structure ( $\beta = -.015$ ), impact of special interest groups ( $\beta = -.048$ ), and last, strength of the governor ( $\beta = -.063$ ) at ( $p = .05$ ). Professionalism of the state legislature had a  $t$ -value of 3.656 and was statistically significant at ( $p = .05$ ). State higher education governance board structure showed a  $t$ -value of  $-.113$  and was not statistically significant at ( $p = .05$ ). The  $t$ -value for special interest groups was  $-.362$  and was not statistically significant at ( $p = .05$ ). The last variable, strength of the governor had a  $t$ -value of  $-.472$  and was not statistically significant at ( $p = .05$ ). The Pearson Product Moment correlation between special interest groups and strength of the governor was  $.166$ .

The  $R^2$  for the 2002 regression model with the control variables was  $.237$ , signifying that approximately 24% of the variance in the state affordability grade was explained by the combination of the three control variables: (a) impact of special interest groups, (b) professionalism of

the state legislature, and (c) strength of the governor (see Table 6 for the first step of the model). When the independent variable, state higher education governance board structure, was added to the model, the  $R^2$  was .238, signifying that little additional variance in the state affordability grade for 2002 was explained by the independent variable. Adjusted  $R^2$  for the control variables was .188, while the combined  $R^2$  for the entire model was .170, providing a more conservative explanation of the variance for affordability in 2002.  $R^2$  change for the three control variables was .237 with a significant  $F$  change of .006, signifying statistical significance at ( $p < .05$ ). When the independent variable was added,  $R^2$  change was .000 with a non-significant  $F$  change value of .911.

Cohen (1988) argued that a population  $R^2$  that explained at least 15 percent of the variance is a large effect size. The observed  $R^2$  for 2002 was well above .15 at .237 signifying the results fell within the standards of a large effect size. This suggests the control and predictor variables are significant predictors of affordability.

#### *Model for 2004*

The standardized Beta coefficients in the regression model provided the relative contributions of the three

control variables and one independent variable. In the first step for 2004, professionalism of the state legislature had the highest Beta coefficient ( $\beta = .576$ ), followed by special interest groups ( $\beta = .120$ ), strength of the governor ( $\beta = .072$ ), and last, state higher education governance board structure ( $\beta = -.017$ ). Professionalism of the state legislature had a  $t$ -value of 4.728 and was significant at ( $p < .05$ ). Special interest groups showed a  $t$ -value of  $-.976$  and was not statistically significant at ( $p = .05$ ). The  $t$ -value for governor strength was  $.589$  and was not statistically significant at ( $p = .05$ ). The last variable, governance structure had a  $t$ -value of  $-.139$  and was not statistically significant at ( $p = .890$ ). For the second time, the Pearson Product Moment correlation between special interest groups and strength of the governor was  $.166$ .

The  $R^2$  for the 2004 regression model with the control variables was  $.354$ , signifying that 35.4% of the variance in the state affordability grade was explained by the combination of the three control variables: (a) impact of special interest groups, (b) professionalism of the state legislature, and (c) strength of the governor (see Table 7). In the second step, when state higher education governance structure was added to the model, the  $R^2$  was

.355, signifying that approximately 36% of the variance in the state affordability grade for 2004 was explained by the combination of the three control variables and the independent variable. Adjusted  $R^2$  for the control variables was .312, while the combined adjusted  $R^2$  for the entire model was .297, providing a more conservative explanation of the variance for affordability in 2004.  $R^2$  change for the three control variables was .354 with a significant  $F$  change of .000, signifying statistical significance at ( $p < .05$ ). When the independent variable was added to the model,  $R^2$  change was .000 with a non-significant  $F$  change value of .890.

Cohen (1988) argued a population  $R^2$  of .15 or higher is a large effect size. The observed  $R^2$  for 2004 was .355 and fell above the minimum .15 for the large effect size range. With an effect size more than double the minimum for a large effect size, the results suggest that the control and predictor variables are an even more important predictor of affordability for 2004.

#### *Model for 2006*

The standardized Beta coefficients in the regression model provided the relative contributions of the three control variables and one independent variable. For the

third and final year, 2006 (see Table 8), the Pearson Product Moment correlation between special interest groups and strength of the governor was .166. Professionalism of the state legislature had the highest Beta coefficient ( $\beta = .441$ ), followed by the impact of special interest groups ( $\beta = .115$ ), strength of the governor ( $\beta = .055$ ), and last, state higher education governance structure ( $\beta = .012$ ). Professionalism of the state legislature had a  $t$ -value of 3.285 and was statistically significant at ( $p < .05$ ). Impact of special interest groups showed a  $t$ -value of .855 and was not statistically significant at ( $p = .05$ ). The  $t$ -value for strength of the governor was .410 and was not statistically significant at ( $p = .05$ ). The last variable, state higher education governance board structure, had a  $t$ -value of .087 and was not statistically significant at ( $p = .931$ ).

The  $R^2$  for the 2006 regression model with the control variables was .218, signifying that 21.8% of the variance in the state affordability grade was explained by the combination of the three control variables: (a) impact of special interest groups, (b) professionalism of the state legislature, and (c) strength of the governor (see Table 8). In the second step, when state higher education governance structure was added to the model, the  $R^2$  remained

at .218, signifying that approximately 22% of the variance in the state affordability grade for 2006 was explained by the combination of the three control variables and the independent variable. Adjusted  $R^2$  for the control variables was .167, while the combined adjusted  $R^2$  for the entire model was .148, providing a more conservative explanation of the variance for affordability in 2006.  $R^2$  change for the three control variables was .218 with a significant  $F$  change of .010, signifying statistical significance at ( $p < .05$ ). When the independent variable was added to the model,  $R^2$  change was .000 with a non-significant  $F$  change value of .931.

Cohen (1988) explained a population  $R^2$  of .15 as a large effect size. The observed  $R^2$  for 2006 was .218 and fell within the large effect size range. While the effect size for 2006 was much less than 2004, the effect size still signifies the importance of the control and predictor variables.

The results of this study answered research question two. While structure of the governing board was not a significant predictor, the results of the  $R^2$  for each of the three years signified the variables under examination contributed to approximately 24% of the variance in 2002, 36% in 2004, and 22% in 2006, suggesting a large effect

size for all three years. Professionalism of the state legislature was the only significant predictor of affordability over the three years under investigation. Chapter V will discuss the results and make implications and suggestions for further research related to affordability of higher education in the United States.

## CHAPTER V

### DISCUSSION

This study addressed two research questions: (a) the statistical significance of the relationship between the structure of the state higher education board and the affordability of higher education across the years of 2002, 2004, and 2006, and, (b) the amount of variation in affordability explained by the structure of the state higher education board when the dimensions that define state political culture were taken into account for 2002, 2004, and 2006. Descriptive statistics, Pearson Product Moment correlations, and hierarchical multiple regression provided statistical information about the influence of the predictor variables on the dependent variable.

The significance of this study is determined by concern from the public and policy makers in the declining affordability of higher education and the variance by state. This chapter presents discussion of the research findings in four sections: (a) discussion of the results for each research question, (b) implications for policy,

research, administrative practice, restructuring, and leadership, (c) future research, and (d) conclusions.

## Discussion of the Results

### Research Question 1

Research question one explored the significance of the relationship between the structure of the state higher education board and the affordability of higher education for the years of 2002, 2004, and 2006. The results of the Pearson Product Moment correlations suggested that state higher education board was not a significant predictor of affordability of higher education. However, one control variable, professionalism of the state legislature was found to be a significant predictor across all three years, 2002, 2004, and 2006.

The results of this study are similar to other research. Hearn, Griswold, and Marine (1996) begged the question of how postsecondary financing policies are associated with region, social and economic resources, and governance factors. The researchers found that differences in tuition and aid programs were stronger than differences associated with governance arrangements.

Research question one was based on the conceptual framework that included the findings of the Bracco,

Richardson, and Callan (1999) study which sought to understand how differences in the design of state governance structures affect higher education performance and how structure affects leadership strategies that state policy makers use to encourage institutions to respond to new state priorities. The new conceptual framework suggested constitutional powers of the governor, the role of the legislature and state higher education agencies, and the role of the two- and four-year universities in the state would help define the structure of the state higher education system. System design or structural environment created a second dimension for the conceptual framework. States make four sets of decisions when systems of higher education are created: (a) decisions about governance structures establish lines of authority and accountability between state government and providers, (b) work processes define responsibility and characteristics, (c) decisions about mission divide responsibility for achieving higher education goals among various types of institutions, and (d) capacity determines the availability and quality.

Bracco, Richardson, and Callan found the case studies suggested that system design, policy environment, and the degree of compatibility between design and environment all influence the performance outcomes and the leadership that

will be effective in each structure. Statewide governance of higher education is most effective when there is interaction between the policy environment and system design. Government strategies to achieve balance among professional values and the use of market forces in the system design determined provider responsibilities, capacities, and relationships to each other and elected officials.

The findings of question one point to professionalism of the state legislature being the most crucial to predicting affordability of higher education.

#### Research Question 2

Research question two addressed the amount of variation in affordability explained by the structure of the state higher education board when the dimensions that define state political culture were taken into context for the years of 2002, 2004, and 2006.

The  $R^2$  for the 2002 regression model with the control variables was .237, signifying that 23.7% of the variance in the state affordability grade was explained by the combination of the three control variables: (a) impact of special interest groups, (b) professionalism of the state legislature, and (c) strength of the governor. When the

independent variable, state higher education governance structure was added to the model, the  $R^2$  was .238, signifying that approximately 23.8% of the variance in the state affordability grade for 2002 was explained by the combination of the three control variables and the independent variable.

For the year 2004, professionalism of the state legislature had the highest Beta coefficient ( $\beta = .576$ ), followed by special interest groups ( $\beta = .120$ ), strength of the governor ( $\beta = .072$ ), and last, state higher education governance board structure ( $\beta = -.017$ ). Professionalism of the state legislature had a  $t$ -value of 4.728 and was statistically significant at ( $p < .05$ ). Special interest groups were found to have a  $t$ -value of  $-.976$  and were not statistically significant at ( $p < .05$ ). The  $t$ -value for governor strength was .589 and was not statistically significant at ( $p < .05$ ). The last variable, state higher education governance board structure had a  $t$ -value of  $-.139$  and was not statistically significant at ( $p < .05$ ) with a significance level of .890.

The  $R^2$  for the 2004 regression model with the control variables was .354, signifying that 35.4% of the variance in the state affordability grade was explained by the combination of the three control variables: (a) impact of

special interest groups, (b) professionalism of the state legislature, and (c) strength of the governor (see Table 7). In the second step, when state higher education governance board structure was added to the model, the  $R^2$  was .355, signifying that approximately 36% of the variance in the state affordability grade for 2004 was explained by the combination of the three control variables and the independent variable.

For the year 2006, professionalism of the state legislature had the highest Beta coefficient ( $\beta = .441$ ), followed by the impact of special interest groups ( $\beta = .115$ ), strength of the governor ( $\beta = .055$ ), and last, state higher education governance board structure ( $\beta = .012$ ). Professionalism of the state legislature had a  $t$ -value of 3.285 and was statistically significant at ( $p < .05$ ). Impact of special interest groups showed a  $t$ -value of .855 and was not statistically significant at ( $p < .05$ ). The  $t$ -value for strength of the governor was .410 and was not found to be statistically significant at ( $p < .05$ ). The last variable, state higher education governance board structure had a  $t$ -value of .087 and was not statistically significant at ( $p < .05$ ) with a significance level of .931.

The second step of the hierarchical regression showed the  $R^2$  remained at .218, signifying that approximately 22%

of the variance in the state affordability grade for 2006 was explained by the combination of the three control variables and the independent variable. Adjusted  $R^2$  for the control variables was .167, while the combined adjusted  $R^2$  for the entire model was .148, providing a more conservative explanation of the variance for affordability in 2006.  $R^2$  change for the three control variables was .218 with a significant  $F$  change of .010, signifying statistical significance at ( $p < .05$ ). When the independent variable was added to the model,  $R^2$  change was .000 with a non-significant  $F$  change value of .931.

Over the three years in question, professionalism of the state legislature continued to have the highest Beta coefficient. The Pearson Product Moment correlation remained constant between special interest groups and strength of the governor at .166. State higher education governance structure declined between the years of 2002 and 2006. By 2006, state higher education governance board structure had the lowest beta coefficient.

While the results of the Girdley (2003) study found that professionalization of the state legislature uniquely explained differences in higher education affordability among states, the effects were not as large as this study. In the Girdley study, the analysis of semi-partial

coefficients showed that the professionalization of the legislature had very small (.8%) or small (2%) unique effects. The Beta coefficients for professionalism of the state legislature were positive in both regressions showing that more professionalized legislatures were associated with increased affordability.

Building on the Girdley study results, the results for question two of this study directly related to the outcomes discussed by Marcus (1997) in his study of government reform of higher education over a five-year period from 1989 to 1994. Marcus looked at shifts in governing and coordinating structures and centralization versus decentralization in both structural forms. Marcus found that restructuring of higher education occurred in approximately 50% of the states based on input from legislators.

Legislators were key in Martinez' (1999) study that analyzed the higher education governance board system from the state perspective through a survey commissioned by the Association of Governing Boards. The study included 18 legislatures that explained the role of trustees in moving higher education forward. The results of the study pointed to legislatures who were key players in planning and executing higher education, and they believed, in order for

higher education governance structures to be successful, collaboration must exist among the most powerful players such as (a) the governor, (b) the governing board(s), (c) the coordinating body (if existed), (d) the administration, and finally, the (e) citizens of the state.

## Implications

### *Research*

When the NCCPE created the *Measuring Up* data set in 2000, there were only three states with the grade of F in affordability. By 2006, there were 43 states with an F grade and an overall average grade of 52.16. State higher education affordability is declining at a rapid pace. A review of political science and higher education literature has linked affordability to state higher education governance board structure. However, this study suggested that professionalism of the state legislator is a more significant predictor of state higher education affordability.

Critics of “professionalized” legislators such as King (2000) explained professionalized legislators as those who spend too much time running for office or seeking advancement to higher levels of government and too little time attending to the public interest. However, based on

the results of this study, it appears that legislators have been listening to their constituents and responding to their requests. Sabloff's (1997) study reported that legislators are listening to their constituents, even if it is at the expense of public institutions when questioning their ability to be effective and efficient. Therefore, it is important to examine what contributes to this phenomenon.

### *Policy*

The results of this study suggested that the variables under examination predicted variance in state higher education affordability. However, the only significant predictor was professionalism of the state legislature. Therefore, there may be additional predictors of affordability not covered in this study. To reverse the effect of declining affordability across the United States, policy leaders must move the affordability effort forward, not just oversee or be passive about the future of higher education.

Legislatures will need to look for creative ways to solve issues related to declining appropriations. There are over 4,000 colleges and universities offering degree-granting programs across the United States. The composition

includes (a) 15% are public four-year institutions, (b) 25% are public two-year institutions, (c) 45% are private four-year institutions, and (d) 15% are private two-year institutions (NCPPE, 2006). Is there a need for this many institutions? One way to cut costs would be for legislatures to begin encouraging state institutions to re-examine the programs that are offered and where in the state. Limited funding should be maximized across the state. For example, is there a demand for four law schools in a particular state? Are all law schools appropriately located across the state for access to all state citizens? Are programs with relatively low demand offered at numerous institutions? If so, consolidation should be examined between both public and private institutions. State and federal financial aid programs support public, private and for-profit institutions, so policy changes should include all college and university types.

In the 2006 State of the State addresses, only 14 of the 50 states included in the *Measuring Up* data set included plans to improve affordability via appropriations for need based or merit based programs (Education Commission of the States, 2006). If affordability is to be improved, this number will need to increase significantly.

### *Administrative Practice*

While policy initiatives are imperative, college and university administrators must do their part to control costs and improve affordability. Administrative costs in colleges and universities have risen dramatically over the past two decades, disproportionately more than the costs of instruction and research. The costs associated with Presidents, Deans, and their assistants grew 26% faster than instructional budgets in the 1980s (Leslie & Rhoades, 1995). In 2002, Mark G. Yudof was one of the highest-paid university leaders in the nation with salary and benefits amounting to at least \$787,319 during the 2002-03 year. In the same year, Mark A. Emmert, chancellor of Louisiana State University at Baton Rouge, received a pay raise in July that more than doubled his annual compensation, from \$284,160 to \$590,000. Less than half of Emmert's annual compensation came from state funds. A larger portion came from private sources affiliated with the university: the LSU Foundation and the Tiger Athletic Foundation (Basinger & Perry, 2002). While the Presidential role is extremely important to the success of a college or university, it is not the only important position on a campus. Are these large salaries necessary? Should there be a cap on public institution presidential salaries allowing discretionary

funds from foundations and athletic foundations to be funneled back into the university to meet other needs such as allowing colleges and universities to keep tuition low or offer more need based financial aid programs?

### *Higher Education Restructuring*

The results of this study confirm the work of critics of coordinating board structures suggesting that any state level structure can be effective if those involved are capable and willing to work with others (Healy, 1997).

Based on the results of this study, it appears that policy makers should proceed with caution in reference to restructuring state higher education governing board structures. An example of a state that changed the structure in the 1990s to improve performance is Kentucky. It appears after reviewing the results of the 2002-2006 *Measuring Up* data, the results of this study are confirmed. Kentucky went from a C in affordability in 2002 to F in 2006. Despite efforts to restructure and improve performance in higher education, affordability was not improved. Therefore, the relationship between professionalism, the most significant predictor, and affordability should be examined in reference to the role of higher education governance board structure.

The results of this study suggest that states should not be quick to restructure state higher education structures but it does suggest that states should look at ways to collaborate more with both public and private higher education providers including increasing the focus on state articulation programs to ease the transition to two- and four-year institutions. Since community colleges are the least expensive of the higher education providers, states must look to create partnerships and increase access to higher education.

### *Leadership*

Leadership is more crucial than ever when examining affordability on a state by state basis. Leaders who are capable and willing to work together in a collaborative manner that have the ability to see the "big picture" will be crucial. With professionalism of the state legislature having the highest beta coefficient across 2002, 2004, and 2006, the results raise the question of why this is the case. What is contributing to professionalism of the state legislature being the most significant predictor? Do legislators in states that are more affordable favor higher education policy or is there another important variable that needs examination?

In the conceptual framework in the Bracco, Richardson, and Callan (1999) study, states create four sets of decisions when systems of higher education are created. Therefore, policy leaders should not only look closely at lines of authority and accountability within higher education structures but should also look at the mission of higher education of each state and look for ways to create policies that will support improving affordability.

Now more than ever, it is important for leadership at the state, national and institutional level to address the issue of declining affordability and begin to look for ways to stop the erosion of affordability of higher education so that future generations of citizens are not denied access to higher education and are offered a more stable economic future.

As the results found by St. John, Paulsen, and Carter (2005) suggest, family background and public policies play a substantial role in the college choice process for African Americans, while grants and tuition have a substantial and direct influence on persistence. Therefore, legislators will need to listen to their constituents of all races and socioeconomic backgrounds and look for ways to address the crisis of declining affordability of higher education in the United States.

## Future Research

The results of this study indicated that professionalism of the state legislature had more of an effect on affordability than state higher education governance board structure or any of the other control variables under examination. Therefore, it is important to examine professionalism further and what contributes to this variable having more impact on affordability. Are more professionalized legislators associated with larger appropriations?

The strength of the governor was not found to be a significant predictor of affordability but professionalism of the legislator was. Is this because of term limits on governors? Do professionalized legislators have more time to develop a positive agenda supporting higher education than governors or is there some other important factor? Determining how leaders can be developed at the state level to improve state higher education affordability and increase their interest in higher education agendas. The unchanged Pearson Product Moment correlation between special interest groups and strength of the governor over the six years provides an opportunity for further research as well. With Governors proclaimed as the most influential

policy makers within a state and special interest groups holding significant resources, how did these variables remain constant over the six-year period?

In a study done by Gittel and Kleinman (2000), the researchers found that political leaders, especially the governor and top elected legislative officials, play a significant role in the design and implementation of policy reforms. Based on the results of this study, it is important for policy makers to understand the components of affordability and how tuition policies, whether institution or government driven, impact the future of American students. In response to the findings of this study, legislatures should examine, on a state by state basis, the seven states out of 50 that did not received an F in affordability in 2006 and determine what has changed over the six-year period. What have those states done differently in structure, in financial aid programs and other factors that relate to affordability? After analysis, the policy leaders should determine which policy changes could be made to improve affordability for citizens on a state by state basis.

Kim (2004) found that financial aid had different effects on students by racial differences in deciding to attend an institution. Therefore, policy makers should

investigate policy initiatives that could be created based on the population composition of the state to encourage completion of a two- or four-year degree within their state.

### Conclusion

Based on the results of the study, it is clear that while state higher education governance board structure is a contributor to affordability of higher education, it is not a significant predictor. Professionalism of the state legislature was the most significant predictor with the largest Beta coefficient. Therefore, it is important for further research to be done to determine what can be done to examine professionalism of the state legislature and its composition to determine how affordability of higher education across the 50 states can be improved.

Leadership ability of the legislators will be the key to success in making higher education both affordable and accessible to all citizens. Legislatures will need to be creative and aggressive in making changes that will increase affordability and improve the outlook for higher education in the 21<sup>st</sup> century.

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APPENDIX A

State Classification for Thomas and Hrebentar (1999) Impact  
of Special Interest Groups

Dominant	Dominant/ Complimentary	Complementary	Complementary/ subordinate
Alabama	Arizona	Colorado	Minnesota
Florida	Arkansas	Delaware	Rhode Island
Nevada	Alaska	Indiana	South Dakota
S. Carolina	California	Hawaii	Vermont
W. Virginia	Connecticut	Maine	
	Georgia	Massachusetts	
	Idaho	Michigan	
	Illinois	Missouri	
	Iowa	New Hampshire	
	Kansas	New Jersey	
	Kentucky	New York	
	Louisiana	N. Carolina	
	Maryland	N. Dakota	
	Mississippi	Pennsylvania	
	Montana	Utah	

APPENDIX A (cont.)

Dominant	Dominant/ Complimentary	Complementary	Complementary/ subordinate
	Nebraska	Wisconsin	
	New Mexico		
	Ohio		
	Oklahoma		
	Oregon		
	Tennessee		
	Texas		
	Virginia		
	Washington		
	Wyoming		
<i>N</i> = 5	<i>N</i> = 24	<i>N</i> = 16	<i>N</i> = 4

APPENDIX B

State Scores for Legislative Professionalism and the  
Institutional Strength of the Governor

State	LPS	GIP	SEP	TP	AP	BP	VP	PC
AL	.14	2.7	1.0	4.0	2.0	3	4	2
AK	.45	3.8	5.0	4.0	3.5	3	5	2
AZ	.28	3.3	1.5	4.0	2.5	3	5	4
AR	.15	2.8	2.5	4.0	2.5	3	4	1
CA	.90	3.0	1.0	4.0	3.0	3	5	2
CO	.27	3.7	3.0	4.0	4.0	3	5	3
CT	.32	3.7	4.0	5.0	3.0	3	5	2
DE	.19	3.3	2.0	4.0	3.0	3	5	3
FL	.35	3.1	3.0	4.0	1.5	3	5	2
GA	.14	2.9	1.0	4.0	.5	3	5	4
HI	.32	4.1	5.0	4.0	2.5	3	5	5
ID	.17	3.7	2.0	5.0	2.0	3	5	5
IL	.38	3.3	4.0	5.0	3.0	3	5	3
IN	.19	3.2	3.0	4.0	4.0	3	2	3
IA	.24	3.8	3.0	5.0	3.0	3	5	4

## APPENDIX B (continued)

State	LPS	GIP	SEP	TP	AP	BP	VP	PC
KS	.18	3.7	3.0	4.0	3.0	3	5	4
KY	.17	3.5	3.0	4.0	3.0	3	4	4
LA	.25	3.1	1.0	4.0	3.5	3	5	2
ME	.16	3.4	5.0	4.0	3.5	3	4	1
MD	.27	4.1	4.0	4.0	2.5	5	5	4
MA	.33	3.0	4.0	4.0	1.0	3	5	1
MI	.50	3.6	3.0	4.0	3.5	3	5	3
MN	.25	3.6	4.0	5.0	2.5	3	5	2
MI	.22	2.8	1.0	4.0	2.0	3	5	2
MO	.30	3.5	2.0	4.0	2.5	3	5	4
MT	.15	3.6	3.0	4.0	2.5	3	5	4
NE	.25	3.7	3.0	4.0	3.0	4	5	3
NV	.20	3.0	2.5	4.0	3.5	3	2	3
NH	.06	2.8	5.0	2.0	3.0	3	2	2
NJ	.37	4.1	5.0	4.0	3.5	3	5	4
NM	.09	3.5	3.0	4.0	4.0	3	5	2
NY	.66	4.1	4.0	5.0	3.5	4	5	3
NC	.28	2.7	1.0	4.0	3.0	3	2	3
ND	.10	3.8	3.0	5.0	2.5	3	5	4
OH	.43	4.1	4.0	4.0	4.5	3	5	4

APPENDIX B (continued)

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State	LPS	GIP	SEP	TP	AP	BP	VP	PC
OK	.28	2.7	1.0	4.0	1.0	3	5	2
OR	.25	3.1	2.0	4.0	2.5	3	5	2
PA	.40	4.1	4.0	4.0	4.5	3	5	4
RI	.19	2.8	2.5	4.0	4.0	3	2	1
SC	.21	2.8	1.0	4.0	2.0	2	5	3
SD	.11	3.8	3.0	4.0	3.5	3	5	4
TN	.18	3.6	4.5	4.0	4.0	3	4	2
TX	.23	3.3	1.0	5.0	3.5	2	5	3
UT	.10	4.0	4.0	4.5	3.5	3	5	4
VT	.28	2.9	2.5	2.0	4.0	3	2	4
VA	.24	3.3	2.5	3.0	3.5	3	5	3
WA	.30	2.9	1.0	4.0	2.5	3	5	2
WV	.16	3.8	2.5	4.0	4.5	5	5	2
WI	.33	3.7	3.0	5.0	2.0	3	5	4
WY	.07	3.6	2.0	4.0	3.5	3	5	4

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Note: LP = legislative professionalism score (King, 2000);  
 GIP = composite gubernatorial institutional power score,  
 SEP = separately elected powers, TP = tenure potential,  
 AP = appointment power, BP = budgetary power, VP = veto  
 Power; PC = party control (Beyle, 1999).

APPENDIX C

State Classification for McGuiness (1997) Higher Education

Governance Structure

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Consolidated Governing Board	Coordinating Board	Planning/Service Agency
Alaska	Arkansas	Delaware
Arizona	California	Michigan
Georgia	Colorado	Minnesota
Hawaii	Connecticut	New Hampshire
Idaho	Florida	Pennsylvania
Maine	Illinois	Vermont
Mississippi	Maryland	
Montana	Massachusetts	
Nevada	Missouri	
North Carolina	Nebraska	
North Dakota	New Jersey	
Oregon	New Mexico	
Rhode Island	New York	
South Dakota	Ohio	
Utah	Oklahoma	

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APPENDIX C (continued)

State Classification for McGuiness (1997) Higher Education

Governance Structure

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Consolidated Governing Board	Coordinating Board	Planning/Service Agency
Wisconsin	South Carolina	
Wyoming	Tennessee	
	Texas	
	Virginia	
	Washington	
	West Virginia	
<hr/> <i>N</i> = 19	<hr/> <i>N</i> = 25	<hr/> <i>N</i> = 6

APPENDIX D

2002 State Affordability Scores

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid	LPO	Debt
		CC	PU4	PR4	(20%)	(20%)	(10%)
AL	57	78	75	74	1	47	91
AK	63	83	83	100	0	59	96
AZ	62	71	69	59	2	97	82
AR	74	95	88	83	32	67	96
CA	100†	68	62	42	44	293	83
CO	72	88	87	53	39	74	81
CT	71	83	71	53	89	64	78
DE	53	75	60	78	8	60	72
FL	60	71	77	52	15	64	95
GA	65	91	95	58	0	71	88
HI	65	84	72	70	2	92	84
ID	69	94	89	81	1	72	92
IL	85	88	76	63	123	70	87
IN	69	74	72	61	72	51	93
IA	73	85	90	70	56	51	100

APPENDIX D (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
KS	72	97	92	78	16	71	94
KY	74	95	92	80	34	62	98
LA	63	97	82	39	1	70	91
ME	56	70	69	51	37	40	91
MD	62	80	70	56	39	54	79
MA	62	78	71	41	83	52	77
MI	68	83	68	85	45	60	97
MN	85	100	100	68	100	49	97
MI	64	85	78	75	1	66	102
MO	67	98	81	68	18	71	91
MT	51	65	67	67	6	37	93
NE	66	90	80	70	12	67	97
NV	68	75	76	61	25	82	85
NH	45	67	61	56	6	31	78
NJ	72	74	64	62	98	49	87
NM	70	83	77	43	24	84	98
NY	56	55	59	42	86	30	83
NC	75	89	88	55	29	100	87
ND	65	87	87	118	3	46	105
OH	55	68	61	59	35	43	87

APPENDIX D (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid	LPO	Debt
		CC	PU4	PR4	(20%)	(20%)	(10%)
OK	74	98	102	71	15	67	95
OR	53	66	60	44	21	54	85
PA	67	76	59	51	102	44	85
RI	43	58	50	40	18	46	73
SC	67	91	68	71	33	67	89
SD	59	83	87	73	0	35	100
TN	61	79	74	60	19	62	91
TX	67	81	72	59	17	89	91
UT	86	103	108	156	3	75	98
VT	56	59	47	52	84	32	74
VA	81	102	85	75	42	100	84
WA	70	80	77	57	63	58	85
WV	57	63	68	57	27	43	95
WI	76	94	95	65	61	49	95

APPENDIX D (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
WY	66	85	87	0	0	66	98

Note. These scores are the indexed scores provided by the National Report Card (NCPPE, 2006). CC = community college; PU4 = public four-year colleges; PR4 = private four-year colleges; Aid = need-based financial aid; LPO = low-priced college options; Debt = low-student debt.

<sup>a</sup>score = the indexed composite affordability grade.

APPENDIX E

2004 State Affordability Scores

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid	LPO	Debt
		CC	PU4	PR4	(20%)	(20%)	(10%)
AL	45	63	59	70	1	31	81
AK	57	79	74	80	0	59	80
AZ	51	64	53	55	1	75	72
AR	55	74	61	62	27	43	86
CA	83	63	49	45	54	185	71
CO	61	72	65	55	46	57	75
CT	53	69	54	46	50	47	68
DE	51	74	53	86	6	57	67
FL	52	62	64	49	15	51	86
GA	53	73	66	51	1	62	75
HI	63	86	70	76	0	85	73
ID	62	84	73	112	3	54	86
IL	66	72	53	52	88	53	72
IN	63	65	54	53	96	40	81
IA	55	65	56	60	41	38	88

APPENDIX E (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
KS	58	82	69	71	15	53	82
KY	60	74	71	63	45	36	87
LA	53	84	70	37	0	55	81
ME	43	53	47	41	33	28	79
MD	53	70	54	55	37	45	69
MA	51	66	51	40	70	35	64
MI	57	70	50	72	41	50	88
MN	72	81	70	65	98	36	86
MI	51	72	59	64	1	47	89
MO	53	79	57	64	14	50	81
MT	42	55	50	63	9	28	83
NE	59	86	66	68	14	57	85
NV	52	62	59	67	0	73	75
NH	41	57	49	54	14	24	67
NJ	64	64	47	58	98	45	77
NM	59	71	59	56	23	67	88
NY	56	52	50	41	102	27	72
NC	61	73	63	48	39	68	76
ND	51	71	64	95	4	33	94
OH	46	57	44	52	35	33	77

APPENDIX E (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
OK	56	76	69	58	18	46	86
OR	43	54	47	45	17	36	80
PA	59	67	45	46	97	38	73
RI	42	56	45	42	24	41	66
SC	46	63	49	56	25	29	79
SD	50	78	69	65	0	32	89
TN	48	66	58	50	21	35	81
TX	63	74	60	53	40	70	80
UT	74	91	89	153	6	56	87
VT	53	51	39	49	97	25	63
VA	61	80	61	63	40	57	74
WA	56	58	50	48	66	39	72
WV	50	57	54	56	31	40	86
WI	65	86	72	60	56	42	85

APPENDIX E (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
WY	56	72	66	0	1	59	90

Note. These scores are the indexed scores provided by the National Report Card (NCPPE, 2006). CC = community college; PU4 = public four-year colleges; PR4 = private four-year colleges; Aid = need-based financial aid; LPO = low-priced college options; Debt = low-student debt.

<sup>a</sup>score = the indexed composite affordability grade.

APPENDIX F

2006 State Affordability Scores

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid	LPO	Debt
		CC	PU4	PR4	(20%)	(20%)	(10%)
AL	43	63	60	61	1	26	74
AK	50	68	64	66	6	42	76
AZ	47	62	50	50	0	65	70
AR	54	76	62	59	24	41	80
CA	71	58	47	42	60	130	64
CO	55	68	59	49	39	53	72
CT	50	62	48	43	54	41	60
DE	54	65	47	82	48	50	62
FL	49	59	61	46	16	47	80
GA	51	71	68	48	0	59	72
HI	65	89	75	76	3	85	68
ID	64	85	74	130	3	54	82
IL	59	64	44	47	83	43	69
IN	57	63	52	49	79	38	74
IA	50	59	52	55	37	32	84

APPENDIX F (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
KS	54	78	61	69	14	48	78
KY	51	59	53	53	47	30	82
LA	50	78	67	37	1	47	78
ME	42	51	43	41	36	26	75
MD	53	63	50	49	59	39	65
MA	47	62	46	39	58	34	60
MI	51	63	44	68	33	43	84
MN	64	71	61	60	88	30	81
MI	50	69	60	69	1	42	83
MO	47	68	51	60	11	41	77
MT	39	53	47	54	10	27	75
NE	53	74	58	65	17	51	76
NV	49	58	56	59	0	67	71
NH	39	54	48	54	13	22	64
NJ	63	59	43	55	108	42	72
NM	57	70	57	62	22	64	82
NY	54	47	48	39	100	25	67
NC	57	68	60	44	44	59	70
ND	47	64	56	104	5	29	84
OH	42	52	37	48	33	29	74

APPENDIX F (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid	LPO	Debt
		CC	PU4	PR4	(20%)	(20%)	(10%)
OK	55	70	65	61	28	41	79
OR	42	52	44	42	23	32	74
PA	54	59	40	43	93	32	68
RI	40	51	41	38	30	36	61
SC	43	57	44	54	28	26	72
SD	43	67	58	61	0	26	82
TN	47	66	60	49	18	31	76
TX	57	69	52	49	38	64	74
UT	71	88	85	146	6	50	84
VT	52	50	38	50	95	24	58
VA	57	75	57	62	43	51	68
WA	60	57	51	48	97	35	69
WV	46	52	51	57	29	29	79
WI	58	74	61	54	59	34	80

APPENDIX F (continued)

State	Score <sup>a</sup>	Ability to Pay (50%)			Aid (20%)	LPO (20%)	Debt (10%)
		CC	PU4	PR4			
WY	52	67	67	0	1	53	72

Note. These scores are the indexed scores provided by the National Report Card (NCPPE, 2006). CC = community college; PU4 = public four-year colleges; PR4 = private four-year colleges; Aid = need-based financial aid; LPO = low-priced college options; Debt = low-student debt.

<sup>a</sup>score = the indexed composite affordability grade.

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