RELATIONSHIP OF ENROLLMENT TO THE TUITION AND FEE DIFFERENCE IN THE STATE OF FLORIDA'S COMMUNITY COLLEGE SYSTEM AND STATE UNIVERSITY SYSTEM AND THE INFLUENCE OF STATE RESOURCES BETWEEN 1970 AND 2010

By

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To my wife, April, and daughter, Delaney

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Community College	Any institution that was regionally accredited to award the associate of arts or the associate in science as its highest degree (Cohen & Brawer, 2003). The nature of the study was designed to compare the tuition difference between the public community colleges and the state's universities. Although the community college became Florida's State College System towards the end of the study, they were referred to as community college through the time of analysis
FTE	Full Time Enrollment, the number of students enrolled at a particular institution during this study. The study was concerned with fall full-time enrollment.
Postsecondary Higher Education Institution	All institutions analyzed in this study
Price Elasticity	Measure of the sensitivity of quantity demanded to the changes in price. (DesJardins & Bell, 2007)
State University	A public institution in Florida that offered at least a bachelor's degree.
Tuition and Fees	Tuition represents a portion of the cost of instruction and fees were assessed for special services that may not be required for all students (Cohen & Brawer, 2003). This study has operationalized the definition according to the cost reported to the National Center for Educational Statistics, The Florida Board of Education, and The Florida Board of Governors. The study also recognized this in accordance with the literature classifying tuition and fees as the "sticker price"

Abstract of Dissertation Presented to the Graduate School
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By

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Major: Higher Education Administration

The effects of college tuition and fees and the impact on student enrollment has been investigated substantially with studies mostly concluding that tuition and fees affect overall higher education enrollment. This study examined the actual difference in resident undergraduate tuition and fees between the 11 state university system institutions and 28 state college system institutions and its effects on enrollment. The difference in fees between types of institution was operationalized as the tuition price difference ratio (TPDR). The purpose of this study examined how enrollment at Florida's public higher education institutions were associated with the TPDR and other state resources including the type of institution, median family income, educational attainment, unemployment rates and Florida state based financial assistance for the years 1970, 1980, 1990, 2000, and 2010.

The results of statistical analyses were mixed. Overall, the study concluded that there was not a statistically significant association between enrollment and the TPDR; however, there was a negative association between enrollment and the TPDR. Furthermore, the study concluded that one's median family income, educational

attainment, and county's unemployment rate were all statistically significant predictors of postsecondary participation.

CHAPTER 1
INTRODUCTION

Higher Education Overview

Most Americans agreed that any type of education beyond secondary education was an extremely powerful means of advancement, both personally and professionally. Therefore, one could utilize this rationale to explain the historically large enrollment increases nationally, and in Florida, in postsecondary education participation (Mbilinyi, 2006). Furthermore, the attainment of postsecondary education has been considered more of a requirement than an option. There were few unskilled employment opportunities that existed as of 1997 where 96% of manufacturing firms indicated that they provided some education and training for their hourly employees. (Casazza & Bauer, 2006); however, measuring the true values and benefits of higher education were extremely challenging (Honeyman & Bruhn, 1996). Therefore, the values and benefits of higher education were usually classified through various dimensions attempting to classify the benefits as consumptive versus investment, monetary versus non-monetary, and public versus private (Honeyman & Bruhn, 1996; Perna, 2005).

Most often, the average American was concerned with the monetary benefits of higher education (Immerwahr, 1998, 2004; Immerwahr & Foleno, 2000). In fact, most discussions about the values and benefits of higher education focused only on the narrow private economic benefits (Institute of Higher Education Policy, 1998). The largest monetary benefit to students attending higher education institutions was the potential increase in lifetime earnings (Immerwahr, 2000, 2004; Immerwahr and Johnson, 2007). In fact, over their employment careers, college graduates earned over 60% more than their high school graduate counterparts. As reported in the 2010

Current Population Survey Annual Social/Economic Supplement, the average American with a baccalaureate degree earned $56,665 annually, as compared to $30,627 earned annually by individuals acquiring only a high school diploma (U.S. Census, 2010b). Also, financing higher education has been considered a great investment. The expected net return on an individual's investment in the completion of a bachelor's degree, which included tuition, living expenses, books, and foregone earnings, was over 11%. This was believed to be extremely favorable as compared to other real returns on financial portfolios (Hill, Hoffman, & Rex, 2005).

Although the monetary values of higher education were important, it has been just as important to identify the non-monetary benefits of higher education because of the common good these benefits provided to the individual and society as a whole (Baum & Ma, 2007). Those individuals that attended higher education institutions had overall improved health and an increased life expectancy (IHEP, 1998). Furthermore, those individuals that continued to increase their educational attainment reported decreased use of smoking cigarettes. In fact, those students that received at least a baccalaureate degree were, on average, 20% less likely to smoke cigarettes than those without a higher education degree (Perna, 2005). In addition, individuals that attended higher education institutions had significantly better working conditions than their non-college counterparts (Perna, 2003). Furthermore, those who attended a higher education institution experienced increased job stability. In fact, the unemployment rates of all racial and ethnic groups with a bachelor's degree were half that of those only receiving a high school diploma (IHEP, 1998).

The non-monetary benefits did not stop with the individual; society as a whole benefited from individuals who attended a higher education institution. This resulted from the fact that highly educated individuals were also members of society. The individuals' beliefs and values shaped while in college ultimately changed society (Bowen, 1977). For example, there was a substantial increase in the civic responsibility of those graduating with a bachelor's degree. In fact, 77% of individuals with at least a bachelor's degree, and 83% of those with an advance degree, voted in the 2008 Presidential election. This was compared to only 54% of those with a high school diploma (U.S. Census, 2010a). Furthermore, the increased educational attainment of individuals increased the likelihood of them contributing further to their community by volunteering with civic and community organizations (Perna, 2005). Those acquiring college education were more open to diversity issues and tended to be more adaptable to new situations (Bowen, 1977). In addition, the more education an individual of society received, the less likely he or she was to be incarcerated. The individuals were, in turn, better citizens and contributed more productively to society (IHEP, 1998). Therefore, one could better understand the reasons why both the federal and state governments supported public higher education.

The American system of higher education continued to be a mixed system of private and public postsecondary institutions (Ehrenberg, 2000). The institutions were funded through several sources of revenue. The primary funding sources included tuition and fees, public tax-supported revenue from federal, state and local sources, gifts, grants, and sales and services (Heller, 2006; Honeyman & Bruhn, 1996) Historically, the first public institutions of higher education were chartered in the late

eighteenth century, primarily in the South and the Midwest (Heller, 2006). The American public university vastly expanded after the passage of the Morrill Act in 1862[1] (Heller, 2006; Nemc, 2006; Thelin, 2004). The Act was originally introduced into Congress by Justin Morrill, in 1857, to establish agricultural colleges (Nemc, 2006). Initially, the act was vetoed by then President James Buchanan. Five years later, the Act was reintroduced and subsequently passed (Nemc, 2006). The Act essentially provided each state with land grants based on the number of congressional seats occupied by a state. The land provided could then be sold and the proceeds from the sales of the land were to be used within five years to support and maintain at least one college within the state (Thelin, 2004).

The number of higher education institutions increased from 563 in 1869 to 977 by the end of the nineteenth century while student enrollments increased fourfold from approximately 52,000 to over 237,000 students (Heller, 2006). Several of these institutions were agricultural institutes or teacher-training colleges that bared little resemblance to today's modern universities and colleges. However, the institutions fostered by the Morrill Act provided individuals with lower cost alternatives to private institutions (Cohen & Brawer, 2003). More recently, the lower cost option to higher education access has been represented by community colleges. In addition, the expansion of higher education was further enhanced by the second Morrill Act of 1890,

[1] The Morrill Act of 1862 was signed into law by President Abraham Lincoln and it guaranteed to each state 30,000 acres of land per congressman to support colleges (Casazza & Bauer, 2006). The Act provided that "each State which may take and claim the benefit of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life"(PL 37-108)

which prohibited federal funding that practiced discrimination in higher education (Casazza and Bauer, 2006).

Higher Education Organization

Colleges and universities continued to expand throughout the first half of the 1900s. During that time period, college enrollments grew exponentially as compared to the nation's population for the same fifty-year period (Lucas, 2006). During that time, the federal support of higher education was relatively quiet until the vocational education support laws of 1918 and subsequent years which provided financial support in a categorical manner to higher education (Wattenbarger & Cage, 1974). The next large expansion of the American higher education system followed World War II (Cohen, 1998; Hauptman, 1990; Heller, 2006; Lucas, 2006; McPherson & Schapiro, 1991; Mills, 2007). This came through Congress' passage of the public law known as the Servicemen's Readjustment Act[2], more commonly referred to as the GI Bill (Cohen, 1998; Heller, 2006; Kiester, 1994). This bill guaranteed financial aid to any veteran who had served after 1940 and met other conditions. Essentially, the GI Bill provided the groundwork for increasing access and ensuring affordability of higher education through portable student aid grants (Thelin, 2004). The Act provided the opportunity for 2.2 million veterans to attend two- and four- year colleges and universities. Furthermore, 3.5 million veterans enrolled in vocational education (Casazza & Bauer, 2006). Essentially for the first time, people with average financial means had an opportunity to

[2] Servicemen's Readjustment Act (1944) was an Act to provide Federal Government aid for the readjustment in civilian life of returning World War II veterans (PL 78-346). The law was an entitlement to any veteran who had served after 1940 and met other conditions, and the scholarship monies were portable in that the eligible student could use the funding at the institution of his or her choice (Thelin, 2004).

pursue a college degree or some other type of vocational training (National Center for Public Policy and Higher Education, 2002).

The number of individuals attending higher education institutions continued to expand, especially during the 1960s and 1970s when both state and federal governments took steps to ensure that access to postsecondary education was open to all, regardless of economic backgrounds. This expansion was mostly a result of the expansion of public support of higher education and a broad network of open enrollment of community colleges (Cohen & Brawer, 2003; McPherson and Schapiro, 1991b). In fact, during that time period, the number of community colleges grew from 412 to 909 two-year institutions (American Association of Community Colleges, n.d.). Rouse (1998) concluded that by adding one additional two-year college per 10,000 high school graduates increased the proportion of students enrolled in two-year colleges by 11.2%. With the increasing number of two-year colleges, a new issue became evident: access to postsecondary institutions as an element of cost. Furthermore by 1999, two out of every three high school graduates enrolled in a postsecondary institution (Lee, 1999; Lingenfelter, 2006). In 2009, there were over 1,100 public community colleges and 690 public four-year institutions with enrollment of over 19 million students (Snyder & Dillow, 2010) (Figure 1-1).

Florida Higher Education Organization

The state of Florida's public higher education system has been divided into two entities, the State University System (SUS), and the Community College System (CCS). Recently, the CCS was renamed the State College System of Florida when institutions in this systems offered baccalaureate degrees. (Florida Board of Governors, 2009; Florida Department of Education, 2010). The SUS was made up of 11 four-year

institutions and one teaching center which enrolled over 302,000 total students in the 2008-09 academic year. Furthermore, the SUS enrolled a total of 233,772 undergraduate students during the same time period (FLBOG, 2009). The state college system was made up of 28 institutions and 62 different campuses that totaled enrollment over 831,000 unduplicated headcount in 2008-09 (FLDOE, 2010). As compared to the national landscape, Florida's State College System, formerly known as the Community College System, grew rapidly between the 1960s and 1970s (Figure 1-2). Furthermore, over 50% of all attendance in higher education in the state of Florida occurred at the community college level. This was a result of Florida's public policy to reinforce the "two-plus-two" articulation system. The public community college was seen as the primary entry point to postsecondary education (Florida Postsecondary Education Planning Commission, 2000; Sanchez-Penley, Martinez, & Nodine, 1997) The state of Florida's public higher education system enrolled four-fifths of the states students that were enrolled in higher education (Snyder & Dillow, 2010).

The initial development of Florida's public community college system was fostered by the legislature establishing the Community College Council. This council outlined and published a report in 1957 entitled "The Community Junior College in Florida's Future." Under this plan, the proposed postsecondary education system provided educational opportunities within driving distance for more than 90% of Florida's population. The intent of the Florida movement, toward the establishment of community colleges, was to serve the local districts in which they were geographically located; (Wattenbarger & Cage, 1974), whereas the state's universities would essentially continue to serve the entire state.

During the past five years, the state of Florida has generally seen overall enrollment growth at all public higher education institutions (Figure 1-3). In fact, from 2002 to 2007, Florida's public institutions experienced a 17.2% increase from 442,000 FTE to 518,000. However, between 2006 and 2007, Florida's institutions had a modest increase of only 2%. To further complicate the issue, Florida's public higher education appropriations per FTE declined approximately 7% from $6647 in 2002 to $6203 in 2007 (State Higher Education Executive Officers, 2008). Therefore, as compared nationally, there was more emphasis placed on students and their families to cover the costs of attending higher education institutions in the state of Florida. As compared to the best performing states, families in Florida devoted a large amount of their income, even after financial aid, to attend public postsecondary institutions. For example, a student arising from a family desiring to reach or maintain middle class status and earning an average of $18,992 spent approximately 40% of their income on net college costs after financial aid was awarded (National Center for Public Policy and Higher Education, 2006). In 2005, Florida ranked 34th among the 48 states that used similar accounting data in core funding (tuition and state appropriations) per FTE, and Florida fell below the national average in core funding by 11.9% (NCPPHE, 2006).

Tuition and Fees

The development of the community college system, both nationally and in Florida, opened higher education opportunities to several students that would not have had the opportunity to attend. From the beginning, attendance at the two-year institutions had always been the less expensive option. Students desiring to attend higher education institutions had long been supported by federal, state, and institutional student financial assistance programs. Most of the programs originated in the concept

of equal access to higher education without regard to financial need in the 1960s (Linsley, 1997; McPherson & Schapiro, 1991a).

Prior to the 1970s, federal student aid programs were relatively small, limited, and specific (Thelin, 2004). Essentially, federal aid to higher education was in response to some problem that arose in the early 1950s to middle 1960s. Special finance projects enlisted by the federal government that counterbalanced the effects of Sputnik included graduate fellowships and expanded research support. The earlier GI Bills were responses by the federal government which provided student aid in response to military service (Hauptman, 1990).

In 1965, there was a change in policy with the passage of the Higher Education Act of 1965. The Act was specifically designed to "strengthen the educational resources of colleges and universities and to provide financial assistance for students in postsecondary and higher education" (PL 89-239). In promoting financial assistance to students and families, emphasis was placed on fellowships and loan programs (Hauptman, 1990). At that time, there was much debate over the establishment of the federal direct student aid system. First, it was contended that the federal loan system would escalate higher education costs and reduce access to lower cost educational programs. Secondly, institutional aid advocates posited that middle-income students would be negatively affected by the constant increase of college costs (Chambers, 1968). This early legislation, with more emphasis placed on loans and fellowships, signaled the beginning of the price differential structures in higher education (Callan, 2006; Hauptman, 1990).

Beginning in the mid 1960s there was an ongoing widening between the price differential of public postsecondary institution's tuition and fees in the United States. This was true in Florida as well. In 2009-10, the average tuition and fees at Florida's community colleges was $2552.00, based on 30 credit hours; whereas the tuition and fee total for students attending SUS institutions was $4352.54 for 30 credit hours (Florida Board of Governors, 2010; FLDOE, 2010). Attendance at a community college remained the less expensive option in the 2009-10 academic year. The price difference between a SUS institution and community colleges grew significantly over the last four decades. Specifically, the difference has grown to a factor of almost nine. The tuition and fee gap between Florida institutions was much higher than Mullin and Honeyman (2008) found nationally between 1960 and 2000. For example, in Florida, the 1969-70 academic year attendance at a SUS institution resulted in an expense to the student of $450 whereas attendance at a community college resulted in an average tuition of $246, a difference of $204. In 2010, this difference was $1800.54 (Figure 1-4), a 782% change from 1970 to 2010. However, it should be noted, that when Florida was compared nationally, the tuition and fees that were charged by Florida's public higher education institutions were below the national average.

Enrollment and Increasing Tuition

There has been considerable research conducted examining the effects of rising tuition costs and its effect on higher education enrollment. Most often the effects were analyzed and explained utilizing human capital theory (DesJardins & Bell, 2007; Shin & Milton, 2006). Human capital theory was first introduced by Gary S. Becker in 1962. Becker's original intent for the theory was to estimate the monetary rate of return of high school and college education in the United States. In the theory, he suggested that an

individual had the ability to identify lower cost options allowing him or her to have a better command over resources (Becker, 1962). As noted by Geske (1996), from an economic perspective, investments in human capital, such as postsecondary education or on-the-job training, could be evaluated on one's ability to generate future returns such as increased lifetime earnings and greater personal satisfactions. The theory suggested that students seeking enrollment to postsecondary institutions attempted to maximize their rate of return[3] and sought low cost opportunities (Becker, 1962). Shin and Milton (2006) further explained human capital theory and stated the theory could generally predict that as tuition at a given institution rose, enrollment would decrease due to the fact that students would search for lower cost alternatives.

Historically, public institutions largest source of revenues were a result of state and local governments. However during the past two decades, tuition and fees contributed more to institutions revenues than the other primary sources of revenue which included the federal, state, and local governments (Heller, 2006). Furthermore since 1980, tuition alone increased almost twice as fast as inflation (Hauptman, 1990; McPherson & Schapiro, 1991b; Heller, 1997; St. John, 1993). Besides the concerns of the widening difference in tuition and fees between Florida's community colleges and state universities, there was recent research which noted, although a few states had made improvements, the nation as a whole had made no progress with access to higher education opportunities since the early 1990s. In fact, there were smaller proportions of young individuals enrolled in education and training beyond high school in 2006 than there were a decade ago (Hunt &Tierney, 2006). In addition, historically, the largest

[3] Rate of return was defined as the ratio between the costs student pay for college and the future monetary benefits that will be received from the college education (Shin & Milton, 2006)

tuition increases occurred during times of economic downturns; thus, limiting the abilities for student and families to cover college expenses (NCPPHE, 2002).

Student Price Response Theory

It was essential for those charged with setting tuition and fee structures at public postsecondary institutions to have an understanding of student price response so that policy analysis could be conducted on access and one's actual opportunity for higher education degree attainment (St. John, 2003). Policy makers were concerned with the cost of higher education, and whether these costs were an obstacle for qualified individuals to attend higher education institutions (Heller, 1996). This concept was vastly studied and the literature demonstrated the fact that price influenced students' participation in higher education institutions (Hearn & Longanecker, 1985, Heller, 1997; Jackson & Weathersby, 1975; Leslie & Brinkman, 1987; Shin & Milton, 2006; St. John, 1993). These studies noted a negative relationship between tuition and fee increases and student attendance at higher education institutions. Therefore, one could conclude there was a definite relationship between the cost of attending an institution of higher education and actual attendance (Heller, 1997; Hsing & Chang, 1996; Leslie & Brinkman, 1987).

There were several published student price response studies. However, most of these studies suggested a single net price was associated with postsecondary education attendance (St. John & Starkey, 1995). Evolving research suggested students responded to a set of prices and subsidies rather than to a single net price, and the most influenced students were those derived from a low socioeconomic status (Dresch, 1965; St. John & Starkey, 1995). Heller (1997) strengthened the argument for the need for policy makers to examine student price response and demand of higher

education by analyzing multiple factors. More recently, Shin and Milton (2006) found college enrollments were more sensitive to relative tuition levels between competing colleges than to actual tuition levels.

State Resources

As noted, government subsidization of higher education was primarily a function of the individual states; where, on average, states provided four dollars of support for every dollar of federal subsidy (Archibald & Feldman, 2006). The state appropriations assisted all public postsecondary institutions to sell their primary product, education, at an extremely discounted price to the consumers in comparison to the cost of production (Winston, 1999). Since the support of higher education was constitutionally a state responsibility, each state had a unique financial support system that was crafted around state statutes (Crampton, 2001). Furthermore, higher education was often the largest spending item in state budgets after expenditures that mandatory by federal, state law, regulation or court order. This was represented by an average of 11.8% of state general funds in the 2005 fiscal year (Layzell, 2007). The amount of an individual states' appropriation was affected by the wealth of that state, specifically, the tax revenue per capita (Koshal & Koshal, 2000). The states' support of higher education was a catalyst for two-thirds of high school graduates to be enrolled in college within one year of high school graduation (Lee, 1999; Lingenfelter, 2006).

Although it appeared during the initial analysis that actual state support of higher education was maintained since 1980, the causal comparison failed to evaluate the rising cost of educating students (Heller, 2006). From 1980 through 2005, expenditures in public institutions demonstrated an increase of 69% in real terms (Snyder, Dillow, & Hoffman, 2008). Furthermore, the state and local share of total college and university

revenues declined from a high of 34% to 26% in 1996. Another example of this was seen in the states that were members of the Southern Regional Education Board (SREB). For these sixteen states, located primarily in the southeastern portion of the United States, there was a decline of 3% in inflation-adjusted funds per FTE at public four-year colleges, and a decline of 7% in inflation-adjusted funds per FTE at public two-year institutions from 2001 to 2005 (Southern Regional Education Board, 2006). Representing a 20- year time period, between the academic years of 1983-84 to 2003-04, state appropriations per FTE student has fallen 23% when utilizing the Higher Education Price Index (HEPI)[4] (Cheslock, 2007).

The consequence of the rising cost of instruction and state funding being unable to provide the needed support to public higher education institutions placed an increased burden on students and their families to subsidize payments for college costs (Heller, 2006). In fact, between 1980 and 1998, the share of fiscal responsibility assumed by students and parents rose from 35% to almost 48% (Zumeta, 2001). A recent survey conducted by the National Center for Public Policy and Higher Education demonstrated that 57% of Americans believed that anyone who needed financial assistance could find the needed aid. However, there was a 10 point increase in anxiety about the availability of needed aid during the last year of this study (Immerwahr & Johnson, 2009).

[4] "The HEPI was an inflation index designed specifically for use by institutions of higher education. HEPI measures the average relative level in the price of a fixed market basket of goods and services purchased by colleges and universities each year through current fund educational and general expenditures, excluding research. The HEPI was a more accurate indicator of cost changes for colleges and universities than the Consumer Price Index (CPI)" (Commonfund Institute, 2008)

The state of Florida's appropriations for higher education paralleled the recent challenges of other states' public higher education support. For example, since the 2006-07 academic year, when state appropriations peaked at $7,751 per FTE, the amount of appropriations per FTE declined to its current 2007-08 FTE support of $7,035 (Florida Board of Governors, 2008). This was true for the community colleges as well. During the same time period, state funding per FTE for community colleges decreased from $3,793 to $2,849 (a 25% reduction) and total funds per FTE decreased from $5,258 to $4,577 (a 13% reduction) when adjusted by the HPEI (Florida Association of Community Colleges, 2008). Furthermore, Florida's community colleges experienced some of the largest enrollment growths when, historically, state support of FTE was the lowest. Although Florida's students and families needed to increase their individual support of higher education pursuits, 77% of Floridians strongly agreed that the price of a college education should not deter qualified and motivated students from attending college (Immerwahr, 2000).

Although state resources have fallen in Florida and much of the spending on higher education has lagged behind other major state spending categories since the 1990s, Florida's public higher education institutions continued to enroll more students year after year (Educational Policy Institute, 2003; Sanchez-Penley, et al., 1997). However, there was a leveling off in enrollment in Florida higher education institutions recently (State Higher Education Executive Officers, 2008). It was also noted that for the years between 1996-2006, tuition and fees for both community colleges and the state's universities increased 40% after adjusting for inflation (Southern Regional Education Board, 2007). This was in comparison to the national trend of tuition

payments increasing. Since 1980, the tuition and fees at a four-year institution, on average, rose nearly three times the rate of median family income and more than three times the rate of the consumer price index (Koshal & Koshal, 2000). The rise in tuition was common practice when higher education institutions were faced with budget shortfalls. Often, a small reduction in state support resulted in large increases in tuition (National Education Association, 2003). Even more problematic was the rate of increase in the price of attending a higher education institution which had out-priced several other entities in the U.S. economy, including healthcare (Callan, 2006).

Purpose of the Study

It was observed that the difference in tuition and fees between public institution types in the state of Florida changed between the years of 1970 and 2010 by a factor of almost nine, while participation in postsecondary education paralleled the national landscape. Nationally, tuition and fees grew by a factor of three between the years 1960 and 2000 with enrollment at a plateau (Mullin & Honeyman, 2008). This was of particular interest, therefore, the price difference between Florida's State University Institutions and Florida Community Colleges was operationalized as the tuition price difference ratio (TPDR). Essentially, the SUS tuition and fee for a given year was divided by corresponding community college(s) in a service area to calculate the TPDR. The purpose of this study was to test student price response theory by examining the degree to which providing access to postsecondary education via the introduction of a lower-priced option, the community college, as operationalized as the TPDR, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010.

Research Question

To examine student price response theory by the different institution types while considering Florida's state higher education resources, the following research question was developed. How was enrollment associated with the tuition and fee difference ratio (TPDR) between Florida's public community colleges and universities and state resources for the years 1970, 1980, 1990, 2000, and 2010? This was tested through multiple linear regression and utilized three separate models. The models tested included a full model which encompassed all variables from the state university system and state college system with total Florida Public Undergraduate Enrollment serving as the dependent variables. The two subsequently reduced models included the variables in the research question with each model specifically analyzing enrollment at the State University System and State College System respectively.

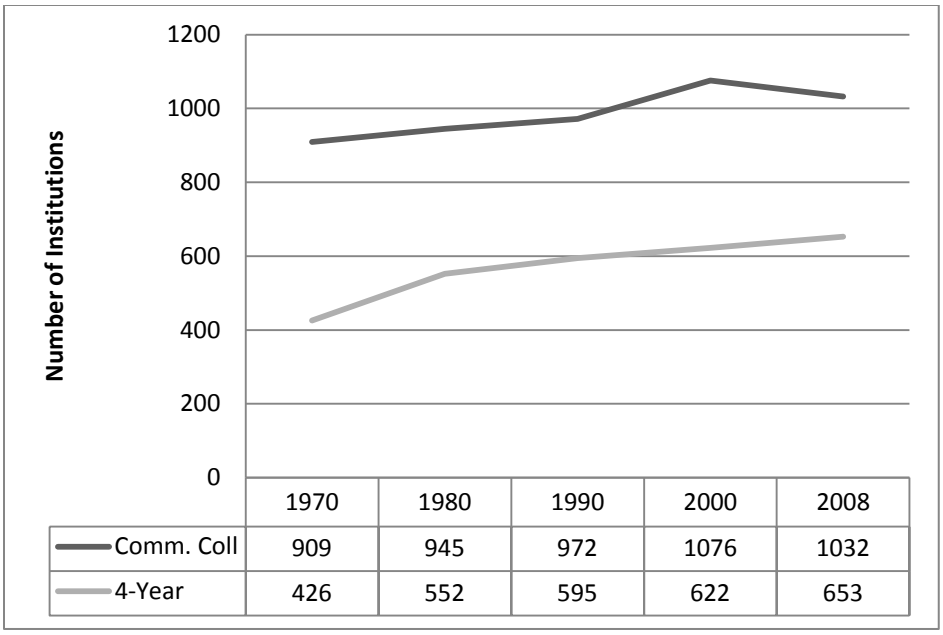
Research Hypotheses

- **$H_0$1:** Enrollment was not significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010.
- **H_A1:** Enrollment was significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010.

Significance of the Study

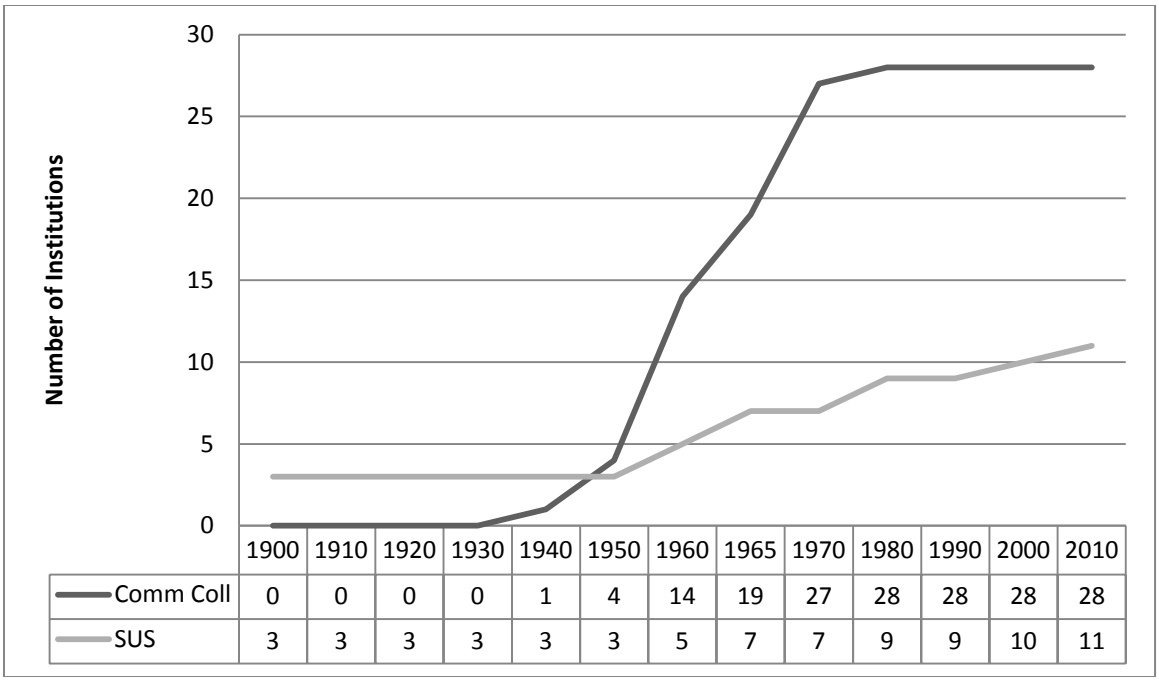
An examination of the factors that contributed to the tuition and fee price differences of attending Florida's community colleges and state universities was imperative as policy makers set tuition prices and expanded access to higher education opportunities. As noted by Leslie and Brinkman (1987), manipulation of student price of higher education has been seen as a major policy instrument that has achieved

expanding or decreasing access. Furthermore, Shin and Milton (2006) posited that tuition and fee levels were important policy tools for adjusting college enrollments. Lastly, as state resources became more limited due to the recession beginning in 2005, and the increased burden students and families faced in funding higher education, it was essential to appreciate the consequences of price increases on real and expected enrollments at Florida's higher education institutions.



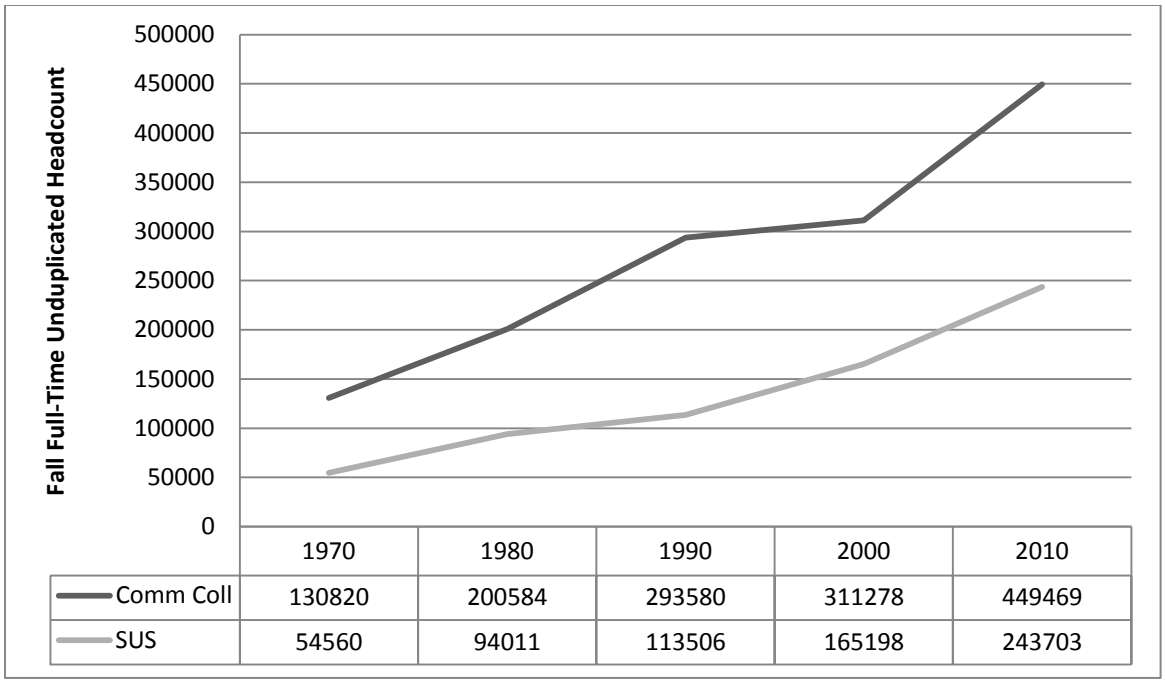
	1970	1980	1990	2000	2008
Comm. Coll	909	945	972	1076	1032
4-Year	426	552	595	622	653

Figure 1-1. Number of public postsecondary education institutions, 1970-2008. [Snyder, Dillow, & Hoffman,2008]



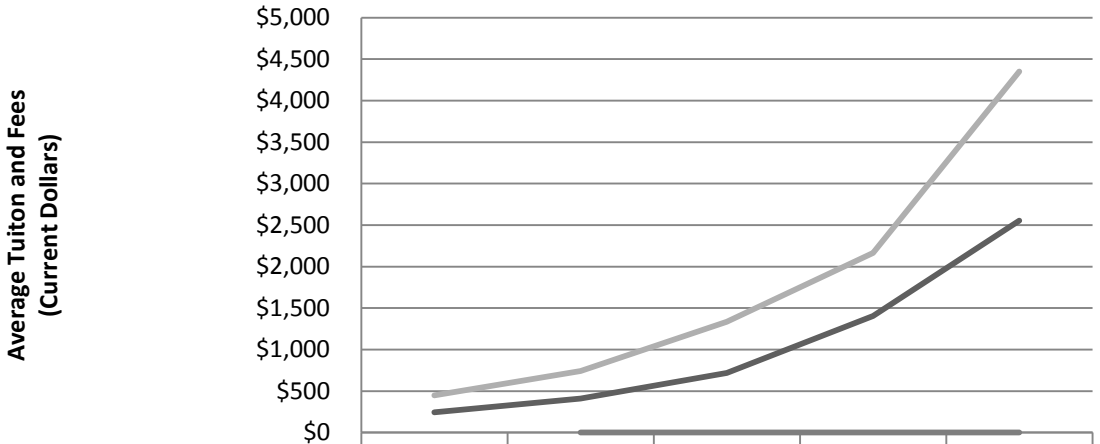
	1900	1910	1920	1930	1940	1950	1960	1965	1970	1980	1990	2000	2010
Comm Coll	0	0	0	0	1	4	14	19	27	28	28	28	28
SUS	3	3	3	3	3	3	5	7	7	9	9	10	11

Figure 1-2. Number of Florida's public postsecondary institutions, 1900-2010 [Florida Board of Governors n.d; Florida Department of Education, Florida Community College System Fact Book, 2008]



	1970	1980	1990	2000	2010
Comm Coll	130820	200584	293580	311278	449469
SUS	54560	94011	113506	165198	243703

Figure 1-3. Fall Full-Time Unduplicated Headcount 1970-2010. [Florida Board of Governors n.d; Florida Department of Education, Florida Community College System Fact Book]



	1969-1970	1979-1980	1989-1990	1999-2000	2009-2010
Community College	$246	$410	$717	$1,404	$2,552
State University	$450	$742	$1,336	$2,163	$4,352
% Difference per 10 years		62%	86%	22%	137%

Figure 1-4. Tuition and fees at Florida's public postsecondary education institutions, 1970-2010. [Florida Board of Governors, 2010; Florida Department of Education, 2010]

CHAPTER 2
REVIEW OF LITERATURE

This study investigated the student price response theory by examining the degree to which providing access to postsecondary education via the introduction of a lower-priced option, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010. This chapter provided a review of literature which was composed of documents being originated by both private and public entities, scholars in the field of higher education finance, governmental reports, and policy institutes. This chapter identified the origination and expansion of higher education, the evolution of the state of Florida's higher education system, how tuition and enrollment in higher education were associated, and the influences of state resources and higher education attendance.

Access and State Structure

There were a variety of forces driving the emergence of the American postsecondary system. Although no one event can be credited for this phenomenon, most literature traced the origins of the development to the passage of the Morrill Act in 1862 (Heller, 2006; National Association of State Universities and Land-Grant Colleges, 2008; Nemc, 2006; Thelin, 2004). The act guaranteed, to each state, 30,000 acres of land per congressman to support colleges dedicated to teaching agriculture and the mechanic arts (Casazza & Bauer, 2006). The land provided could then be sold and the proceeds, from the sales of the land, were to be used within five years to support and maintain at least one college within the state (Thelin, 2004). Over 17.5 million acres were distributed to the states through the Morrill Act (Cohen, 1998). Within the state of Florida, there were two land-grant universities, the University of Florida and Florida

A&M University. They were established by the second Morrill Act which appropriated some of the money available from the second act to initiate the development of 17 historically black land-grant universities (NASULGC, 2008).

The Morrill Act of 1862 (PL 37-108) provided that “each State which may take and claim the benefit of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life” (p.1). Although portrayed in the accounts of the development of land grant colleges as a favorable picture that immediately addressed the learning needs of a state’s population, the actual historical records were much more complex and ambiguous (Lucas, 2006). Furthermore, it was not until the Morrill Act of 1890 that regular annual state appropriations were made to the land-grant colleges. Prior to the second act, the actual state support of the institutions was marginal at best (Lucas, 2006). The lack of full appropriations prompted the land-grant colleges to charge tuition directly to the individual (Heller, 2006). However, these charges were much less than the private institutions; therefore, public supported universities were given impetus from the two Morrill Acts that provided individuals lower costs alternatives to private education (Cohen & Brawer, 2003; Heller, 2006).

Throughout the next seventy-five years, often referred to as the University Transformation Era, much change was brought to higher education (Lucas, 2006). A

great deal of the first forty years of this time period were characterized by changes in institutional form, with the largest growth in enrollment occurring in the last thirty-five years (Cohen, 1998). An often overlooked, important approach to higher education policy occurred in the early 1900s at the University of Illinois that continued to shape a state's role in support of their higher education institutions (Thelin, 2004). During the early 1900s, the Illinois' flagship university was not funded as well as the other adjacent Midwestern state's universities. Therefore in 1910, the University of Illinois' president began to lobby the state for regular and reliable state funding. Contrary to the established practice at the time, the Illinois' president kept the Illinois legislature informed of the proposed projects while providing accurate estimates of the anticipated costs. The president explained why the proposed units were expensive, but what worth they would bring to the institution and state of Illinois (Slosson, 1910). This early change marked the beginning of fundamental achievement of state governments and higher education to allocate annual appropriations defined through standards and formulas (Thelin, 2004).

Higher Education Regulation and State Master Plans

The federal constitution did not specifically state, but did empower, coordination and the responsibility of all education to the states in which they reside (U.S. Constitution. Amendment. X). Historically, each state's public higher education institutions employed local governing boards to set policy and control operations (Glenny, 1976). However, during the depression of the early 1900s and 1930s more than twelve states placed organization and policy control under a single governing board (Berdahl, 1971). Glenny (1965) identified this phenomenon, in postsecondary education, as the master plan. Master planning was a linear approach that emphasized

a linkage between goals and actions; however, in the history of use for statewide planning, it had rarely addressed the state's needs (St. John, 1991). However, after the early 1950s, states began establishing alternatives to the single statewide coordinating board (Glenny, 1976; McLendon, 2003).

Glenny (1976) concluded that by the early 1950s, as a result of the rapid expansion of education, which included rapid increases in student enrollment, expansions of college and university functions and services, expansion of branch campuses and two-year colleges, and the emphasis on graduate training, one coordinating board was not sufficient. Wattenbarger (1974) concluded that the rapid increases in statewide master planning and subsequent changes were a result of the increased influences on higher education. Prior to the master plans, higher education was an elite function and was relatively simple to manage and control. However, with an increased number of individuals having concern about higher education, the system became too diffuse; thus, the need for centralization within states. He further concluded, the balance of power in higher education was most affected by the initiation of new agencies within the state government (Wattenbarger).

Glenny (1976) further stated, in order to meet the "chaotic situation", (p. 20) faced by higher education, the states had little option but to initiate higher education coordination and budget review agencies. The early agencies were charged, through state statutes, to approve new programs and to prevent unnecessary overlap and duplication. They were also charged with reviewing and making recommendations to the state affecting institutional budgets (Berdahl, 1971; Glenny 1976). By the 1960s, most states' acts and statutes defined the role of statewide planning for the orderly

development of higher education (Glenny, 1976). During the decade of 1960, master plans for higher education existed in 38 states (The Carnegie Foundation for the Advancement of Teaching, 1982).

Beginning in the 1980s and 1990s, the early centralization which characterized higher education institutions in prior decades was replaced with reorganization and restructuring initiatives within the states (McLendon, 2003). A policy change emerged during this time to decentralization. Essentially, decentralization of decision authority was characterized by repositioning the power to make decisions at local institutional levels as compared to the centralized state levels (MacTaggart, 1998; Marcus, 1997). However, during the 1990s and 2000s, there was an enhanced initiative to move towards more decentralization of authority. McLendon (2003) noted that not all decentralization efforts were successful. Furthermore, Zumeta (2001) concluded, through the performance funding mandates which were initiated in states, there were still vast centralized control of higher education.

State of Florida Higher Education Evolution

The state of Florida's public higher education system was divided into two entities--the State University System (SUS) and the Community College System (CCS). Recently, the CCS was renamed the State College System of Florida when institutions in this system offered baccalaureate degrees. The SUS was made up of 11 four-year institutions and one teaching center which enrolled over 302,000 total students, which included undergraduate and graduate students, in the 2008-09 academic year. Of the 302,000 total students, the SUS enrolled a total of 233,772 undergraduate students during the same time period (FLBOG, 2009). The state college system was made up of

28 institutions and 62 different campuses that totaled enrollment over 831,000 unduplicated headcount in 2008-09 (FLDOE, 2010).

Higher education in the state of Florida began with a pair of frontier seminaries founded in the early 1850s. These two seminaries were the precursors for what became known as the University of Florida and Florida State (Business Higher Education Partnership, 1996). The growth in Florida's postsecondary educational system, in both enrollment and in the number of institutions, was traced to the formation of the system of public higher education in 1905 (Select Council on Post High School Education, 1970).

In the late 1950s, the legislature established the Community College Council and in 1957, the council's first master plan recommended a comprehensive system of public community colleges in Florida. This marked the creation of the Division of Community Colleges within the State Department of Education (Florida Department of Education, 2008; Sanchez-Penley, et al., 1997). The Florida master plan was fully implemented in 1962 when Pasco-Hernando Community College opened.

The state board of education was the chief policy-making and governing body for all public education in Florida. Prior to the year 2000, the board was composed of the governor and seven elected cabinet members, which included the commissioner of education who served on the board of regents and the state board of community colleges (Sanchez-Penley, et al., 1997). The Board of Regents (BOR) was a governing board which provided oversight to the SUS while the community colleges had oversight from the State Board of Community Colleges (SBCC), which was a coordinating board (Mills, 2007). In 2000, the state legislature implemented a new law which created a

“super board” known as the Florida Board of Education (FLBOE) to provide oversight of all education within the state (Mills, 2007). The state statute also repealed the BOR and the SBCC replacing them with individual trustees at each of the SUS institutions. The statute did maintain the institutional board structure of the community colleges (Florida Department of Education, 2008; Mills, 2007). Later change occurred in the SUS governance structure after 2002. Individuals opposing the new structure, an initiative lead by a popular former governor and senator, advanced a referendum which created the Board of Governors (BOG). The newly created BOG was a coordinating board which provided oversight to each of the individual trustee boards, at the SUS institutions. This limited direct trustee control by the FLBOE (Mills, 2007)

Student Price Response

It was essential to have an understanding of student price response so that policy analysis could be conducted on students’ access and opportunities to higher education (St. John, 2003). Policy makers have long been concerned with the cost of higher education, and whether the costs were an obstacle for qualified individuals to attend higher education institutions (Heller, 1996). The literature demonstrated a definite relationship between the cost of attending an institution of higher education and actually attending any postsecondary higher education institution (Heller, 1997; Hsing & Chang, 1996; Leslie & Brinkman, 1987). Hauptman (1990) further concluded the tuition set at higher education institutions provided an influence in both the supply and demand of higher education. For higher education administrators and policy makers to shape

policies and apply economic concepts to enrollment management, there was a need to define the foundational market concepts of supply and demand. [1]

The association between the cost of attending a higher education institution and seeking a degree was often explained through human capital theory. Thus, human capital theory was a way for researchers to examine the rational decisions students made in regards to college enrollment or other life choices (DesJardins & Bell, 2007; Shin & Milton, 2006). Essentially, the theory suggested that individuals wanted to maximize their returns on investments, which was defined for the purposes of this study as the ratio between the costs students pay for college and the monetary benefits they received from their college education (Shin & Milton, 2006).

Human capital theory was first introduced by Gary S. Becker in 1962. Becker's original intent for the theory was to estimate the monetary rate of return of high school and college education in the United States. This framework was the basis for several studies on student behavior which included student choice, student demand, and price response (Heller, 1997; Jackson & Weathersby, 1975; Leslie & Brinkman, 1988). In the predominant models related to net tuition, researchers have considered net-price to be the remaining price following the subtraction of grant aid from tuition (St. John, 2003).

Leslie and Brinkman (1987) reviewed over 25 studies conducted between 1967 and 1982 which evaluated the relationship between the price of attending a higher education institution and actual college enrollment. Their intent was to standardize the

[1] Demand refers to the quantity of a good that consumers were willing to buy at a given price, where as supply was the relationship that existed between the quantity of a good that producers were willing and able to supply at a given price. Related to higher education, the good that was supplied was the actual education provided by postsecondary institutions, the consumers were the students and their families, the producers were the institutions, and the price was the tuition charged in a given semester or academic year (DesJardins & Bell, 2007, p. 61).

findings of previous studies through meta-analytical procedures, which were guided by the methodology utilized earlier by Jackson and Weathersby (1975), which calculated a student price response coefficient (SPRC)[2] (Leslie & Brinkman, 1987). Leslie and Brinkman (1987) concluded that the mean price response was 0.7 percentage points. This would have resulted in a three-quarters percentage drop of enrollment for 18-24 year old participation groups for every $100 increase in tuition price given the 1982-1983 average weighted higher education prices of $3240 for tuition and room and board.

Savoca (1990) argued several of the earlier studies may have actually under estimated the true tuition sensitivity on enrollment decisions by as much as half. Her research focused on the level of tuition as a determining factor for a student to decide to apply to college, a factor that had been left out of sole tuition responsiveness of students who applied and were admitted to a postsecondary institution. Kane (1995) also found a phenomenon associated with community college enrollment. He concluded tuition increases have increased effects on students attending community colleges as compared to those students attending four-year colleges and universities.

As noted, there have been several student demand studies published since Leslie and Brinkman's analysis in the late 1980s (Heller, 1997). Most of the earlier studies have concluded students' participation in higher education was related to a single net price (St. John & Starkey, 1995). However, an emergent approach to evaluate student price response in higher education began to develop in the 1970s and

[2] Student price response coefficient (SPRC) was defined as the change in college participation rates of 18-24 years-old for every $100 increase in tuition process (in 1982-1983 dollars). Because of demand theory, as colleges prices rise, college enrollment should fall, *ceteris paribus;* one could conclude the SPRC to be negative (Leslie & Brinkman, 1987).

was first introduced by Stephen Dresch (1975). He posited the problem with several of the early student demand studies was that they were too focused and did not account for all of the factors related to student demand of higher education. Dresch (1975) concluded the single net price studies placed the process of educational decision making solely on the potential student without much regard for the external environment. St. John and Starkey (1995) expanded Dresch's emergent approach to student demand research. They concluded students responded to a set of prices and subsidies rather than to a single net price. Furthermore, their work stated low-income students were the most price responsive to tuition which were followed by lower-middle-income students.

Heller (1997) strengthened the argument for the need for policy makers to examine student price response and demand of higher education by analyzing multiple factors. The intent of Heller's research expanded the efforts of Leslie and Brinkman. He was specifically concerned with the effects of financial aid on tuition charges, which correlated to the other subsidies discussed by St. John and Starkey (1995). Heller's works contributed some key observations, which included: (a) increases in tuition led to declines in enrollment, (b) decreases in financial aid also led to declines in enrollment with changes to grant aid having increased effects as compared to loans or work study, (c) lower-income students were more sensitive to changes in tuition and aid than students from middle- and upper- income families, (d) black students were more sensitive to changes in tuition and aid than white students , and (e) students attending community colleges were more sensitive to tuition and changes as compared to their four-year public colleges and universities counterparts. Heller (1997) concluded any

way a policy maker would like to evaluate tuition, financial aid, or the net-cost of attendance, one could summarize the effects in one sentence, "as the price of college goes up, the probability of enrollment tends to go down" (p. 649).

Although several of the earlier studies concluded that tuition was a critical factor in determining enrollment, studies conducted by Ghali, Miklius, and Wade (1977) and Wetzel, O'Toole, and Peterson (1998) suggested tuition effects on enrollment were small or non-significant. More recently, Shin and Milton (2006) concluded tuition change had no effect on change in enrollments and their best calculations were a $100 increase of college tuition correlated to a 1.13 student decrease per year. Furthermore, the research conducted by Shin and Milton examined data from 1998 through 2000 and the authors posited that the earlier studies analyzed tuition from the 1960s to the late 1990s, a time in which students were more responsive to tuition changes. Lastly, Shin and Milton found that college enrollments were more sensitive to relative tuition levels between competing colleges than to actual tuition levels.

Tuition and Fee Philosophies

An institution's tuition was the price it charged students for their academic program (Balderston, 1995). This source of revenue has historically been the second largest source of general fund income to the institutions (Whalen, 1996). Prior to discussing the financial realities of increasing tuition, one must differentiate the cost of college from the price paid by the students attending institutions of higher education. Higher education was sold at a price that was lower than its actual cost (National Education Association, 2003). In 1993, the average fees for resident undergraduate students was approximately 30-35% of the cost of instruction at public institutions with the remaining cost being covered, mostly, by the state operating appropriations

(Balderston, 1995). The price that higher education was sold was in the form of tuition and fees (NEA, 2003). Often times, tuition levels and fees also served as important policy tools for adjusting college enrollments, off-setting shortages in state revenues, and accomplishing other institutional goals such as expanding equal opportunity in higher education or emphasizing technology in the state economy (Shin & Milton, 2006).

Setting tuition and fees price levels were difficult decisions for administrators. They had to set the fee schedule at a rate that retained current students, attracted new students, and provided adequate revenue to cover costs (Bryan & Whipple, 1995). As a result of economic stresses faced by higher education, administrators have produced a high premium on student enrollments to enhance institutional revenue, diversity, and quality (Hossler, 2004). Hossler further posited that there were costs and trade-offs associated with the pursuit of any one of these goals; therefore, it was essential for administrators and policy makers to find balance in the competition (Figure 2-1).

Since the Mass Higher Education Era of the 1970s, tuition and fee charges have been the center of research analysis (Cohen, 1998). As noted in the literature, relative tuition increases have historically decreased enrollment (Heller, 1997; Leslie & Brinkman, 1987; Savoca, 1990; St. John & Starkey, 1995). The literature has stressed two general policies relating to tuition and fee schedules established at public postsecondary institutions. The philosophies[3] included a low tuition charge to the student with increased state support directed to the institutions, or a high tuition, high student aid model where financial assistance was provided directly to the student.

[3] Carbone (1974) proposed alternative models for the establishment of tuition and fee structures. They included (a) the nonresident student surcharge model, (b) resident student fee remission model, (c) the sliding scale (multiple criteria) model, (d) the sliding scale (single criterion) model, and (e) the national tuition bank model.

Low tuition

The support for a low-tuition and fee structure policy originated from the idea to ensure affordable and equitable access to higher education opportunities to all students (Stampen, 1980; Wattenbarger & Cage, 1974). Furthermore, the rationale to maintain a low-tuition policy was strengthened through the analysis of society's benefits of having more educated citizens, better skilled workforce, and increased potential revenue from tax payers (Bowen, 1971; Wattenbarger & Cage, 1974; Young 1974; Stampen, 1980; Mingle 1992). This policy approach was based on keeping tuition as low as possible by providing all governmental subsidies to institutions (Stampen & Layzell, 1997). Another argument in support of a low tuition and fee policy was the fact an institution's tuition and fee structure does not account for the other expenses associated with attending a higher education institution (Wattenbarger & Cage, 1974).

Hansen and Weisbrod (1969) posited, the potential future earnings of college graduates were overestimated. They noted the discrepancy between the over estimation and actual financial gains was a result of the amount of foregone earning while attending college, the higher taxes set to be paid by the post college graduates, and the level of motivation among college attendees. Essentially, these individuals would have had larger earning regardless of a college degree. They further concluded the overestimation of potential income was a marketing technique utilized mainly by private schools to promote their programs.

The low-tuition and fee policy was central to the foundational mission of the community college and paralleled the open-door access philosophy of community colleges (Gleazer, 1998; Wattenbarger & Cage, 1974). In fact, the President's Commission on Higher Education (1947) recommended free public education through

the fourteenth year be made available to all individuals willing to participate (p. 5-6). During the 1960s and the early 1970s, the policy held true. Several states and metropolitan areas charged no tuition and those that did charged minimal fees (Gleazer, 1998).

These views were not shared with many individuals outside of the academy. In fact, tuition continued to increase rapidly (Cohen & Brawer, 2003). Wattenbarger and Cage (1974) concluded there was little rationale for actually charging tuition except to share the cost of higher education between society and the individual. In contrast, Romano (2005) stated, a low tuition policy actually subsidized the education of the middle and upper socioeconomic groups, often at the expense of the low-income groups. He stated that most economists proposed a relatively high tuition, high financial aid policy as being more equitable and efficient.

High tuition

The high tuition and fee structure associated with high student financial aid policy was most often attributed to the argument established by Milton Friedman (1968). He called for a “free market” in higher education, “with students being charged tuition covering the full cost of instruction” (p. 15). Wattenbarger and Cage (1974) noted there were two basic arguments utilized to rationalize the level at which tuition and fees were set. The arguments utilized to set tuition and fee prices were developed around who shared in the benefits of higher education and whether the benefits were individual or societal. If one believed that higher education benefited individuals more, then the price charged to the individual should have been higher. The opposite held true if it was perceived the benefits were accrued more by society, thus the basis for federal and state subsidiaries to higher education institutions. Hearn and Anderson (1995) stated

that the lower tuition setting and increased subsidization by the states to the institutions, through tax support, had overestimated the societal returns of postsecondary education; thus, providing higher education participants too generous of a subsidy.

Romano (2005) concluded the actual problem associated with higher education cost was tuition was not too high, but rather the amount of need based financial aid was too low. The National Center for Public Policy and Higher Education (2002) noted the lowest income families have lost the most ground in the ability to finance higher education and this was one of the major factors in their lower rates of college attendance. Furthermore in 1970, the Carnegie Commission on Higher Education urged students to pay a larger share of instructional costs as a way to save the private sector of higher education. The report found, on average at public four-year institutions, tuition charges met 17% of the instructional costs. Therefore, within the report, it was recommended to increase the students' charges to 33% within 10 years. Hearn and Anderson (1995) concluded the driving forces to set high tuition and high aid levels in the public sector was the fact tuition was too low. Therefore, the amount of tuition should have been more reflective of an institutions' instructional costs. They further stated the tuition gap between the public and private institutions was economically inefficient and should be lessened. Cohen and Brawer (2003) concluded that those individuals who benefited from going to college should pay, and in turn would have taken their education more seriously since they had a personal investment in the education.

The high tuition/high aid model also received strength from the ability to capture the savings from the tuition rises and distributing them more equitably to the lower-

income, more financial needy students. Hearn and Anderson (1995) concluded that the econometric evidence supported the notion that middle-income and upper-income students would continue to attend public institutions regardless of the tuition rises, and the lower-income students would have more ability to attend with available modified and additional financial aid. However, there were arguments against this policy as well. Critics often argued that the high tuition/high aid strategy ignored the important psychological and political realities which included lower-income students becoming discouraged to attend higher education institutions because of the increasing “sticker prices” (Mumpher, 1996).

Tuition Differentiations

Tuition differentiation has long existed; however, more recently, institutions were beginning to make finer distinctions in the tuition differentiation (Hearn, 2006). Tuition charges could be uniform, or they could have been set to vary according to the cost of a particular academic program, or for non-resident students. The literature on tuition differences was representative of general themes. Tuition differentials for potential students were dependent on the following themes: (a) residency status of students, (b) academic programming or academic level of students, (c) academic status of students, i.e. different tuition charges for undergraduate students versus graduate or professional students, (d) set fees for academic term or year compared to set fees per the number of credit hours a student has enrolled in a given semester, (e) the idea of providing access for all citizens to postsecondary higher education opportunities (Balderston, 1997; Lenth, 1993)

Residency

Historically, the posted tuition at most higher education institutions has been uniform for all students. However, public universities and colleges were often obligated by state government to charge a higher tuition for non-resident students (Balderston, 1995). Essentially, the tuition and fee structure was calculated in a way that charged the non-resident student the "full" cost of attending a particular institution (Lenth, 1993). For example, a large mid-west doctoral institution's in-state tuition in 1970-1971 was $325, and non-residents were charged $745. In 2004-2005, tuition and fees for residents had raised to $6,776 versus $18,589 for non-residents. Therefore, in that time period, non-resident tuition grew at a rate of almost 250% whereas the resident tuition charges only grew 200% (Hossler, 2006). The plausible rationale for the difference between in-state and out-of-state tuition was that the taxpayers in the state, where a particular public institution was located should not be expected to subsidize the education of students that were non-residents (Hossler)

Tuition differentials relationship comparisons.

In addition to residency tuition differentials, there were several others that have already been noted. The tuition difference was both intra- and inter- institutional. Within an institution, there were differences among academic programs, level of education either undergraduate or graduate, or lower division or upper division (Lenth, 1993; Simpson, 1991). Simpson (1991) posited the difference in tuition among academic program of studies may have originated from the future benefits, especially varied future earnings, to the individual of attaining a particular type of instruction. He also noted that another plausible explanation for the varied tuition and fee charges related to the higher costs associated by the different categories described. However, Middaugh, Graham,

and Shahid (2003) found no relationship between tuition differences and actual instructional costs. A recent study conducted by Romano and Djajalaksana (2010) suggested that it was not any cheaper for the public to educate students pursuing a bachelors at a community college for their first two years of course. They found it actually more cost effective, for public puposes, for these students to be educated at four-year institutions.

There were several positives associated with differential tuition; however, careful consideration needed to be given prior to the policy being implemented. For example, higher education administrators had to critically analyze tuition elasticity. Shin and Milton (2008) concluded that the differences in tuition elasticity between academic disciplines could have been caused by the rates of return between academic majors. They posited that students in high rate of return majors were not sensitive to tuition increases because those students expected greater benefits from their college education. Furthermore, using differential tuition based on majors could cause students to declare a major out of current affordability and not interest (Balderston, 1995).

Institutional Rationales

A major recurring theme in reviewing the literature and the history of higher education was the ongoing search by the public institutions for the needed financial resources to fulfill their individual missions (Hossler, 2004). Generally, the literature has supported the causes for increasing tuition and fees having been a result of inflation changes, institutional expenditures increasing, and unstable financial sources. Hauptman and Merisotis (1990) posited, after researching articles and other documents, six general trends for the increased tuition and fees seen at public institutions. They included: (a) increased costs to the institution, (b) the need to expand services (c)

decreased sources of other institutional financial support, (d) the amount of increased student aid available, (e) the need for institutions to be competitive, and (f) the changing college student demographic.

Since most public colleges covered the majority of the costs through state appropriations, and only a smaller portion of the costs through student tuition, a small percentage decrease in state appropriation led to a large increase in tuition and fees to help compensate for the lost state revenues (NEA, 2003). In fact, the burden of financing higher education was assumed by the students and families of those attending. Between 1980 and 1998, the share of fiscal responsibility assumed by the students and parents rose from 35% to almost 48%. Furthermore, state and local appropriations dropped from 55.5% to 43% (Zumeta, 2001).

As noted, when institutions were faced with lower than needed state appropriations, often the first response was an increase in tuition and fees (Hauptman, 1997). In fact, in a 15 year span from 1985-1999, at public institutions, the proportion of current-fund revenue declined from 45.1% to 35.8%, which resulted in an absolute decrease of 21% (Santos, 2007). Furthermore, in the mid 1990s, tuition and fees represented about one-fifth of total revenues at public institutions which was up from less than one-sixth of total revenue a decade earlier (Hauptman, 1997). In comparison, from 1983 through 1997, tuition and other student charges in both the public and private sectors had increased at approximately double the rate of the Consumer Price Index (CPI) (Hauptman, 1997). In fact, during a five year period from academic year 1990-91 through academic year 1995-96, the average tuition for a full time resident undergraduate student rose 43.8%, compared with an increase of 15.4% in the CPI,

and 13.8% in median household income in 1998 current dollars (United States General Accounting Office, 1998).

More recently, the annual tuition increases were at or above 10% from 2002 to 2004 (Benjamin, 2007). Furthermore, Hossler (2006) demonstrated the effect of raising tuition at a major research institution in the northeast. At this institution, the state resident tuition was $10,856 for 2004-2005 with approximately 34,000 undergraduates enrolled. With a modest 5% increase in tuition, this generated $18.5 million additional revenue. Furthermore, if the tuition increase was 10%, which had been the average, there was a potential for $37 million in new revenue. In addition, if the undergraduate population increased by 500 additional students, another $5.5 million was generated.

Although both types of higher education institutions have seen rapid increases in tuition and fees, on a percentage basis, tuition increased more quickly at both the 4- and 2-year public colleges and universities than at 4-year private institutions. In fact, there was a 30% increase in tuition for public colleges and universities compared to a 17% increase for private institutions from 1993-1998 (USGAO, 1998). Tuition increases were consistent at both the private and public institutions. However, one major difference was when the tuition increases historically occurred. The increases in tuition and other charges at private institutions have largely been instituted during times of economic prosperity. This was a result of the belief, by the private institutions, that the consumers were able to afford the higher rates and charges. However at the public institutions, tuition and fee charges tended to increase the quickest during times of economic hardships. This was normally a result of the individual states' difficulties in maintaining their financial commitment to public institutions, often a result of tax revenue

shortfalls (Hauptman, 1997). Furthermore, tuition and fees increased in years that no state budget short-falls were present. In fact, the cost of a year's attendance, with the increasing tuition rates and untargeted college financial aid for lower income families, equated to approximately 40% of the total family income (Hunt & Tierney, 2006).

Federal Actions

The federal government's role in funding higher education was often considered a role of enabling. The programs that the federal government provided allowed millions of Americans an opportunity to pursue a higher education degree regardless of their financial status (Wegner, 2003). However, to appreciate the role of the federal government in funding higher education, one must examine the evolutionary role of this revenue source. Following the two Morrill Acts, the federal support of higher education was relatively quiet until the vocational education support laws of 1918 and subsequent years which provided financial support in a categorical manner to higher education (Wattenbarger & Cage, 1974). Then in 1944, American colleges received an unexpected and not completely welcomed financial windfall. This came through Congress' passage of Public Law 36 which was the Servicemen's Readjustment Act, more commonly referred to as the GI Bill (Kiester, 1994). This bill guaranteed financial aid to any veteran who had served after 1940 and met other conditions. Essentially, the GI Bill provided the groundwork for increasing access and ensuring affordability of higher education through portable student aid grants (Hearn & Holdsworth, 2004). It opened higher education to hundreds of thousands of American families who previously had no direct experience with education beyond high school. Essentially, for the first time, people with average financial means had an opportunity to pursue a college degree or some other type of vocational training (NCPPHE, 2002).

Although the federal government began to aid students in their pursuits of higher education, most of the early efforts were targeted to select populations such as: (a) military veterans, (b) children of military veterans, and (c) disabled students (St. John & Parsons, 2004). The federal government did not firmly establish its role in higher education finance until the 1970s with the creation of other federal student financial aid opportunities (Heller, 2006). In the 1970s, the United States elected to make student financial assistance a national priority (Lingenfelter, 2003). Some of the programs that were available to students after 1972 included the Basic Educational Opportunity Grant (BEOG), quickly renamed the Pell Grant in honor of Senator Claiborne Pell of Rhode Island, the Supplementary Education Opportunity Grant (SEOG), and the State Student Incentive Grant (SSIG). With the passage of the Higher Education Act of 1965 and the Educational Amendments of 1972, the United States Congress significantly transformed higher education policy. With the final support of the federal government, it marked the conclusion of over two decades of political and social debate about whether the federal government would provide direct aid to students, rather than to the institutions, for the purpose of expanding postsecondary education access (Alexander, 2003).

The federal government provided a substantial amount of financial aid that helped enable students to attend higher education institutions. However, the majority of aid was in the form of loans and did little to reduce the cost of attending higher education. It just delayed payment of the higher education costs associated with attendance (Hunt & Tierney, 2006). In addition, the use of student loans actually increased the cost of attendance because of interest charges and other matriculation fees (Hossler, 2006). Furthermore, the cost of education rose quicker than the available

amount of financial aid to students (NEA, 2003). In addition, much of the current trends in federal financial assistance were targeted to the middle- and upper-income families that did little to ensure access to all (Lingenfelter, 2006).

State of Florida Actions

The Office of Student Financial Assistance (OSFA) was located in the Florida Department of Education (Office of Program Policy Analysis and Government Accountability 2005; Sanchez-Penley, et al., 1997). The OSFA was responsible for the function of two major program areas related to student aid. These areas included managing the state of Florida's scholarship and grant program, and the federal student loan program. In 2003-04, the OSFA administered over $ 414 million in state student aid programs (OPPAGA, 2005). The state of Florida provided over 18 programs (OSFA, 2009) with the largest support distributed to the Florida Bright Futures Scholarship program (FBFS) (Calcagno & Alfonso, 2007), the Florida Student Assistance Grant (FSAG), and the Florida Resident Access Grant (FRAG) (Sanchez-Penley, et al., 1997).

State financial aid policies had historically focused on need-based aid to ensure equality in higher education access and completion. However during the last 15 years, Dynarski (2004) noted the shifting trend of states to a more merit aid system. Such merit based programming has existed in the state of Florida since 1997 (Calcagno & Alfonso, 2007). The program was known as the Florida Bright Futures Scholarship (FBFS) program. Essentially, the program rewarded "traditional"[4] students for their academic achievement in high school by assisting them to finance their in-state

[4] FBFS defined traditional students as those who matriculate at any Florida college in the fall term of the same year in which they graduated high school (Office of Student Financial Assistance, 2009).

postsecondary education. The FBFS was a lottery-sponsored funding source which provided four different types of awards which included: (a) the Florida Academic Top Scholar Award (FATS), (b) the Florida Academic Scholarship (FAS), (c) the Florida Medallion Scholarship (FMS), and (d) the Florida Gold Seal Vocational Scholarship (FGSV). In 2008-09, the FBFS funded over 169,000 students with a total aid amount of over $436 million (OSFA, 2009). Although the state had several financial aid programs available to students, the federal government remained the largest provider of student aid in Florida (Sanchez-Penley, et al., 1997). In fact, federal programming accounted for over $1.4 billion in financial aid programming in 2003-04 (OPPAGA, 2005).

Tuition and Fees and Enrollment

The general purpose of the community college was to provide educational opportunity. Gleazer (1998) noted public community (junior) colleges were intended to extend education opportunity. By the creation of the community college, those families and individuals with limited financial means had a low-cost higher education option. Medsker and Tillery (1971) noted these colleges had to be open-access, offer a diverse range of curriculum options, and attendance at the institutions needed to be financially easier than attendance at other institutions.

This was the case with the expansion of the Florida community college system. Community colleges in Florida were originally authorized by the Florida Legislature to provide programs and services in the areas of: (a) lower-level undergraduate instruction and awarding associate degrees, (b) preparation for vocations that require less than baccalaureate degrees, (c) promotion of economic development of the state within the college service district, and (d) community services, adult pre-college education, recreational and leisure services, general education developmental examinations (GED)

and other programs and courses to fulfill the mission (Tollefson, Garrett, & Ingram, 1999 p. 111).

There was concern with setting the tuition and fees lower at the community colleges thereby making postsecondary education accessible to all students, in that the lower income and minority students might only focus their efforts at these type of institutions (Trow, 1977). In the state of Florida, Floridians were more likely to see community colleges as a solution to the problem of underprepared and low income students. Furthermore, public community colleges in the state of Florida, typically enrolled over half of the students who attended higher education (Sanchez-Penley, et al., 1997). The community college has long been the access point for students beginning their higher education careers in the state of Florida

It was often believed that when tuition was increased, there were associated enrollment decreases since the cost of attending a higher education institution exceeded the individuals' ability to cover the costs of attendance (Morgan, Kickham, & LaPlant, 2001). However, a study conducted by Shin and Milton (2006) concluded that enrollment changes between 1998-2002 were not affected by changes in tuition, financial aid, or unemployment rates. In contrast, the wage premium for college graduates over high school graduates and competitive tuition demonstrated an effect on college enrollment growth. Furthermore, the increases in tuition had more of an effect on where students chose to attend college versus not attending any higher education institution (Toutkoushian, 2003).

Since 2004, the state of Florida has generally seen overall enrollment growth at all public higher education institutions. In fact, from 2002 to 2007, Florida's public

institutions experienced a 17.2% increase from 442,000 FTE to 518,000 FTE. However, between 2006 and 2007, Florida saw a modest increase of only 2%. Between 1997-98 and 2001-02, after adjusting for inflation, tuition and fees increased 18% at the SUS institutions and 7% for the community college system (Council for Educational Policy Research and Improvement, 2003)

State Resources

The growth and expansion of the Florida public higher education system occurred rapidly after 1960. This was a result of the state needing to have a more developed workforce. It was believed that the rapid increase occurred because of two factors. The first factor contributing to the expansion was the ability of Florida's state citizens to financially support postsecondary higher education participation. Research and literature demonstrated that tuition in public higher educational institutions was linked to the appropriations guaranteed by the states (Koshal & Koshal, 2000). The next factor believed to influence the state resources, was the percentage of the state of Florida's population eligible to attend a public postsecondary institution.

The monetary benefits of an educated workforce were extremely evident to society as a whole. All individuals of society were benefited from the investment in higher education whether or not they attended a higher education institution. This was due to the fact that individuals that furthered their education beyond a high school diploma were more productive. Furthermore, the higher salaries that these educated individuals received generated higher tax payments at all levels of government which benefited society as a whole (Baum & Ma, 2007). Lastly, one of the largest monetary societal benefits was the decreased reliance on governmental financial support. In fact,

very few high school graduates that attained an associate's degree, bachelor's degree, or advanced degree received any type of public assistance (Perna, 2005).

There were generally two accepted problems associated with the expansion of higher educational opportunities within a state. Initially, the individual benefits of attaining a higher education degree were applied to the individuals whom were eligible to participate. Secondly, those individuals whom were eligible had to have the ability to finance the educational opportunities (Martinez, 2004).

Income and the Ability to Pay

As noted, there has been an increased trend in higher education institutions utilizing tuition and fees as a source of income; thus, placing more burdens on students and their families in supporting the quest of attaining postsecondary education opportunities (Hosssler, 2006). There have been several changes in financial aid policies to help support these students. However, an inadequacy of the federal financial model was the initiation of programs improving the affordability of college for middle- and upper-class families. One of the first such programs which benefited the middle and upper class was the program which removed income and eligibility limits for one of the federal loan programs, and subsequently, created another loan program for wealthier households. This was a result of the reauthorization of the Higher Education Act in 1992 (Baird, 2006). In 1997, the federal legislature enacted tax savings with the implementation of the federal Hope Scholarship and Lifetime Learning Credit tax credit programs, and college savings incentives (Zumeta, 2001). In 2003, the Office of Management and Budget estimated that the expenditures on the above two tax credit programs were approximately $6 billion. In contrast, $11 billion dollars was spent on the Pell Grant in the same year (Baird, 2006). However, these programs were of little

use to the families who had incomes too low to owe taxes, or had no means of saving for college (Zumeta, 2001). As a result, those from the middle- and upper-classes were the primary benefactors, and the programs had no discernible effects on college enrollments (Long, 2004). The current shift to the above initiatives may have affected the long-term support of the important need-based financial aid programs, thus skewing the enrollment further to more affluent students (Zumeta, 2001).

Another disturbing trend was the shift of responsibility to the students and parents of those attending college. In addition, there was an increasing trend to shift the way that financial aid was distributed. The trend was that aid was being distributed through a merit-based system instead of a financial-need based system (NCPPHE, 2002). With this shift in distribution, most experts believed that the federal direct student aid polices have only marginally succeeded in improving lower-income access to higher education (Alexander, 2003). In fact, need based aid fell from 80% a decade ago to less than 60%. Furthermore, the federal student aid system drifted from a grant dominated system to that of a loan dominated system (Hearn & Holdsworth, 2004). In 1981, student financial loans only accounted for 45% of student financial aid and grants represented 52% of the aid. However, in 2000, student financial loans represented 58% of student financial aid and grants only contributed 41% of aid (NCPPHE, 2002). Although loans were often used to finance higher education, it was well documented that grants were much more effective than student loans in improving access to higher education. Essentially, student loans did nothing to lower the price of higher education, it just delayed the payment. In fact, student loans actually increased the costs of college because of interest and matriculation fees (Hossler, 2006).

Although student loans were a legitimate source of aid and often times necessary for the financing of a college education, there was a need to evaluate how much debt college students should have incurred (Hunt & Tierney, 2006). The most disturbing trend in this shift of funding was that although all social classes of students borrowed money to attend college, those from the lower socioeconomic classes borrowed money at a higher percentage. Consequently, the borrowing of money, by this class, was a much greater burden than it was on other social classes. Furthermore, the lowest income quartile experienced an increase in cumulative debt. Senior students at public colleges and universities cumulative debt increased from $7,629 to $12,888, in constant dollars, between 1989 and 1999 (NCPPHE, 2002). These outstanding cumulative debt totals may have actually priced students out of lower paying public careers such as public school teachers (Hunt & Tierney, 2006).

Another initiative enacted by several states to assist in the funding of higher education was the creation of pre-paid college tuition plans (Baird, 2006). Although these plans were promoted as increasing access to all, they most often only increased access for the middle- and upper-income families (Hauptman, 1990). Essentially, state sponsored pre-paid tuition plans allowed parents (or others) to purchase a future college education at the current tuition price (Baird, 2006). Often, they were referred to as tuition guarantees because the payments that the parents made at the initiation of such programs would fully cover the cost of tuition in the future, whenever the child was ready to enroll at an institution (Hauptman, 1990). In addition to the parent's or guardian's investment in the plan, the individual states that provided this type of program contributed a sizeable contribution as well. The state used the principle and

interest to meet liabilities. For this program to be successful and not to operate at a loss for the state, the investment returns had to equal or exceed tuition inflation (Baird, 2006).

As stated, the pre-paid tuition plans provided a general advantage for the middle- and upper- income households. Lehman (1990) noted that the higher income households disproportionately enrolled in Michigan's pre-paid tuition plan. In fact, he estimated that 50% of the enrollees were in the state's top income quintile, compared to only 4% in the bottom income quintile. Therefore, it was evident that these plans target and were skewed to wealthier-college attending families. Furthermore, Baird (2006) concluded that the success of pre-paid tuition programs may have actually compromised other goals that were central to educational policy such as access to all. She further stated that the existence of this type of program may have led to a decline in state or federal support of higher education.

Although there were several programs initiated benefiting the middle and upper class, another disturbing issue related to financial assistance for the lower socioeconomic class student was the perception that postsecondary education was not an available opportunity (Callan, 2006). In fact, those that came to the conclusion that higher education was unattainable did not take the steps to get there. Coles and Baum (2005) concluded that several lower income students did not pursue higher education opportunities because they believed that they could not afford it.

State of Florida and Ability to Pay

Even after several tuition increases, in the late 1990s, by 2008-09, Florida still ranked 49th among the states on the amount charged to resident undergraduates at public universities. Only Wyoming charged less than Florida. The national average for

flagship resident undergraduate tuition and fees in 2008-09 was $7,481; in Florida, it was $3,777, which equated to more than 50% less than the national average (Washington Higher Education Coordinating Board, 2009). Although Florida's tuition and fee structure remained the second lowest in 2008-09, Dosal (2008) posited this did not mean students in Florida had the ability to afford higher education costs. He further noted that marginating a low tuition did not guarantee access to a Florida public higher education institution. He concluded the real measure of a student's ability to afford higher education in Florida should be measured in the total cost of attendance.

Although Florida was recognized as a low-tuition state, it still received an "F" from the National Center for Public Policy and Higher Education in 2006. In fact, the report noted families in Florida devoted a very large share of income, even after financial aid, to attend public two-year and four-year colleges in Florida. Furthermore, the net college costs[5] for low- and middle-income students to attend public two- and four-year college represented approximately 40% of these families' annual income, even after accounting for Florida based scholarships and other financial aid.

Florida's focus on merit based aid limited the lower income families' ability to attend higher education institutions. In fact, 80% of the aid appropriated through the state was intended to support the FBFS program, and the remaining 20% of the appropriations were placed in need-based aid initiatives (Dosal, 2008). Lastly, 48% of Floridians interviewed in 2000 believed that there were several individuals qualified to go to college that did not have the opportunity to do so (Immerwahr, 2000).

[5] Net college cost represents tuition, room, and board after financial aid

State Appropriation and Tuition Relationship

State governments were the principle source of revenue for public higher education institutions (Mumpher, 1996). However, over the past two decades, state appropriations for public four-year colleges and universities were stable or declining (Hossler, 2004). To completely understand the dynamics of state funding of higher education institutions, one should realize that funding decisions often had more to do with the political make-up of the state, rather than the state's economic position (Alexander, 2003). Therefore, the actual study of higher education financial policy and practice was actually a study of state legislative activity (Crampton, 2001). Furthermore, since higher education was a public service, it had to also compete with other public services offered by the state which included K-12 schools, welfare, Medicaid, and corrections (Callan, 2002).

These competing demands challenged state support for higher education, especially in lean budget years (Weerts & Ronca, 2006). The competition became extremely fierce when state funds were scarce (Okunade, 2004). It was perceived by the state legislatures that public higher education institutions had more fiscal resources than the previously mentioned public services and agencies. State policy makers believed that if an individual state was faced with a budget shortfall, than higher education institutions were able to find alternative sources more easily to offset the faced budget limitations (Callan, 2002). This often forced the institutions to raise tuition and fees to help off-set state budget short falls (Baird, 2006; Morgan, Kickham, & LaPlant, 2001). Hovey (1999) concluded that higher education acted as the "balance wheel on state finance." Most often, when state governments were faced with adverse budget conditions, higher education budgets were disproportionally reduced for the

above mentioned reasons. However, when states were faced with excellent budget conditions, higher education often received larger increases than the other public services funded by state appropriations (Hovey).

In general, state support for higher education has decreased for several decades. Measures of state support that examined funding per $1,000 of personal income demonstrated a 30% decline since the 1970's (Archibald & Feldman, 2006). One example of this can be seen in the states that were members of the Southern Regional Education Board (SREB). For these sixteen states, located primarily in the southeastern portion of the United States, there was a decline of 3% in inflation-adjusted funds per FTE at public four-year colleges, and a decline of 7% in inflation-adjusted funds per FTE at public two-year institutions from 2001 to 2005 (SREB, 2006). These trends were echoed by a 2007 Survey of the National State Directors of Community Colleges which found that the majority of states with community college funding formulas indicated that their formulas were not fully funded for the 2007-08 fiscal year (Katsinas, Tollefson & Reamey, 2008).

State of Florida State Appropriations

Florida experienced both underfunding and unfunded enrollment increases over the past ten years. In fact, in 2005-06 constant dollars, the appropriations for (FTE) student dropped significantly over the past decade. For example, in Florida's State SUS, General Revenue per FTE declined since the 2006-07 academic year when it peaked at $7,751 per FTE. Recently, the General Revenue per FTE was $7,035 (Florida Board of Governors, 2008). While other fund sources, such as lottery funds, student fees, and state trust funds contributed to the total amount of funding for the SUS system, the total amount of system funding also decreased since 2006-07 from a high

of $3,001,976,573 to the 2008-09 amount of $2,984,104,675 (Florida Board of Governors, 2008). Essentially, this amounted to a loss of 1% from 2006-07 to 2007-08, and another loss of 1.8% from 2007-08 to 2008-09, before adjusting for inflation.

The community college system experienced some of the same budget shortfalls. In fact, state funding per FTE for community colleges decreased from $3,793 to $2,849 (a 25% reduction) and total funds per FTE decreased from $5,258 to $4,577 (a 13% reduction) when adjusted by the higher education price index (Florida Association of Community Colleges, 2008).

Educational Attainment

An individual decided to attend or not attend a postsecondary institution for several different reasons. These reasons often revolved around economic, social, or psychological factors (Mumpher, 1996). However, another issue considered when analyzing higher education enrollment was the actual educational ability of those individuals desiring to attend. Essentially, there needed to be qualified individuals prior to analyzing the other reasons to attend or not attend. One can see the vast increases in the number eligible to attend higher education institutions by examining high school graduation rates. For example, in 1900, only 6% of all 17-years old graduated from high school, and by 1930 this grew to 30% (Goldin & Katz, 2000). This trend continued through the 2006-2007 academic year where close to 74% of the freshmen who entered high school graduated within four years.

Kim and Rury (2007) concluded, in their study that analyzed higher education enrollment patterns between 1940 and 1980, that having an increased number of high school graduates naturally increased higher education participation rates. However, they further concluded that the expansions of secondary education and subsequent

high school graduation rates did not account for all of the phenomenal growth in higher education during their years of study. It was observed that during the same time period, along with the number of graduates, the proportion of secondary school graduates who attended postsecondary institutions increased as well. In fact, college enrollment from high school graduates increased from 16.5% in 1940 to over 44% in 1980 (Kim & Rury, 2007).

The trend that was noticed nationally was similar with the citizens of Florida. Although since the turn of the 20th century, Florida has steadily increased high school graduation rates, it did so at a slower rate as compared to the national landscape. However, Florida's statewide high school graduation in 2006-07 was minimally under the national high school graduation rate at 72.4% (Florida Department of Education).

Unemployment

An individual may have elected to attend a higher education institution as a result of the economic conditions. The literature suggested that potential students often returned to colleges, specifically community colleges, for job retraining to become employable in other occupations. Another potential influence of unemployment, or the threat of unemployment, was students being enrolled in higher education institutions as a buffer from the unemployment business cycle (Betts & McFarland, 1995).

Heller (1999) noted, in his study analyzing five different ethnic groups and factors affecting enrollment, as employment possibilities lessened, all of the groups studied were more likely to enroll in community colleges as an alternative to entering the workforce. He further concluded that Asian Americans had the largest response, followed by Whites. Another possible scenario to describe the increases in enrollment during high unemployment rate time periods could have been explained through a rate

of return analysis. Betts and McFarland (1995) concluded that enrollments increased at community colleges during high rates of unemployment because the opportunity cost of enrollment declined.

Conceptual Framework

The conceptual framework that guided this study was developed after the literature reviewed demonstrated the influence that tuition pricing had on an individual's ability to attend postsecondary public institutions and the choice of attending specific institutions of higher education. Earlier studies examined the effects of price on students' decision to apply, the ability for students to persist at an institution, and more recently, the association of a state's public postsecondary education pricing structure on enrollment. This study contributed to an in-depth analysis of Florida's public postsecondary education pricing structure on enrollment from 1970 to 2010.

Florida's public postsecondary education pricing structure was operationalized by a ratio demonstrating the difference in the state's tuition and fees at the State University System's institutions divided by tuition and fees at the community colleges, as displayed in Figure 2-2. A small ratio resulted, when the difference in tuition and fees at Florida State universities and community colleges were close to each other, as demonstrated by points (A) and (B). The larger ratio demonstrated in the figure by points (C) and (D) represented a larger price difference between the Florida State universities and community colleges (Mullin, 2008; Mullin & Honeyman, 2008).The ratio grew to almost a factor of nine by the conclusion of the study. As noted in the literature, if the price difference were zero, in theory, the price was the determinant for enrollment at a particular institution. Expanding on this assumption, if the price difference remained zero and tuition and fees were high, then it was concluded that enrollment would

negatively be affected. The opposite would also be true, if tuition and fees remained low, then student enrollment at public postsecondary institutions would be positively affected. This study did not examine the actual “sticker price” of higher education (College Board, 2006); instead, the study was designed to evaluate the difference in prices between Florida’s public universities and community colleges. Therefore, one could have posited that as the difference ratio increased between the two sectors of Florida’s public higher education, a lower cost option was created. The lower priced option may have served as an entry-point that was more affordable and essentially decreased the influences of tuition and fees as an obstacle for students in enrolling in a postsecondary education institution.

The state of Florida developed public postsecondary education structures to address the increased participation in postsecondary education. Within the state, Florida’s structure was made up of 11 state universities and 28 community colleges. This study included Florida’s state resources to determine their association with enrollment. The state structure was operationalized to include median family income, the percent of Florida’s population aged 25+ with a high school diploma but not a bachelor’s degree or higher, the state’s student financial assistance, and the state’s unemployment rates.

The variable of interest in the study was enrollment in Florida’s public postsecondary education institutions. This was operationalized with a variable reflective of Fall Unduplicated Headcount for a given year of degree-seeking individuals in undergraduate academic programs.

In summary, since the 1950s, there have been an increasing amount of individuals participating in postsecondary education. Much of the increased participation was a result of federal initiated programs that have allowed higher education opportunities to become affordable to a larger population. Florida experienced vast higher education enrollment growths between the 1960s and 1970s with the creation of the community college system serving the local geographical areas. For the first time, individuals “placed bound” had an opportunity to seek postsecondary education. In addition, since the early 1900s there was an increasing number of eligible individuals to attend higher education institutions. In fact, in 2006-07, the four year freshman graduation rate was approximately 74%. Therefore one could conclude over the past fifty years, there was an increased eligible student population that also had the necessary resources to attend higher education institutions.

The literature suggested tuition and fees impacted an individual’s ability to pursue higher education opportunities. Tuition has steadily increased over the past fifty years and has often increased at a rate much higher than the rate of inflation. This has placed more emphasis on students and their families to finance postsecondary education opportunities. In addition to the rapid increase in tuition, the gap between tuition at two year colleges and four year colleges and universities have widened. Mullin and Honeyman (2008) concluded that between 1960 and 2000, the gap increased by a factor of three. The tuition gap between the two types of institutions has been even greater in Florida where between 1970 and 2010, the tuition and fee gap has widened by a factor of almost nine. The literature recently has hinted that the impact of the tuition gap has been less founded. One explanation for the lower impact was the ever

expanding use of loans and other alternatives to assist students in their pursuits of postsecondary education.

There were several factors identified in the literature that have affected higher education enrollment. It was proposed that an association existed between the constructs of Florida's state resources, which included education attainment of its population, unemployment rate, the ability to pay for higher education opportunities, state based financial aid, and the universities and community colleges' pricing structures with enrollment in these institutions (Figure 2-3). The purpose of this study was to test student price response theory by examining the degree to which providing access to postsecondary education via the introduction of a lower-priced option, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010.

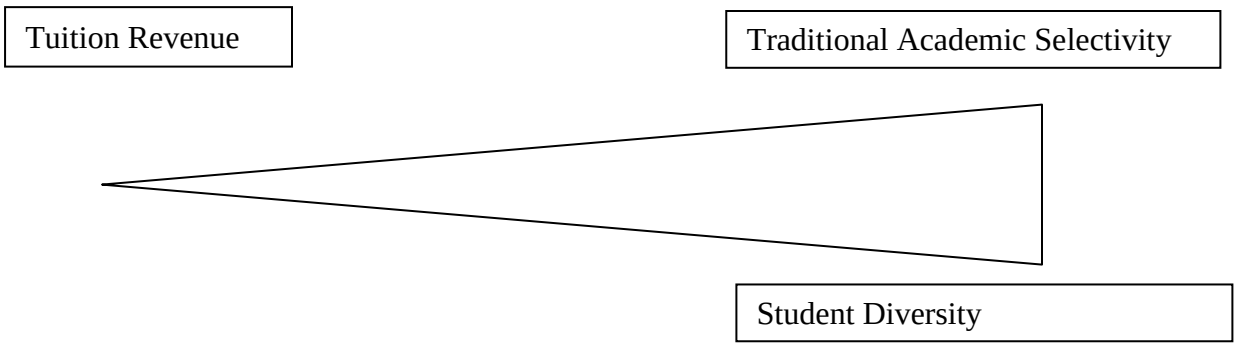


Figure 2-1. The balancing of the competing goals of enrollment [Hossler, 2004]

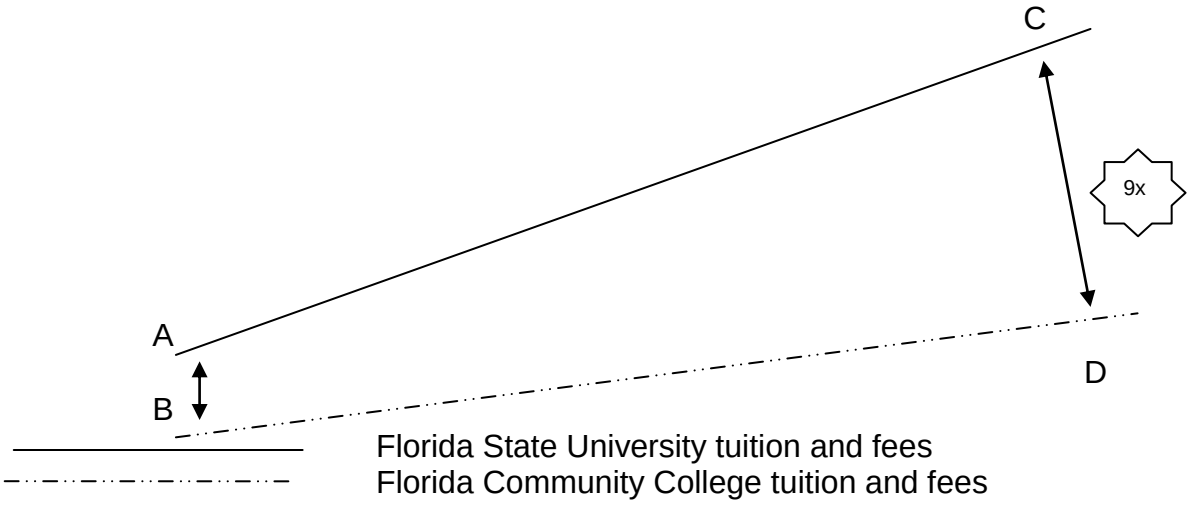


Figure 2-2. A depiction of the difference in the tuition and fee structure in the State of Florida's Public Higher Education System [Modified from Mullin, 2008]

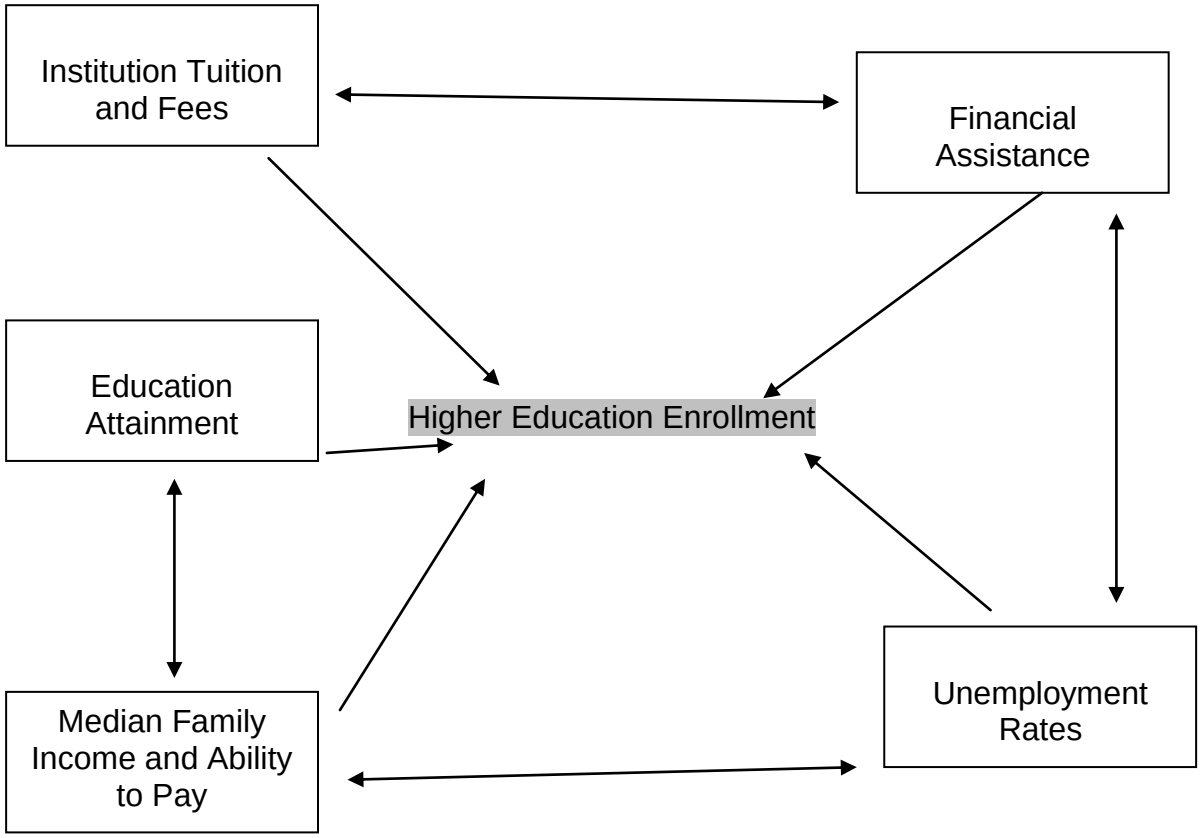


Figure 2-3. Conceptual framework

CHAPTER 3
METHODOLOGY

It was observed that the difference in tuition and fees between public institution types in the state of Florida changed between the years of 1970 and 2010 by a factor of almost nine while participation in postsecondary education paralleled the national higher education landscape. The State of Florida's public higher education difference in tuition and fees were three times higher than that of the national landscape, where between the years of 1950 and 2000, the difference in tuition and fees between public institution types increased by a factor of three while enrollment was at a plateau (Mullin & Honeyman, 2008). As compared to the national landscape, Florida's community college system grew rapidly between the 1960s and 1970s. Furthermore, during the years of interest, over 50% of all attendance in higher education in Florida occurred at the community college level. This was a result of Florida's public policy which reinforced the "two-plus-two" articulation system. The public community college was seen as the primary entry point to postsecondary education (Florida Postsecondary Education Planning Commission, 2000; Sanchez-Penley, Martinez, & Nodine, 1997). The purpose of this study was to test student price response theory by examining the degree to which providing access to postsecondary education via the introduction of a lower-priced option, the community college, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010.

Research Question

To examine student price response theory as operationalized as the tuition price difference ratio (TPDR) between the different institution types while considering Florida's state higher education resources, the following research question was

developed. How was enrollment associated with the tuition and fee difference ratio between Florida's public community colleges and universities and state resources for the years 1970, 1980, 1990, 2000, and 2010?

Research Hypothesis

In order to test the research question, the following hypothesis was developed.

- **$H_0$1:** Enrollment was not significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010.
- **H_A1:** Enrollment was significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010.

Data Summary

To test the research question, data were collected for Florida's state university system, community college system, and state resources for the years of 1970, 1980, 1990, 2000, and 2010. These data were analyzed by utilizing the type of institutions as the unit of analysis.

Population

The population of interest in this study was Florida's public higher education system which included the State University System (SUS) and the Community College (CC) System which was known as the Florida State College System (FSCS) at the conclusion of the years of interest in the study. At the beginning time of analysis, in 1970, the state of Florida had 27 community colleges and 7 state universities. By the next date of interest to the researcher, the Community College System had grown to its full capacity of 28, at which it remained in 2010. The State University System expanded to 9 institutions by 1980 with the addition of universities in northeast and southeast Florida. The State University System expanded again in 1991 with the addition of the

10th university in Southwest Florida, but did not officially begin operations until 1998. Therefore, data on the 10th institution were only calculated for the last two years of interest to the researcher. For the last year of analysis, the State University System had reclassified an existing branch campus to an independent college to serve as the state's legislatively classified honors college for the liberal arts, thus increasing the number of institutions to 11 (Table 3-1). As a result of the additional institutions in the state of Florida throughout the study, the size of the population analyzed changed for each year, where: 1970 (*N*= 34), 1980 (*N*= 37), 1990 (*N*= 37), 2000 (*N*= 38), and 2010 (*N*=39). As a result there were a total of 185 different cases.

Variables of Interest

This study analyzed three independent constructs, which consisted of seven independent variables that the researcher believed to influence the dependent variable of enrollment in Florida's public higher education institutions.

Enrollment. The number of postsecondary institutions grew rapidly in the state of Florida between the years of 1960 and 1970. Much of the expansion of Florida's public postsecondary institutions resulted from the 1955 Legislature session, which established the Community College Council. By 1957, the council published a report entitled "The Community Junior College in Florida's Future". The report was approved by the State Board of Education and contained recommendations for needed legal changes and for a master plan design that established the Community College System in Florida (Florida Department of Education, 2008).

This study utilized Full Time Fall Unduplicated Headcount to measure enrollment. Headcount was utilized in the study since it was the most consistent data over the 40 years of investigation. Fall Unduplicated Headcount data for the Florida Community

College System were obtained from the Florida Department of Education, and specifically the State College System Factbooks. Likewise, Fall Unduplicated Headcount for the state university systems were obtained through data reported by the Florida Board of Governors and the State University Factbooks. Total Fall Unduplicated Headcount in both types of public institutions (FL HEI_ENR), Fall Unduplicated Headcount at Florida's public community colleges (FL CC_ENR), and Fall Unduplicated Headcount at Florida's state universities (FL SUS_ENR) were employed as the dependent variables in the three individual models.

Tuition and Fees. An institution's tuition and fee structure was the price it charged students for their academic program (Balderston, 1995). For this study, the tuition and fees reported represented the price of instruction for one academic year which was based on a 30 credit hour course load. The researcher was interested in the difference in tuition and fee rates at the Florida public community colleges and state universities due to recent research which suggested 71% of all state policymakers believed the increased demand for higher education should redirect students first through the two years at the lower cost community college, then on to the four-year granting institution (Ruppert, 2001). Furthermore, community colleges typically have served as the primary gateway of access to higher education for disadvantaged students (Anderson, Alfonso, & Sun, 2006). Therefore, price differences studied in Florida's two public systems had potential large state policy implications for future. The results could have informed higher education access initiatives that would have continued to direct students to the lower cost community colleges, building on the two plus two policy, and prior to matriculating to the state universities for the upper division

course work, or those desiring to remain at the community college to seek a baccalaureate degree.

Tuition and fee data utilized for this research were obtained from three sources: The Florida Department of Education, The Florida Board of Governors, and the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). The need to utilize all of the sources was required to ensure that specific tuition and fees were reported for the 28 community colleges and 11 public universities.

The tuition data for this study were based on the costs for an in-state undergraduate student to attend either the community college or state university system institution as a full-time student, thus the tuition and fees represented the cost of 30 credit hours. The tuition and fee difference ratio (TPDR) between Florida's two public postsecondary higher education institutions was determined by dividing the SUS institutions' tuition and fees by the community college(s) average tuition and fees in the same service regions. The counties served by each state university and community college were obtained from the Florida Board of Governors and Florida Department of Education, respectively (Table 3-2).

State resources. The growth and expansion of the Florida's public higher education system occurred rapidly after 1960. This resulted from the state needing to have a more developed workforce. It was believed that the rapid increase occurred because of two factors. The first factor contributing to the expansion was the ability of Florida state citizens to financially support postsecondary higher education participation. This was determined by averaging an institutions' median family income for the counties in which the institution serviced (Tables 3-2 and 3-3). Data were obtained from U.S.

Census Data for the years 1970, 1980, 1990, and 2000. For the year of 2010, the estimation of MFI was produced from U.S. Department of Housing and Urban Development, Median Family Income Documentation System.

The next factor believed to influence the state resources was the percentage of the state of Florida's population eligible to attend a public postsecondary institution. Within this context, the researcher also investigated how those careers that only required a high school diploma affected Florida's postsecondary eligible population. This was determined by combining potential degree seeking individuals from an institutions service area. This was further defined as those individuals in a county that were 25+ with at least a high school diploma and those that were 25+ without a four-year degree. Data were obtained from the U.S. Census Data for the years 1970, 1980, 1990, and 2000. For the year of 2010, data were collected from the North Carolina Economic Development Intelligence System (EDIS) which produced an estimated educational attainment percentage for each county in the state of Florida.

Lastly, it was believed that a county's unemployment rate affected those individuals desiring to pursue opportunities of postsecondary education. It had been suggested that as employment opportunities lessened, individuals were more likely to attend a postsecondary education institution as an alternative to entrance into the workforce (Heller, 1999; Shin & Milton, 2006). Data were obtained from the University of Florida Bureau of Economic and Business Research Florida Statistical Abstracts for the years 1970 and 1980. Data for the years 1990, 2000, and 2010 were obtained from the U.S. Department of Labor.

State Financial Aid. The federal and state governments had several programs that assisted students in the pursuit of higher education opportunities. The numbers of programs have expanded with the expansion of higher education (Mendoza, Mendez, & Malcolm, 2009). Specifically states invested in higher education in several ways to assist students in gaining access and completing a college degree (Titus, 2009). However, with decreasing economic conditions, students struggled to find mechanisms to fund their higher education endeavors (Mendoza, et al., 2009). Titus (2009), concluded that state need based aid had a positive impact on bachelor's degree production whereas state non-need based aid was statistically insignificant. Data for Florida State Student Aid were obtained from two sources, and as Florida changed its student financial aid policies the data expanded to include both need based and non-need based aid programs. Data for the years 1970, 1980 and 1990 were obtained from the National Association of State Student Grant and Aid Programs (NASSGAP) Annual Surveys and the data for the remaining years of interest were obtained from the Florida's Office of Student Financial Assistance (OSFA). The first two years of interest in the study, 1970 and 1980, financial assistance was limited to only need based aid. For the remaining years of interest, 1990, 2000, and 2010, both need based and non-need based state financial aid was included in the analysis.

Research Design

The research was a non experimental design that utilized pre-existing data. The research question for this study questioned if enrollment at Florida's community colleges and state universities were associated with the tuition difference ratio between the two public postsecondary institutions between 1970 and 2010. The study utilized

three separate multiple regression analysis models to address the stated question for the years (1970, 1980, 1990, 2000, and 2010).

Full Model

The first multiple regression analysis was conducted with Fall Full Time Unduplicated Enrollment at the Florida's public higher education institutions (FL HEI _ ENR) which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational attainment (EA), the tuition price difference ratio (TPDR), unemployment rates (UNEM), Florida state financial aid (FLSA), and the type of institution (TYPE) for the five years of study.

$$\text{FL HEI\_ENR} = \beta_0 + \beta_1 (\text{TYPE}) + \beta_2 (\text{YEAR}) + \beta_3 (\text{MFI}) + \beta_4 \text{TPDR}) + \beta_5 (\text{EA}) + \beta_6 (\text{UNEM}) + \beta_7 (\text{FLSA}) + \varepsilon_i$$

where,

- FL HEI _ ENR = the dependent variable for unduplicated fall headcount, Florida public institutions of higher education,
- β_0 = Y intercept of the multiple regression equation,
- β_1 = regression coefficient for the type of institution (TYPE),
- TYPE = the independent variable for the type of institutions, either Florida Community Colleges or State Universities,
- β_2 = regression coefficient for the year studied (YEAR),
- YEAR = the independent variable for year,
- β_3 = regression coefficient for median family income (MFI),
- MFI = the independent variable for median family income,
- β_4 = regression coefficient for the tuition price difference ratio (TPDR),

- TDPR = the independent variable for the tuition price difference ratio between Florida Community Colleges and State Universities,
- β_5 =regression coefficient for educational attainment (EA),
- EA = the independent variable for education attainment which was the percentage of those individuals in the State of Florida that had achieved a high school diploma but had not achieved their first baccalaureate degree,
- β_6 = regression coefficient for the percentage of workforce unemployment (UNEM),
- UNEM = the independent variable for unemployment which was the percentage of those individuals in the county that were unemployed,
- β_7 = regression coefficient for Florida state aid (FLSA),
- FLSA = the independent variable for the total amount of Florida State Aid distributed in the year of interest, and
- ε_i = the errors accounted for with the regression model.

The null and alternate hypotheses were:

- H_O: $\beta_{1\text{-}7} = 0$
- H_A: $\beta_{1\text{-}7} \neq 0$

The null hypothesis stated that there was no association between Florida's public higher education institutions FTE and the tuition and fee difference between the two different institution types and state resources.

Reduced Model 1

The second multiple regression analysis was conducted with Fall Full Time Unduplicated Enrollment at Florida's community colleges, (FL CC _ ENR) which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational

attainment (EA), the tuition price difference ratio (TPDR), unemployment rates (UNEM), and Florida state financial aid (FLSA) for the five years of the study.

$$FL\ CC\_ENR = \beta_0 + \beta_1 (YEAR) + \beta_2 (MFI) + \beta_3 (TPDR) + \beta_4 (EA) + \beta_5 (UNEM) + \beta_6 (FLSA) + \varepsilon_i,$$

where,

- FL CC _ ENR = the dependent variable for the Florida community college, full-time equivalent (FTE) in public postsecondary education,
- β_0 = Y intercept of the multiple regression equation,
- β_1 = regression coefficient for the year studied (YEAR),
- YEAR = the independent variable for year,
- β_2 = regression coefficient for median family income (MFI),
- MFI = the independent variable for median family income,
- β_3 = regression coefficient for the tuition price difference ratio (TPDR),
- TDPR = the independent variable for the tuition price difference ratio between Florida Community Colleges and State Universities,
- β_4 = regression coefficient for educational attainment (EA),
- EA = the independent variable for education attainment which was the percentage of those individuals in the State of Florida that had achieved a high school diploma but had not achieved their first baccalaureate degree,
- β_5 = regression coefficient for the percentage of workforce unemployment (UNEM),
- UNEM = the independent variable for Unemployment which was the percentage of those individuals in the county that were unemployed,
- β_6 = regression coefficient for Florida state aid (FLSA),
- FLSA = the independent variable for the total amount of Florida State Aid distributed in the year of interest, and
- ε_i = The errors accounted for with the regression model.

The null and alternate hypothesis were:

- H_O: $\beta_{1\text{-}6} = 0$
- H_A: $\beta_{1\text{-}6} \neq 0$

The null hypothesis stated that there was no association between Florida's state community colleges' FTE and the tuition and fee difference between the two different institution types and state resources.

Reduced Model 2

The third multiple regression analysis was conducted with Fall Full Time Unduplicated Enrollment at Florida's state universities, (FL SUS _ ENR) which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational attainment (EA), the tuition price difference ratio (TPDR), unemployment rates (UNEM), and Florida state financial aid (FLSA) for the five years of the study.

$$\text{FLSUS\_ENR} = \beta_0 + \beta_1 (\text{YEAR}) + \beta_2 (\text{MFI}) + \beta_3 (\text{TPDR}) + \beta_4 (\text{EA}) + \beta_5 (\text{UNEM}) + \beta_6 (\text{FLSA}) + \varepsilon_i$$

where,

- FL SUS _ ENR = the dependent variable for the Florida community college, full-time equivalent (FTE) in public postsecondary education,
- β_0 = Y intercept of the multiple regression equation,
- β_1 = regression coefficient for the year studied (YEAR),
- YEAR = the independent variable for year,
- β_2 = regression coefficient for median family income (MFI),
- MFI = the independent variable for median family income,
- β_3 = regression coefficient for the tuition price difference ratio (TPDR),

- TDPR = the independent variable for the tuition price difference ratio between Florida Community Colleges and State Universities,
- β_4 = regression coefficient for educational attainment (EA),
- EA = the independent variable for education attainment which was the percentage of those individuals in the State of Florida that had achieved a high school diploma but had not achieved their first baccalaureate degree,
- β_5 = regression coefficient for the percentage of workforce unemployment (UNEM),
- UNEM = the independent variable for Unemployment which was the percentage of those individuals in the county that were unemployed,
- β_6 = regression coefficient for Florida state aid (FLSA),
- FLSA = the independent variable for the total amount of Florida State Aid distributed in the year of interest, and
- ε_i = The errors accounted for with the regression model

The null and alternate hypothesis were:

- H_O: $\beta_{1\text{-}6} = 0$
- H_A: $\beta_{1\text{-}6} \neq 0$

The null hypothesis stated that there was no association between Florida's state universities' FTE and the tuition and fee difference between the two different institution types and state resources.

Data Treatment

Data were analyzed through the IBM SPSS Statistics 18. Descriptive statistics were calculated to demonstrate the nature of the studies' data which included mean, median mode and standard deviation. In all three models, assumptions of linearity and normality were achieved through scatter and residual plots (Huck, 2008). Furthermore, collinearity was evaluated through the application of tolerance and variance inflation factors. The decision to accept or reject the null hypothesis was set at a level of

significance of .05. The analysis of the data were interested in significant interactions between the variables, either positive or negative; therefore, non-directional hypotheses were used.

Limitations

The research study was concerned with undergraduate enrollment in Florida public postsecondary institutions; therefore, those interpreting the data should be cautious when interpreting the results as they related to graduate education enrollment. Also, the study was concerned with in-state undergraduate enrollment; however, all of the data on undergraduate enrollment were reported as a total undergraduate enrollment for the years of study. Therefore, the actual enrollment may be slightly over inflated due to the inclusion of a small number of out-of-state students. This was a concern to the researcher and those using the results of this study should be cautioned. The scenario outlined may have limited the impact of the independent variables. However, since the Florida legislature mandated that the overall State University System did not allow for more than 10% of the statewide enrollment to be made up of non-resident students, it was assumed that the impact was minimal. Furthermore, total system enrollment consisted of both undergraduate and graduate enrollment number, thus limiting the impact as well. Lastly, the fall enrollment numbers presented for the Florida Community College System was minimally impacted since community colleges tended to service students from their local geographical area.

The total fall undergraduate headcount used in the study was total undergraduate enrollment for the community colleges and the state university system institutions. This study did not account for choice of attending an upper division courses, but was interested in the overall analysis of the independent variables effect on the

dependent variable of undergraduate enrollment. Those individuals interpreting the results should be cautious when interpreting the results beyond the capacity of this study. The total undergraduate enrollment numbers utilized in the study were used since they were the most consistent data available for the years of interest. The impact of upper division student enrollment included in the total enrollment was not considered to be an impact of the regression analyses that occurred. If those students could have been removed, it would have decreased the total number but not affected the independent variables on enrollment.

Another limitation of the study was the TPDR. This ratio needed to be interpreted as a conservative low-estimate of the difference in cost to attend a Florida Community College versus a Florida State University. The TPDR did not include other costs associated with attending a postsecondary Florida public institution such as housing, meals, textbooks, or other student cost of living needs.

As noted in the literature, financial assistance to students such as grants, scholarships, loans, and fellowships expanded higher education opportunities for students who, without the subsidiaries, would not have had the means to attend a postsecondary institution. Furthermore, the literature suggested that the federal government has provided the largest source of student financial aid to the state if Florida. The impact of financial aid was minimally accounted for in the study by the inclusion of only Florida state based aid. This variable's impact was likely under represented since consistent data on other sources of financial aid, such as federal loans, grants, and other sources were not available for the years of interest in this of

study. Secondly, this independent variable changed with the inclusion of state non-need based aid for the last three years of interest in the study.

Lastly, the study assumed that the population seeking attendance at a Florida public higher education institution were those that were 25 and over with a high school degree but without a four year degree. Those utilizing these results should be cautious since this study did not take into account those occupations that did not require any postsecondary education, thus removing those individuals from seeking higher education opportunities in the first place. However, it was believed that the impact was limited since postsecondary education opportunities have expanded with online delivery mechanisms and the inclusion of a county's unemployment rate.

Table 3-1. Number of institutions per year

	1970	1980	1990	2000	2010
Community Colleges	27	28	28	28	28
State Universities	7	9	9	10	11

Table 3-2. Counties served by state community college

Community College	Counties
Brevard	Brevard
Broward	Broward
Central Florida	Citrus, Levy, Marion
Chipola	Calhoun, Holmes, Jason, Liberty, Washington
Daytona St.	Flagler, Volusia
Edison	Charlotte, Collier, Glades, Hendry, Lee
Florida State College at Jacksonville	Duval, Nassau
Florida Keys	Monroe
Gulf Coast	Bay, Franklin, Gulf
Hillsborough	Hillsborough
Indian River	Indian River, Martin, Okeechobee, St. Lucie
Lake City	Baker, Columbia, Dixie, Gilchrist, Union
Lake Sumter	Lake, Sumter
Manatee	Manatee, Sarasota
Miami Dade	Dade
North Florida	Jefferson, Hamilton, Madison, Lafayette, Suwannee, Taylor
Northwest Florida	Okaloosa, Walton
Palm Beach	Palm Beach
Pasco Hernando	Hernando, Pasco
Pensacola	Escambia, Santa Rosa
Polk	Polk
St. Johns	Clay, Putnam, St. Johns
St. Petersburg	Pinellas
Sante Fe	Alachua, Bradford
Seminole	Seminole
South Florida	DeSoto, Hardee, Highlands
Tallahassee	Gadsden, Leon, Wakulla
Valencia	Orange Osceola

Table 3-3. Counties served by state university institutions

State University	Counties
University of Florida	All Florida counties
Florida State University	All Florida counties
Florida A & M	All Florida counties
University of South Florida	DeSoto, Hardee, Hernando, Highlands, Hillsborough, Manatee, Pasco, Pinellas, Polk, Sarasota, Charlotte*, Collier*, Hendry*, Glades*, Lee*
Florida Atlantic University	Broward, Indian River, Martin, Okeechobee, Palm Beach, St. Lucie, Dade**, Monroe**
University of West Florida	Bay, Escambia, Gulf, Holmes, Okaloosa, Santa Rosa, Walton, Washington
University of Central Florida	Brevard, Citrus, Flagler, Lake, Levy, Marion, Orange, Osceola, Seminole, Sumter, Volusia
Florida International University	Dade, Monroe, Broward
University of North Florida	Alachua, Bradford, Clay, Duval, Nassau, Putnam, St.Johns
Florida Gulf Coast University	Charlotte, Collier, Hendry, Glades, Lee
New College	Sarasota, Pinellas, Hillsborough

Counties marked with * were served by USF for the years 1970, 1980, 1990. Counties marked with ** were served by FAU for the year 1970.

CHAPTER 4
RESULTS

The purpose of this study was to test student price response theory by examining the degree to which providing Floridians access to postsecondary education via the introduction of a lower-priced option, the community college, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010. It was hypothesized that the enrollment was not significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010. To test the hypotheses, multiple linear regression analysis was employed.

Three multiple linear regression equations were utilized in examining student price response theory as it related to the state of Florida. The variables analyzed in the study were the same throughout the three models and included the following. The independent variables were the tuition price difference ratio (TPDR), median family income (MFI), percent of the county's workforce unemployed (UNEM), educational attainment (EA) the type of institution (TYPE), state of Florida financial assistance (FLSA), and the year of interest (YEAR). The dependent variable was fall undergraduate unduplicated headcount for the different postsecondary institutions. In the full model, total fall headcount at both types of institutions was the dependent variable. For the reduced models the dependent variable was the total community college enrollment and state university system enrollment, respectively.

Full Model

The full model applied multiple linear regression analysis with Fall Full Time Unduplicated Enrollment at the Florida's public higher education institutions (FL HEI _

ENR) which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational attainment (EA), the tuition price difference ratio (TPDR), unemployment rates (UNEM), Florida state financial aid (FLSA), and the type of institution (TYPE) for the five years of study.

The multiple regression analysis of the complete model accounted for 32.8% of the variance within the model (Table 4-1). The resulting multiple regression equation (Table 4-2) was as follows:

FL HEI _ ENR = -872213.60 + 3583.62(TYPE) + 445.83(YEAR) - 1830.31(TPDR) + .555(MFI) -665.24(EA) + 692.42(UNEM) – 1.123E-5(FLSA)

The intercept of the multiple regression equation could not be zero since zero would not be a valid option for enrollment in this study. The Analysis of Variance (ANOVA) revealed the full model to be statistically significant, F (7, 177) = 12.329, $p<.01$ (Table 4-3). As a result, the null hypothesis that there was no association between enrollment and the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010 was rejected.

Descriptive statistics were presented in Table 4-4. For the full model, Pearson Correlations revealed that Florida's total public higher education enrollment was statically correlated with all the independent variables of interest (Table 4-5). The independent variables: TYPE, TPDR, EA, were all statistically significant at the .05

level. Furthermore, the independent variables: MFI, UNEM, and FLSA were all statistically significant at the .01 level. In terms of enrollment all independent variables except for the TPDR had weak positive correlations with the dependent variable of Florida Public Higher Education Enrollment where the TPDR was weakly negatively correlated.

The assumptions of linearity and normality were achieved through scatter and residual plots (Huck, 2008). Studentized residuals were calculated and plotted on the y-axis against each variable separately on the x-axis within the regression model (Figures 4-1 to 4-7). The evaluation of the scatter plots did not reveal any violations to the assumptions required to conduct multiple linear regression analysis. In addition the dependent variable FL HEI_ENR was examined to ensure that the frequency was normally distributed (Figure 4-8). Furthermore the dependent variable was tested for a normal distribution with a Normal P-P plot (Figure 4-9).

Reduced Model 1

The second multiple linear regression analysis was conducted with Fall Full Time Unduplicated Enrollment at Florida's community colleges, (FL CC _ ENR), which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational attainment (EA), state appropriations (SA), and the tuition price difference ratio (TPDR), unemployment rates (UNEM), and Florida state financial aid (FLSA) for the five years of the study.

The multiple regression analysis of the first reduced model (community college specific model) accounted for 38.3% of the variance within the model (Table 4-6). The resulting multiple regression equation (Table 4-7) was as follows:

FL CC _ ENR = -8977322.82+ 500.29(YEAR) – 2551.31(TPDR) + .676(MFI) -757.59(EA) + 963.73(UNEM) – 1.756E-5(FLSA)

The intercept of the multiple regression equation could not be zero since zero would not be a valid option for enrollment in this study. The Analysis of Variance (ANOVA) revealed the first reduced model to be statistically significant, F (6, 132) = 13.636, $p<.01$ (Table 4-8).

Descriptive statistics were presented in Table 4-9. For the first reduced model depicting specific enrollment evaluation for Florida Community Colleges, Pearson Correlations revealed that Florida's community college enrollment was statistically correlated with four of the six independent variables of interest (Table 4-10). The independent variables: YEAR, MFI, UNEM, FLSA were all statistically significant at the .01 level. Unlike the full model, the TPDR and EA were not statistically correlated with community college enrollment. In terms of enrollment, all of the independent variables that were statistically significant had weak to moderate positive correlations with the dependent variable of Florida Community College Enrollment.

The assumptions of linearity and normality were achieved through scatter and residual plots (Huck, 2008). Studentized residuals were calculated and plotted on the y-axis against each variable separately on the x-axis within the regression model (Figures 4-10 to 4-16). The evaluation of the scatter plots did not reveal any violations to the assumptions required to conduct multiple linear regression analysis. In addition the

dependent variable FL CC_ENR was examined to ensure that the frequency was normally distributed (Figure 4-17). Furthermore the dependent variable was tested for a normal distribution with a Normal P-P plot (Figure 4-18).

Reduced Model 2

The third multiple linear regression analysis was conducted with Fall Full Time Unduplicated Enrollment at Florida's State Universities, (FL SUS _ ENR) which served as the dependent variable. The independent variables were included in the regression analysis to demonstrate the variance associated with the dependent variable. The independent variables of interest were median family income (MFI), educational attainment (EA), state appropriations (SA), and the tuition price difference ratio (TPDR), unemployment rates (UNEM), and Florida state financial aid (FLSA) for the five years of the study.

The multiple regression analysis of the second reduced model (state university specific model) accounted for 31.1% of the variance within the model (Table 4-11). The resulting multiple regression equation (Table 4-12) was as follows:

FL SUS _ ENR = -2826860.37+ 1478.85(YEAR) + 1170.60(TPDR) - .870(MFI) -1025.56(EA) -116.30(UNEM) – 2.779E-5(FLSA)

The intercept of the multiple regression equation could not be zero since zero would not be a valid option for enrollment in this study. The Analysis of Variance (ANOVA) revealed the second reduced model to be statistically significant, F (6, 39) = 2.933, $p<.05$ (Table 4-13)

Descriptive statistics were presented in Table 4-14. For the second reduced model depicting specific enrollment evaluation for Florida State University Institutions,

Pearson Correlations revealed that Florida's State University System enrollment was statistically correlated with five of the six independent variables of interest (Table 4-15). The independent variables: MFI, EA, and UNEM were all statistically significant at the .05 level. Furthermore, the independent variables: YEAR and FLSA were all statistically significant at the .01 level. Similar to the first reduced model, but unlike the full model, the TPDR was not statistically correlated with state university system enrollment. In terms of enrollment, all of the independent variables that were statistically significant had weak to moderate positive correlations with the dependent variable of Florida Community College Enrollment.

The assumptions of linearity and normality were achieved through scatter and residual plots (Huck, 2008). Studentized residuals were calculated and plotted on the y-axis against each variable separately on the x-axis within the regression model (Figure 4-19 to 4-25.) The evaluation of the scatter plots did not reveal any violations to the assumptions required to conduct multiple linear regression analysis. In addition the dependent variable FL SUS_ENR was examined to ensure that the frequency was normally distributed (Figure 4-26). Furthermore the dependent variable was tested for a normal distribution with a Normal P-P plot (Figure 4-27).

Table 4-1. Model summary for full model

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.573[a]	.328	.301	8694.320	.328	12.329	7	177	.000

a. Predictors: (Constant), FLSA, TYPE, TPDR, MFI, UNEM, EA, YEAR

b. Dependent Variable: FL_HEI ENR

Table 4-2. Coefficients for full model

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-872213.596	374046.425		-2.332	.021	-1610378.208	-134048.985		
	TYPE	3583.619	1489.161	.149	2.406	.017	644.823	6522.415	.986	1.014
	YEAR	445.831	192.408	.605	2.317	.022	66.122	825.541	.056	17.942
	TPDR	-1830.307	3023.710	-.044	-.605	.546	-7797.470	4136.855	.733	1.365
	MFI	.555	.107	.434	5.169	.000	.343	.767	.540	1.853
	EA	-665.240	148.287	-.519	-4.486	.000	-957.877	-372.603	.284	3.520
	UNEM	692.419	310.784	.198	2.228	.027	79.101	1305.737	.482	2.077
	FLSA	-1.123E-5	.000	-.229	-1.038	.301	.000	.000	.078	12.780

Table 4-3. ANOVA for full model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.524E9	7	9.320E8	12.329	.000[a]
	Residual	1.338E10	177	7.559E7		
	Total	1.990E10	184			

a. Predictors: (Constant), FLSA, TYPE, TPDR, MFI, UNEM, EA, YEAR

b. Dependent Variable: FL HEI_ENR

Table 4-4. Descriptive statistics for full model

	Mean	Std. Deviation	N
FL HEI_ENR	10863.62	10400.493	185
TYPE	1.25	.433	185
YEAR	1990.59	14.110	185
TPDR	1.818919	.2476211	185
MFI	5.142484E4	8.1240010E3	185
EA	54.039306	8.1097300	185
UNEM	6.002695	2.9720124	185
FLSA	2.041722E8	2.1172820E8	185

Table 4-5. Pearson's correlation for full model

		FL HEI_ENR	TYPE	YEAR	TPDR	MFI	EA	UNEM	FLSA
FL HEI_ENR	Pearson Correlation	1							
	Sig. (2-tailed)								
TYPE	Pearson Correlation	.150*	1						
	Sig. (2-tailed)	.042							
YEAR	Pearson Correlation	.395**	.000	1					
	Sig. (2-tailed)	.000	1.000						
TPDR	Pearson Correlation	-.150*	-.071	-.264**	1				
	Sig. (2-tailed)	.042	.337	.000					
MFI	Pearson Correlation	.430**	-.021	.620**	-.212**	1			
	Sig. (2-tailed)	.000	.774	.000	.004				
EA	Pearson Correlation	.178*	.044	.785**	-.127	.595**	1		
	Sig. (2-tailed)	.015	.551	.000	.084	.000			
UNEM	Pearson Correlation	.277**	.038	.622**	.059	.229**	.490**	1	
	Sig. (2-tailed)	.000	.603	.000	.422	.002	.000		
FLSA	Pearson Correlation	.388**	.036	.938**	-.343**	.533**	.636**	.632**	1
	Sig. (2-tailed)	.000	.627	.000	.000	.000	.000	.000	

*. Correlation is significant at the .05 level (2-tailed). **. Correlation is significant at the .01 level (2-tailed).

Table 4-6. Model summary for reduced community college model

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.619[a]	.383	.355	8267.286	.383	13.636	6	132	.000

a. Predictors: (Constant), FLSA, TPDR, MFI, UNEM, EA, YEAR

b. Dependent Variable: FL CC_ENR

Table 4-7. Coefficients for reduced community college model

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-977322.818	392098.471		-2.493	.01	-1752932.349	-201713.287		
	YEAR	500.289	201.343	.687	2.485	.014	102.012	898.566	.061	16.369
	TPDR	-2551.305	2997.708	-.066	-.851	.396	-8481.067	3378.457	.774	1.293
	MFI	.676	.108	.569	6.282	.000	.463	.889	.569	1.757
	EA	-787.592	149.973	-.640	-5.052	.000	-1054.253	-460.931	.291	3.436
	UNEM	963.730	328.758	.279	2.931	.004	313.414	1614.045	.515	1.944
	FLSA	-1.756E-5	.000	-.358	-1.531	.128	.000	.000	.085	11.722

Table 4-8. ANOVA for reduced community college model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.592E9	6	9.320E8	13.636	.000[a]
	Residual	9.022E9	132	6.835 E7		
	Total	1.461E10	138			

a. Predictors: (Constant), FLSA, TPDR, MFI, UNEM, EA, YEAR

b. Dependent Variable: FL CC_ENR

Table 4-9. Descriptive statistics for reduced community college model

	Mean	Std. Deviation	N
FL CC_ENR	9969.29	10290.716	139
YEAR	1990.14	14.141	139
TPDR	1.83	.267	139
MFI	51523.86	8663.203	139
EA	53.83	8.698	139
UNEM	5.94	2.984	139
FLSA	1.98E8	2.101E8	139

Table 4-10. Pearson's correlation for reduced community college model

		FL CC_ENR	YEAR	TPDR	MFI	EA	UNEM	FLSA
FL CC_ENR	Pearson Correlation	1						
	Sig. (2-tailed)							
YEAR	Pearson Correlation	.363**	1					
	Sig. (2-tailed)	.000						
TPDR	Pearson Correlation	-.123	-.235**	1				
	Sig. (2-tailed)	.149	.005					
MFI	Pearson Correlation	.475**	.577**	-.191*	1			
	Sig. (2-tailed)	.000	.000	.025				
EA	Pearson Correlation	.143	.781**	-.124	.582**	1		
	Sig. (2-tailed)	.093	.000	.147	.000			
UNEM	Pearson Correlation	.256**	.597**	.077	.165	.483**	1	
	Sig. (2-tailed)	.002	.000	.366	.052	.000		
FLSA	Pearson Correlation	.349**	.937**	-.313**	.496**	.636**	.598**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	

**. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

Table 4-11. Model summary for reduced state university system model

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.558[a]	.311	.205	9249.370	.311	2.933	6	39	.019

a. Predictors: (Constant), FLSA, TPDR, EA, MFI, UNEM, YEAR

b. Dependent Variable: FL SUS_ ENR

Table 4-12. Coefficients for reduced state university model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-2826860.37	1535077.42		-1.842	.073	-5931847.54	278126.802		
	YEAR	1478.849	799.580	2.008	1.850	.072	-138.455	3096.153	.015	66.689
	TPDR	1170.600	12063.371	.020	.097	.923	-23229.872	25571.071	.422	2.371
	MFI	-.870	.509	-.528	-1.711	.095	-1.899	.158	.186	5.384
	EA	-1025.558	669.915	-.593	-1.531	.134	-2380.588	329.472	.116	8.590
	UNEM	-116.303	875.267	-.033	-.133	.895	-1886.698	1654.092	.284	3.527
	FLSA	-2.7796E-5	.000	-.584	-.770	.446	.000	.000	.031	32.495

Table 4-13. ANOVA for reduced state university system model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.506E9	6	2.509E8	2.933	.019[a]
	Residual	3.336E9	39	8.555E7		
	Total	4.842E9	45			

a. Predictors: (Constant), FLSA, TPDR, EA, MFI, UNEM, YEAR

b. Dependent Variable: FL SUS_ENR

Table 4-14. Descriptive statistics for reduced state university system model

	Mean	Std. Deviation	N
FL SUS_ENR	13566.04	10373.222	46
YEAR	1991.96	14.082	46
TPDR	1.789	.176	46
MFI	51125.63	6291.720	46
EA	54.659	6.032	46
UNEM	6.201	2.958	46
FLSA	2.230E8	2.178E8	46

Table 4-15. Pearson's correlation for reduced state university system model

		FL SUS_ENR	YEAR	TPDR	MFI	EA	UNEM	FLSA
FL SUS_ENR	Pearson Correlation	1						
	Sig. (2-tailed)							
YEAR	Pearson Correlation	.480**	1					
	Sig. (2-tailed)	.001						
TPDR	Pearson Correlation	-.235	-.405**	1				
	Sig. (2-tailed)	.116	.005					
MFI	Pearson Correlation	.302*	.840**	-.365*	1			
	Sig. (2-tailed)	.041	.000	.013				
EA	Pearson Correlation	.319*	.844**	-.132	.691**	1		
	Sig. (2-tailed)	.031	.000	.383	.000			
UNEM	Pearson Correlation	.335*	.694**	-.004	.516**	.544**	1	
	Sig. (2-tailed)	.023	.000	.979	.000	.000		
FLSA	Pearson Correlation	.492**	.941**	-.491**	.720**	.674**	.734**	1
	Sig. (2-tailed)	.001	.000	.001	.000	.000	.000	

**. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

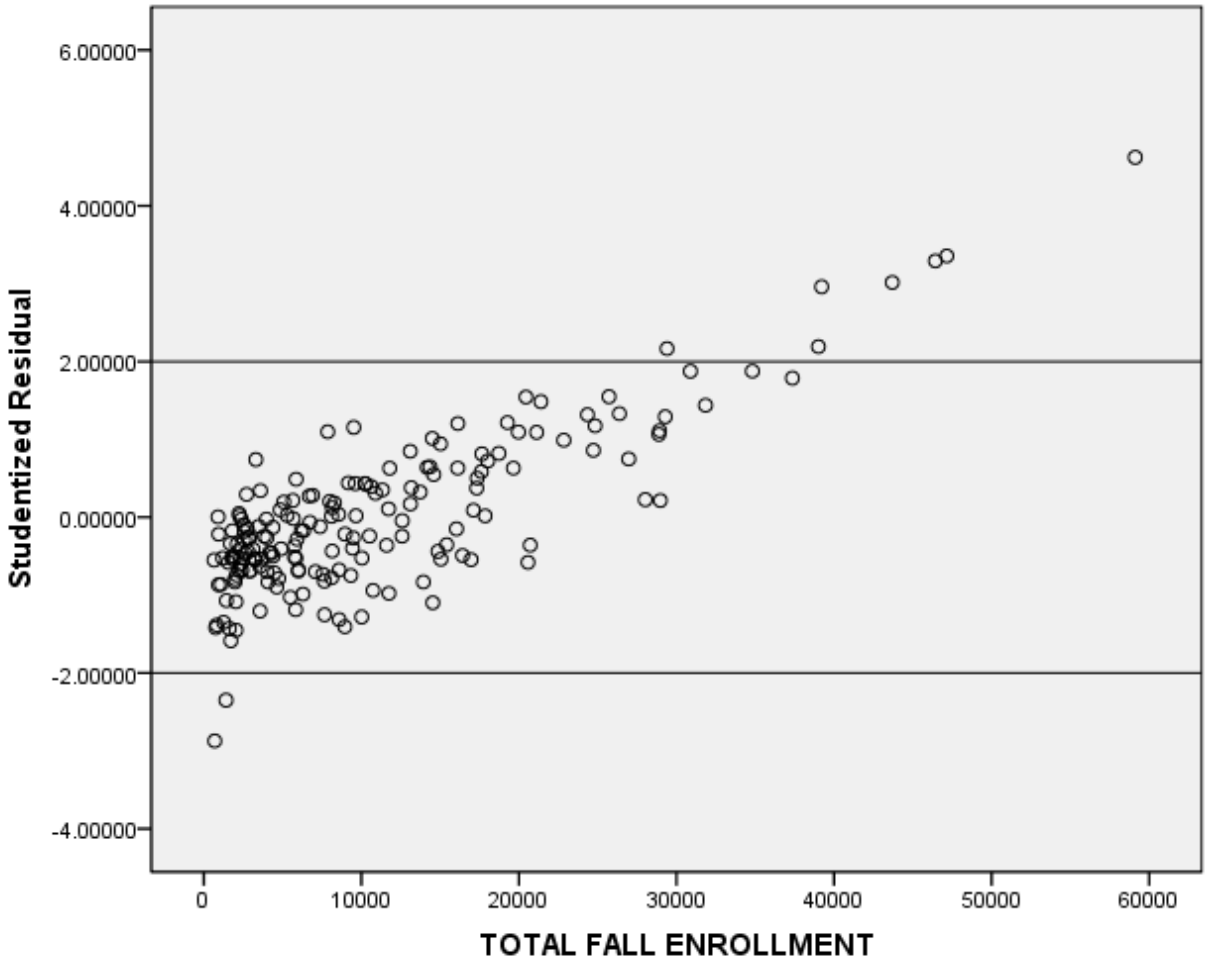


Figure 4-1. Studentized Residuals versus FL HEI_ENR

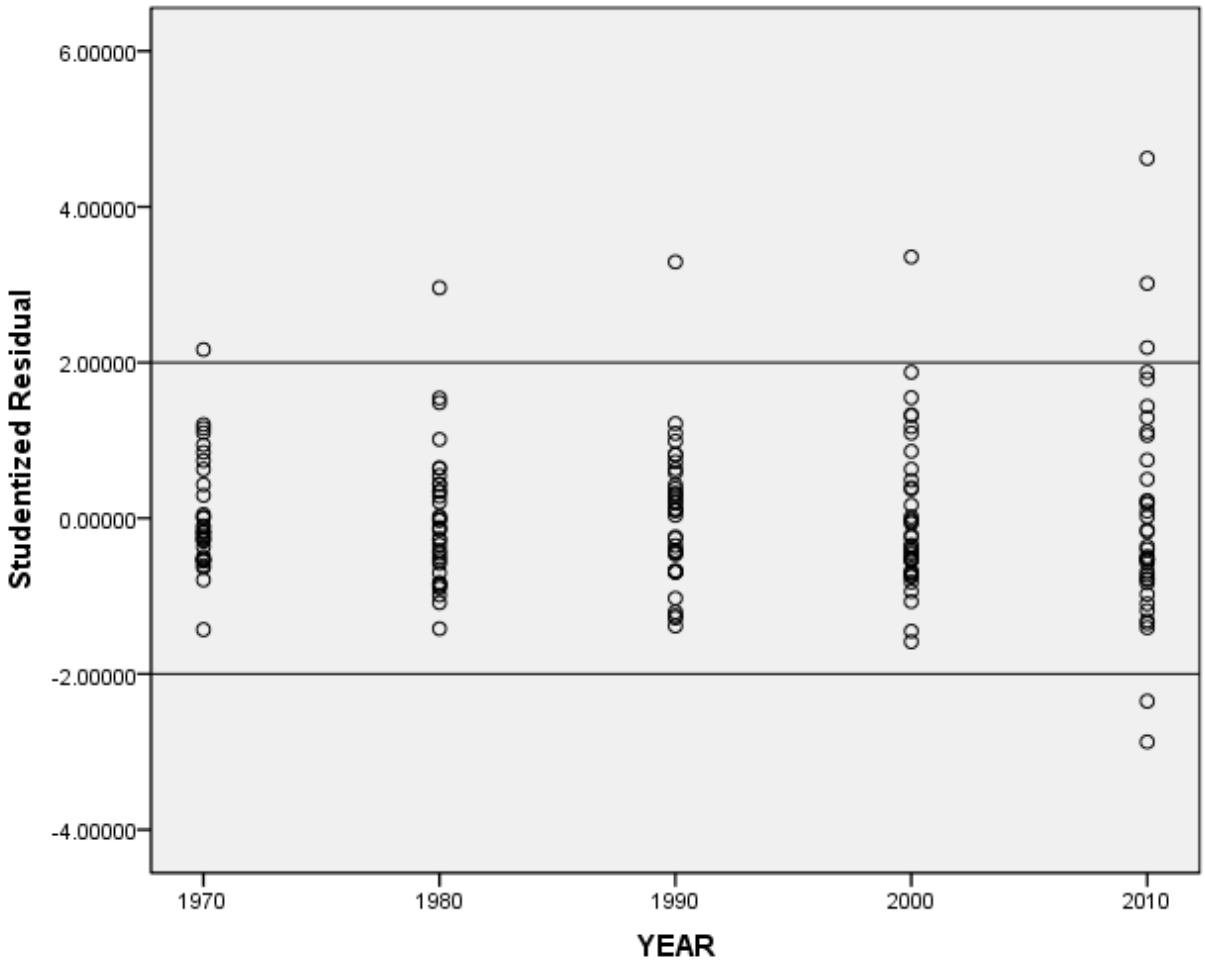


Figure 4-2. Studentized Residuals versus YEAR

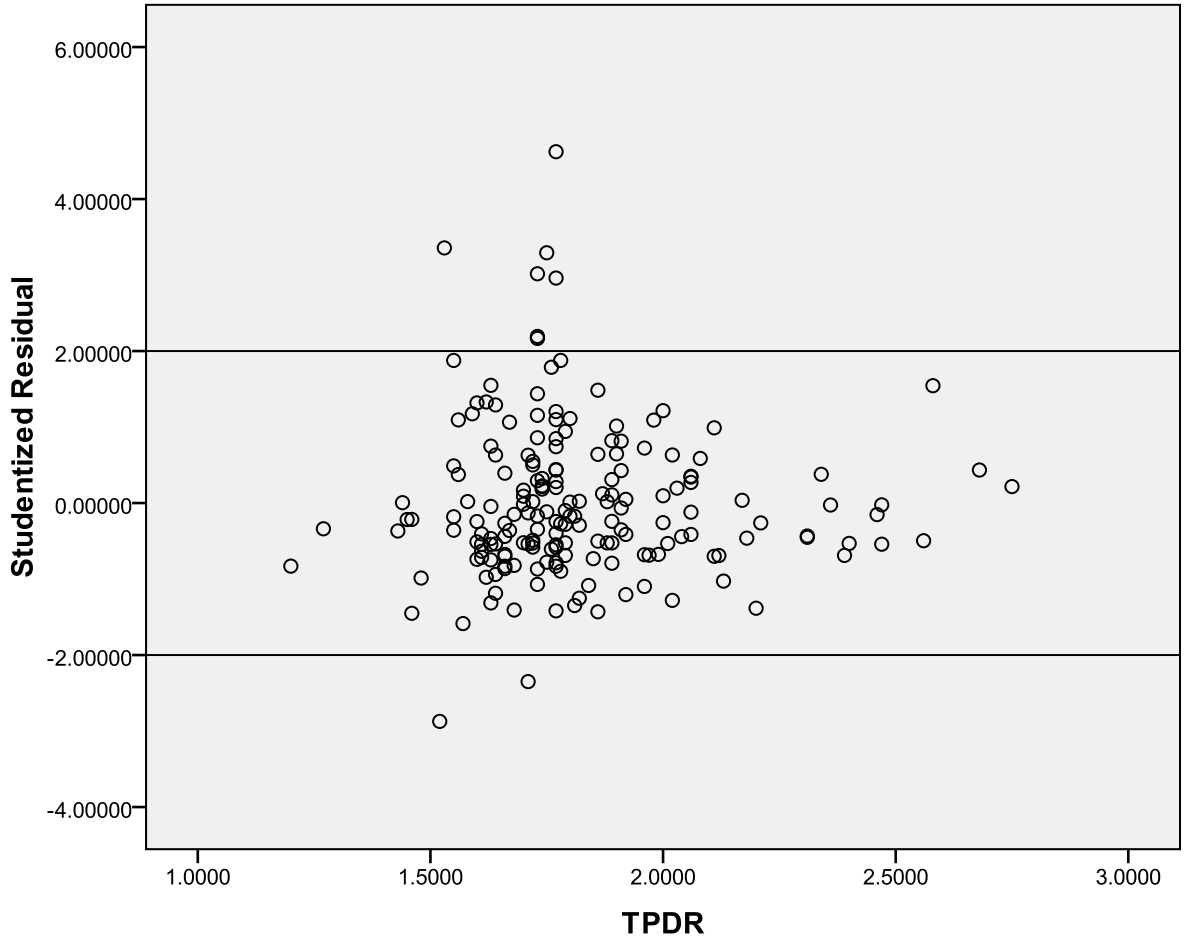


Figure 4-3. Studentized Residuals versus TPDR

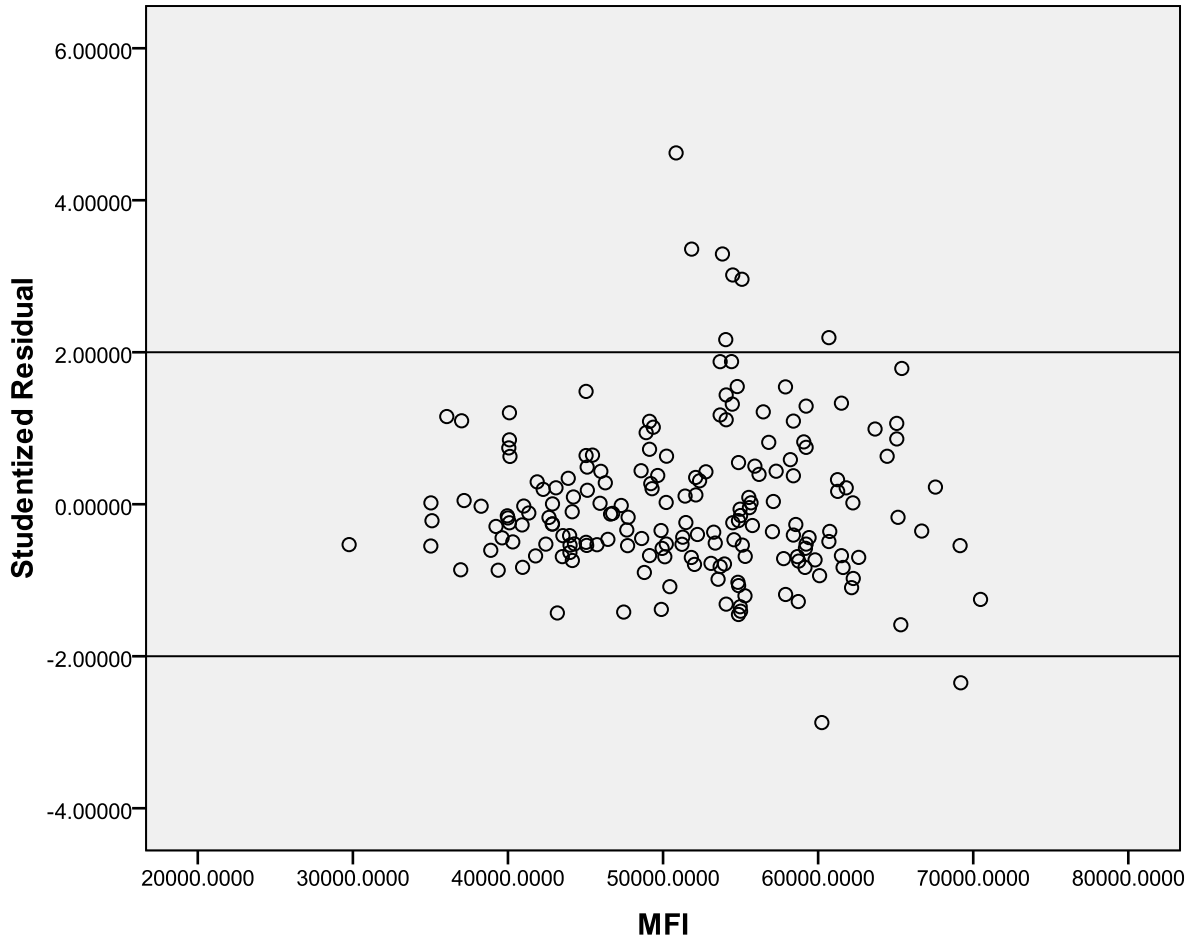


Figure 4-4. Studentized Residuals versus MFI

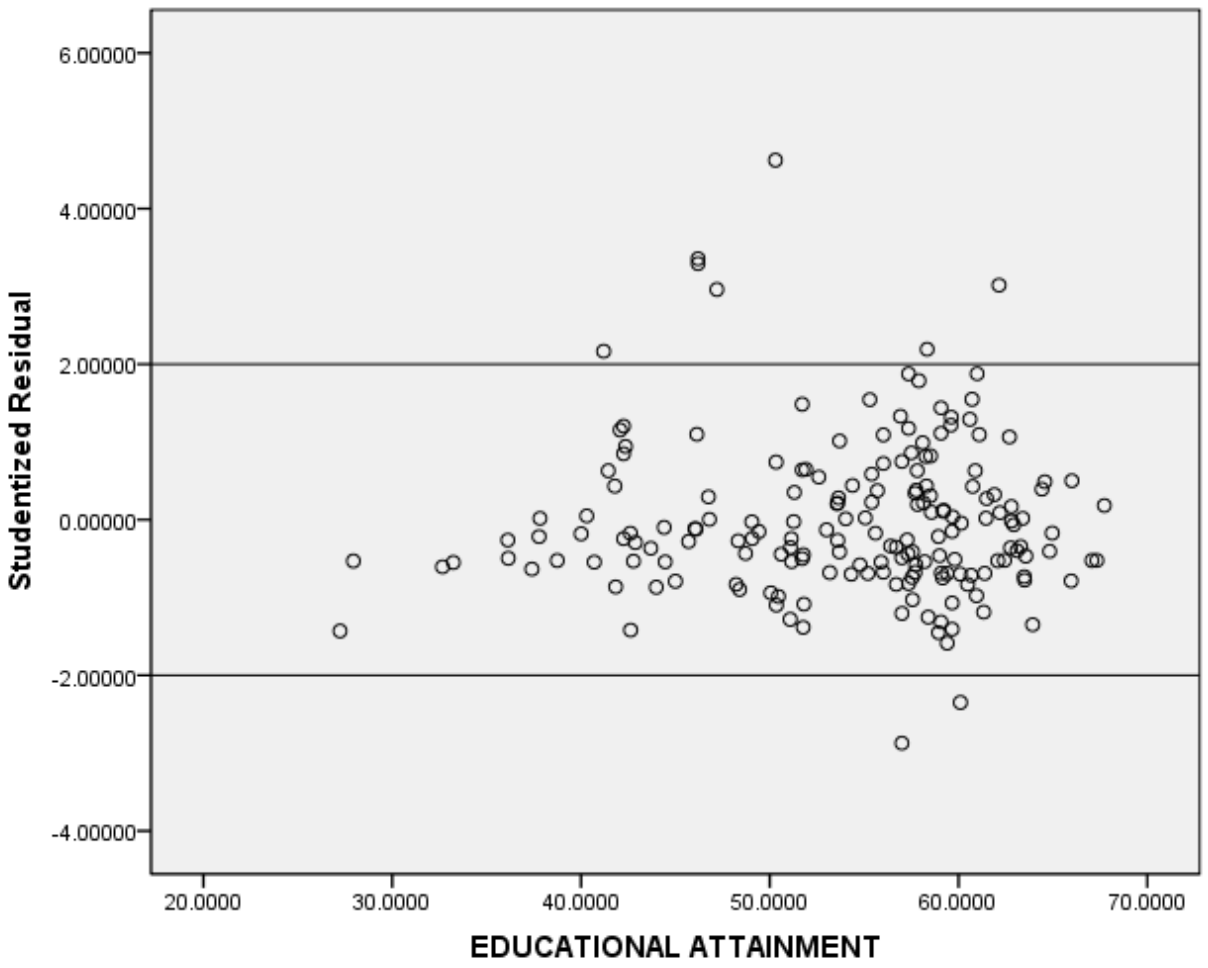


Figure 4-5. Studentized Residuals versus EA

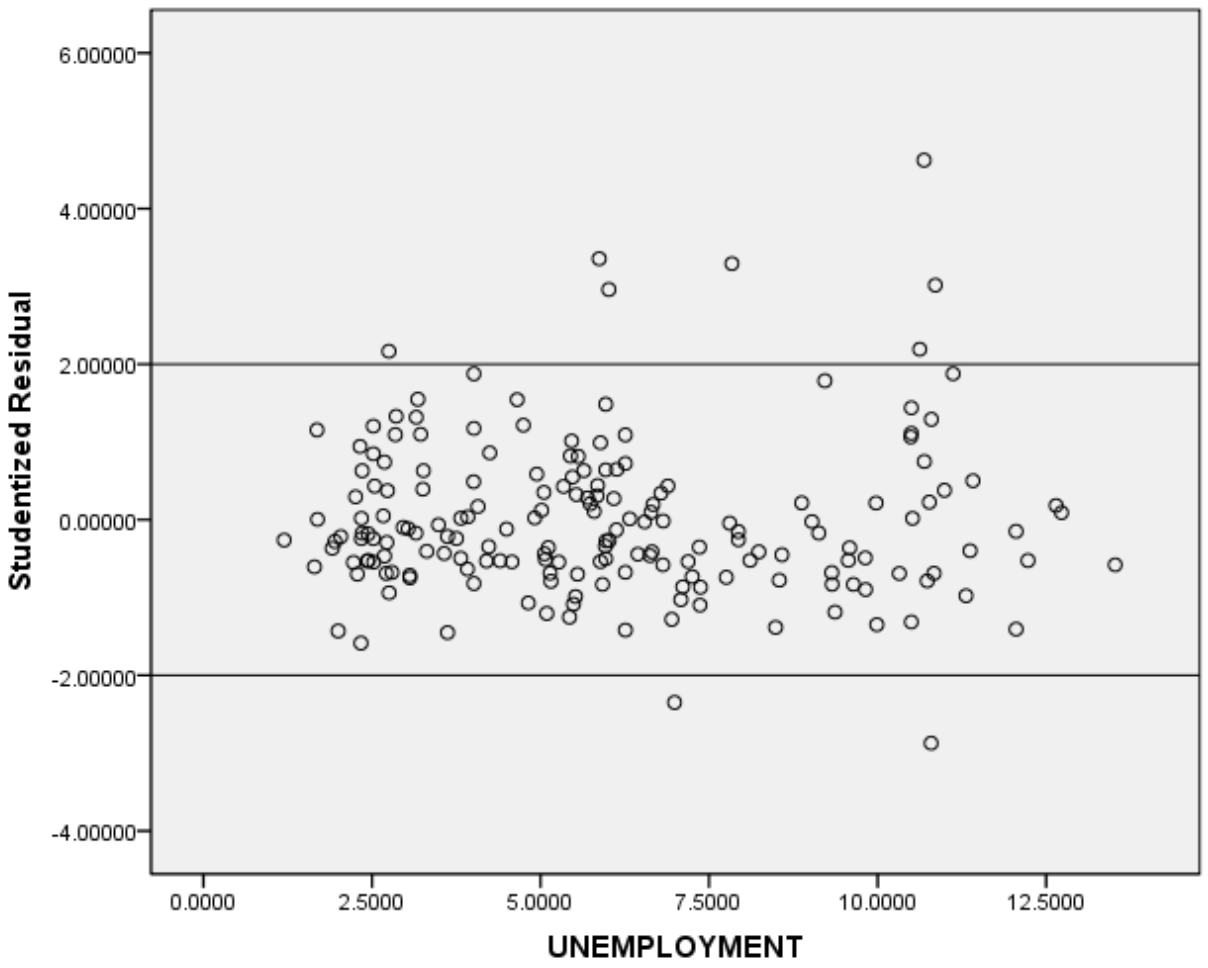


Figure 4-6. Studentized Residuals versus UNEM

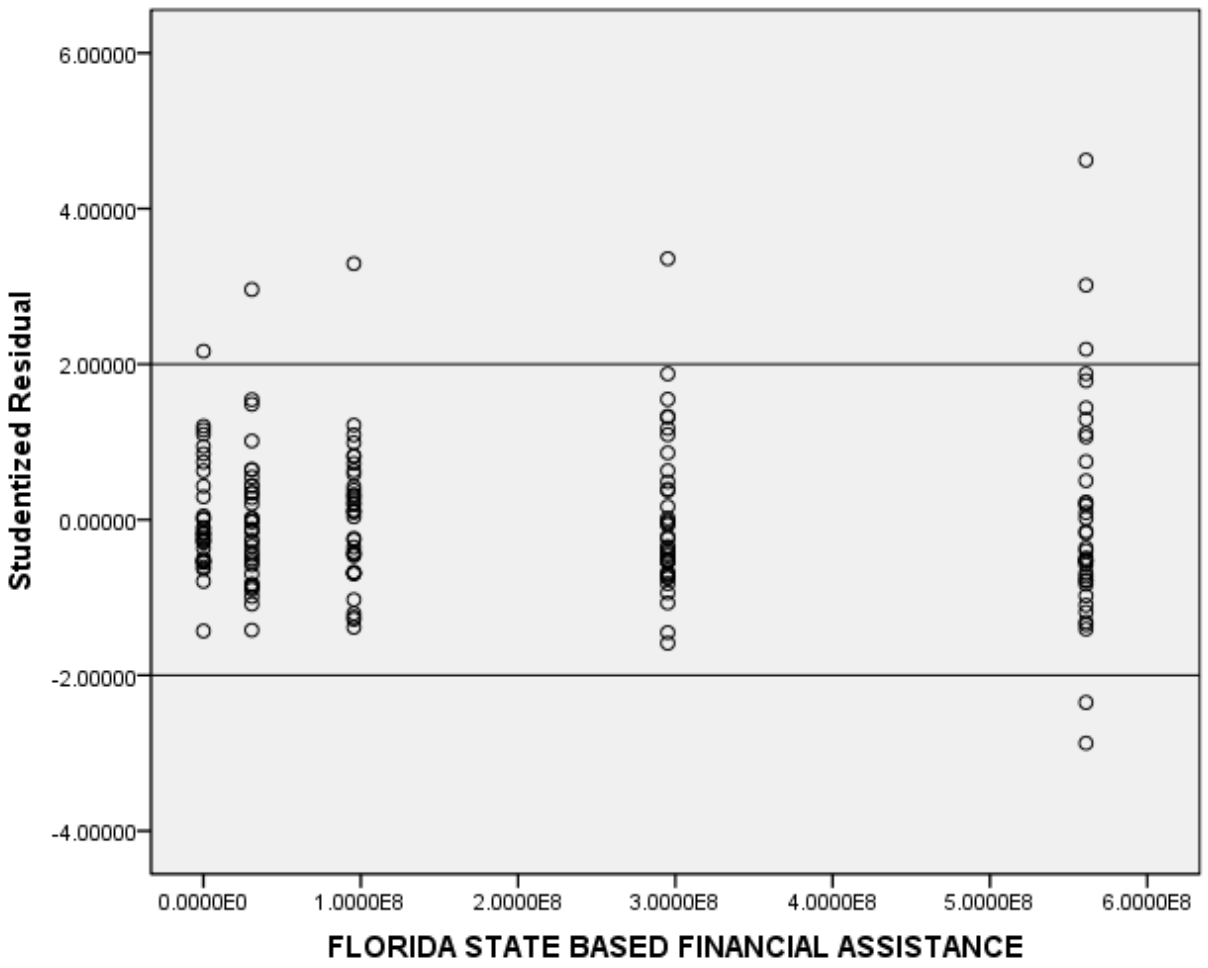


Figure 4-7. Studentized Residuals versus FLSA

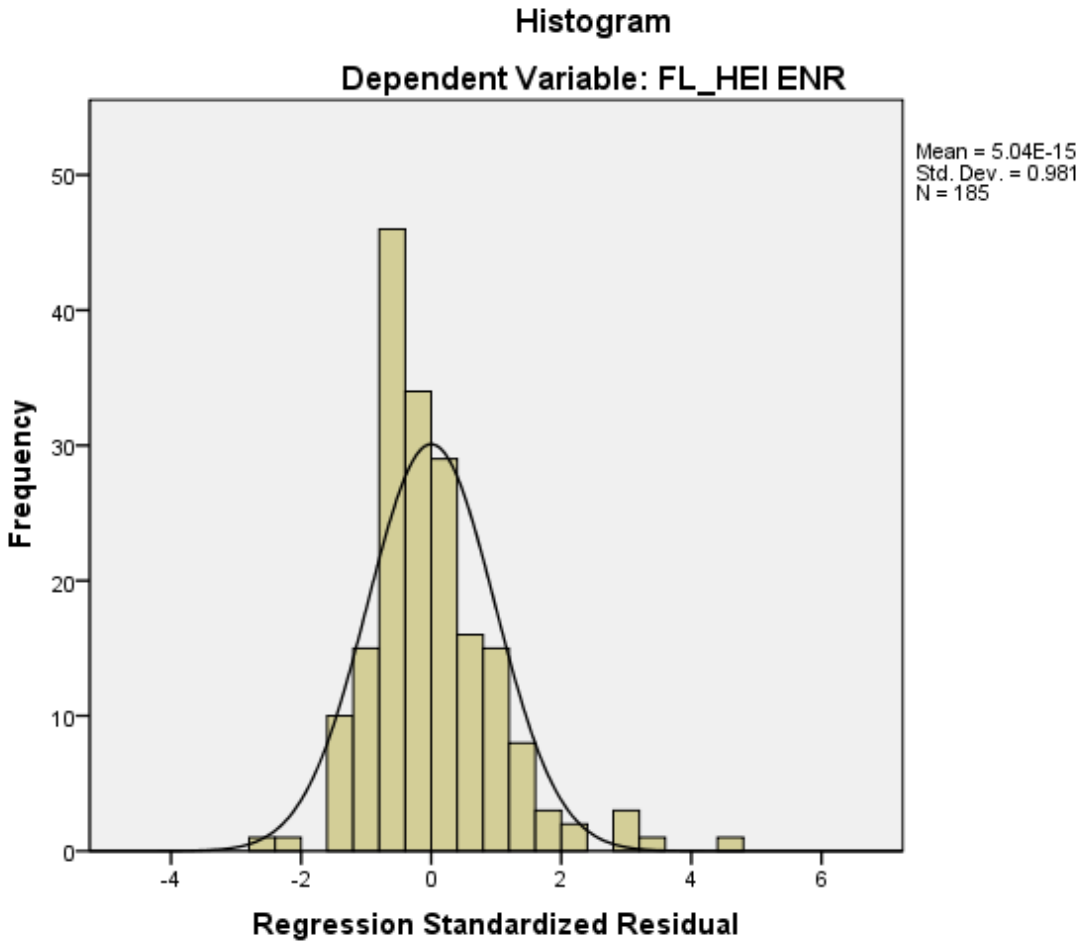


Figure 4-8. Histogram of Regression Standardized Residual

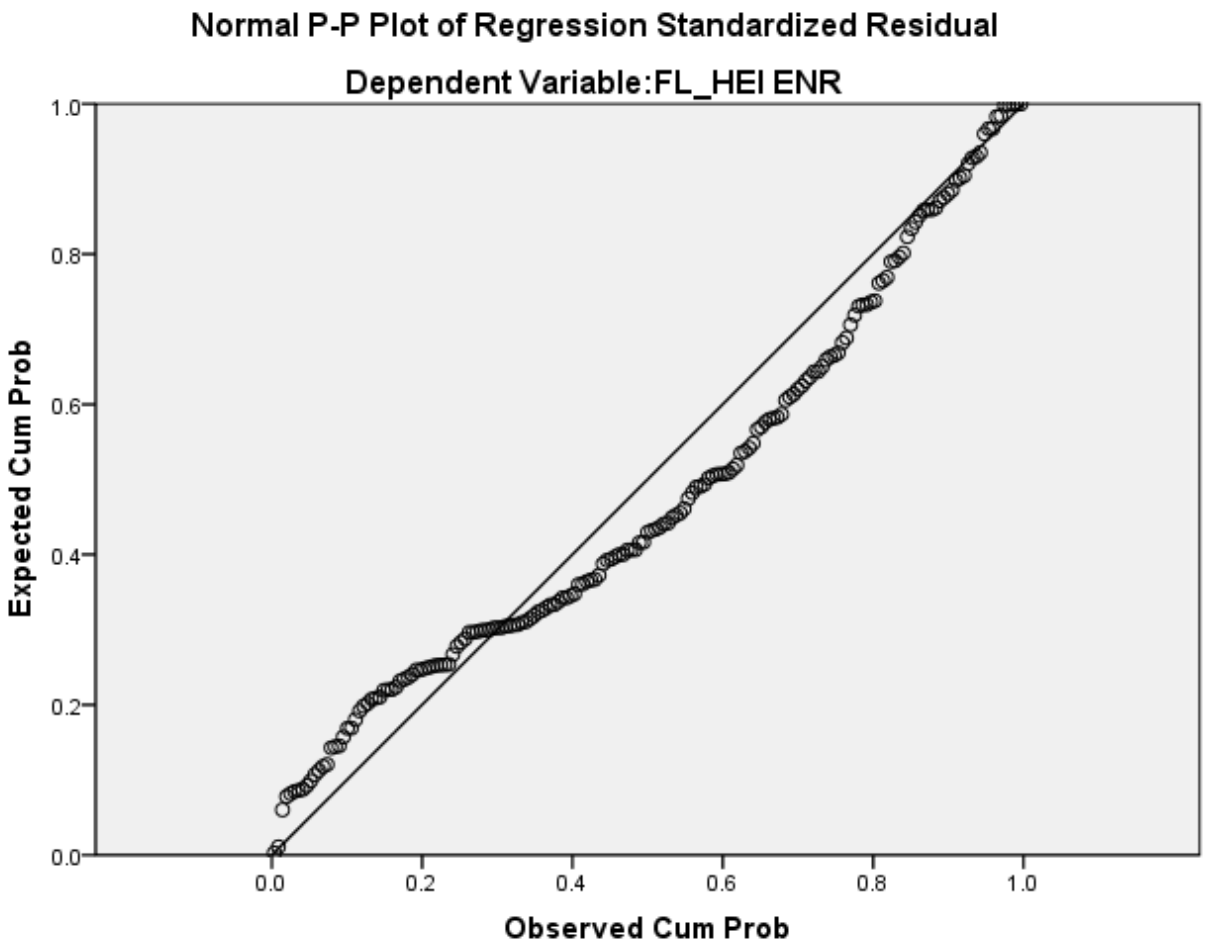


Figure 4-9. Normal P-P Plot of Regression Standardized Residual

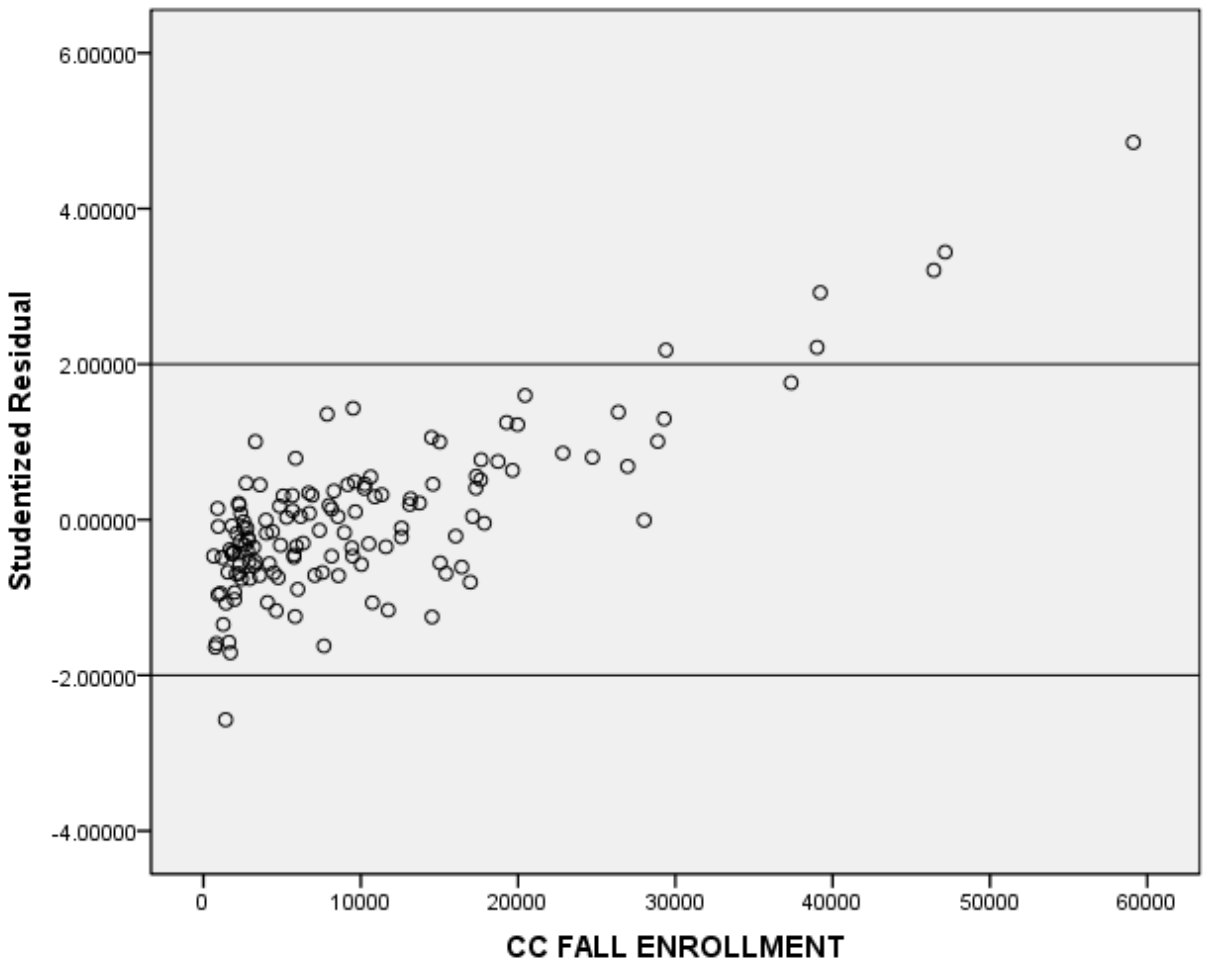


Figure 4-10. Studentized Residuals versus FL CC_ENR

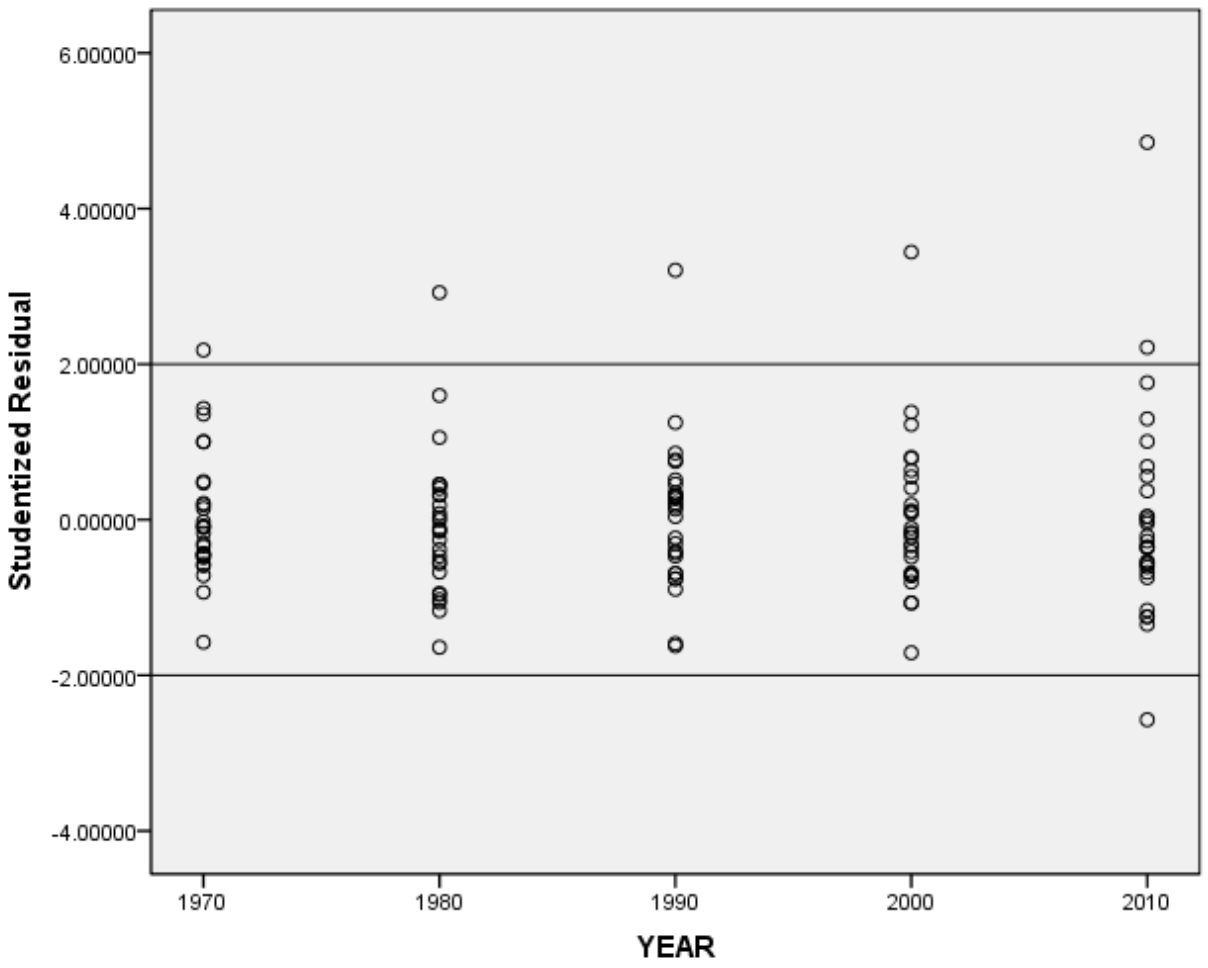


Figure 4-11. Studentized Residuals versus YEAR

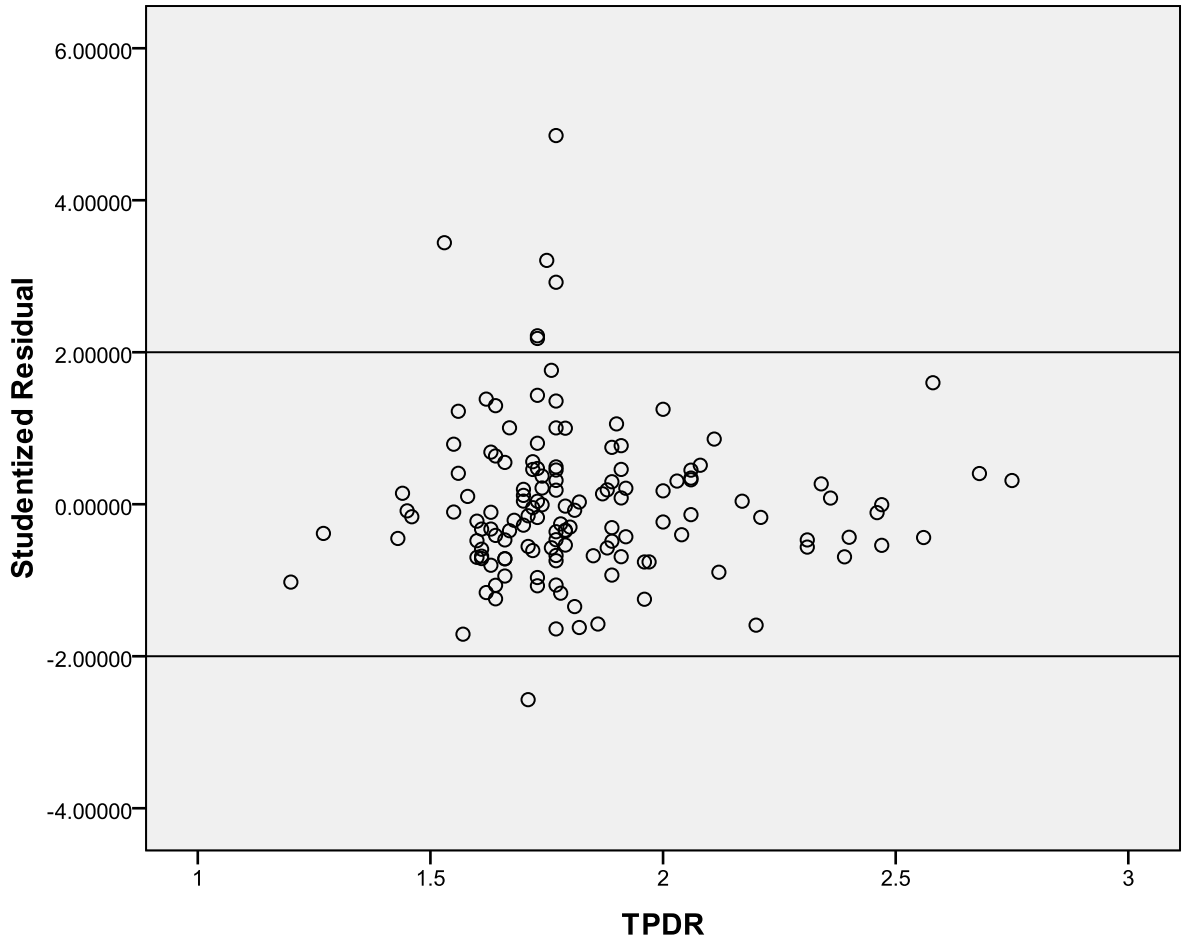


Figure 4-12. Studentized Residuals versus TPDR

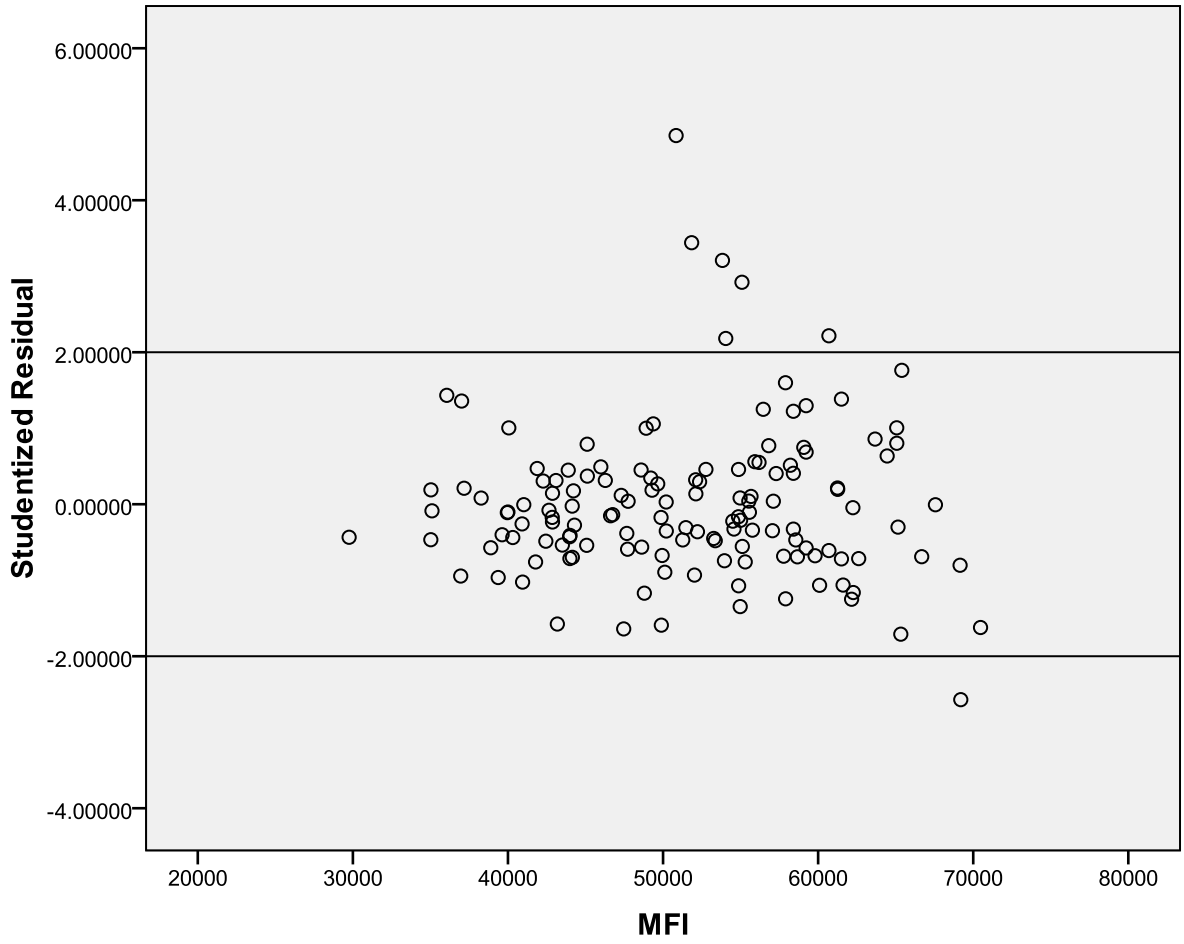


Figure 4-13. Studentized Residuals versus MFI

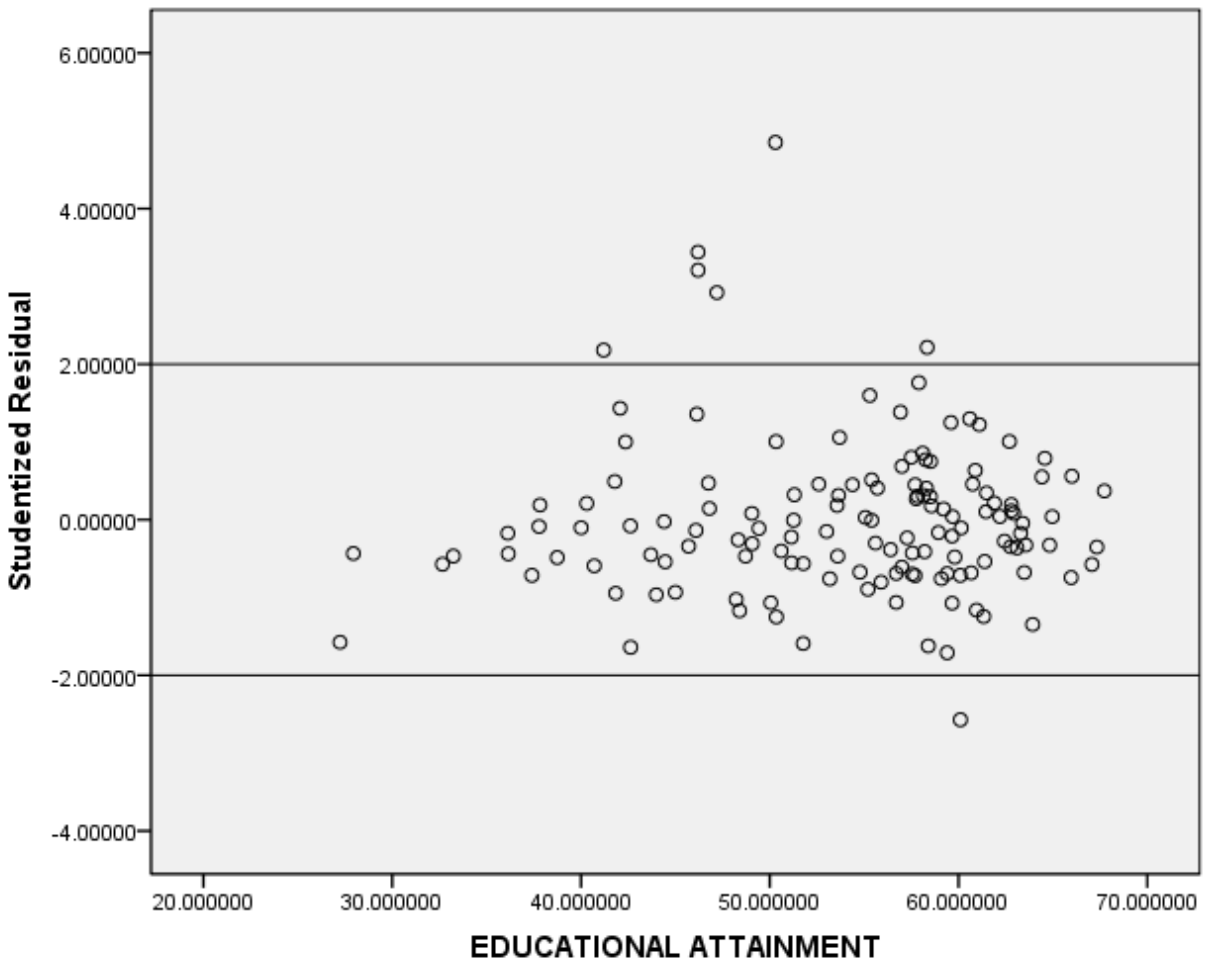


Figure 4-14. Studentized Residuals versus EA

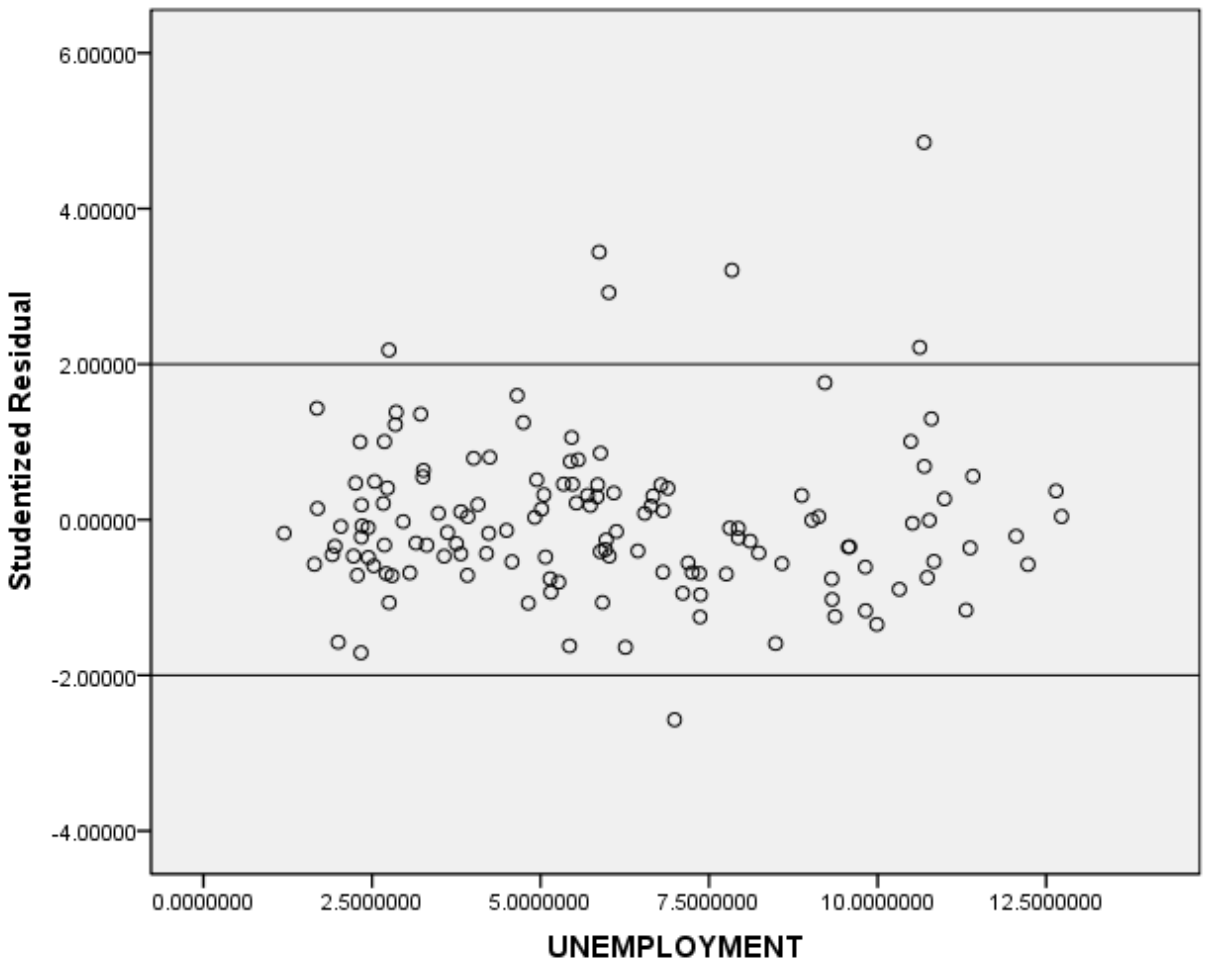


Figure 4-15. Studentized Residuals versus UNEM

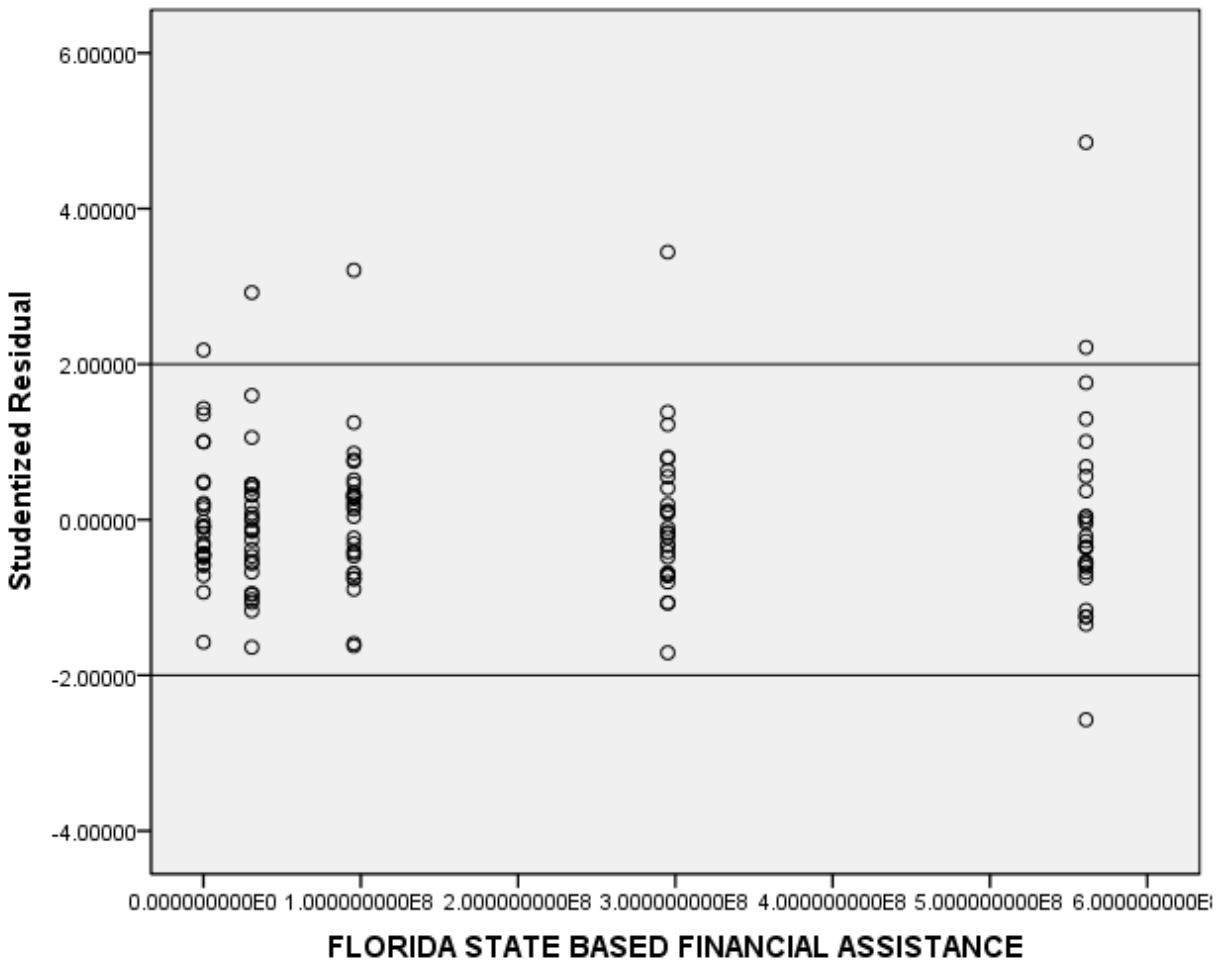


Figure 4-16. Studentized Residuals versus FLSA

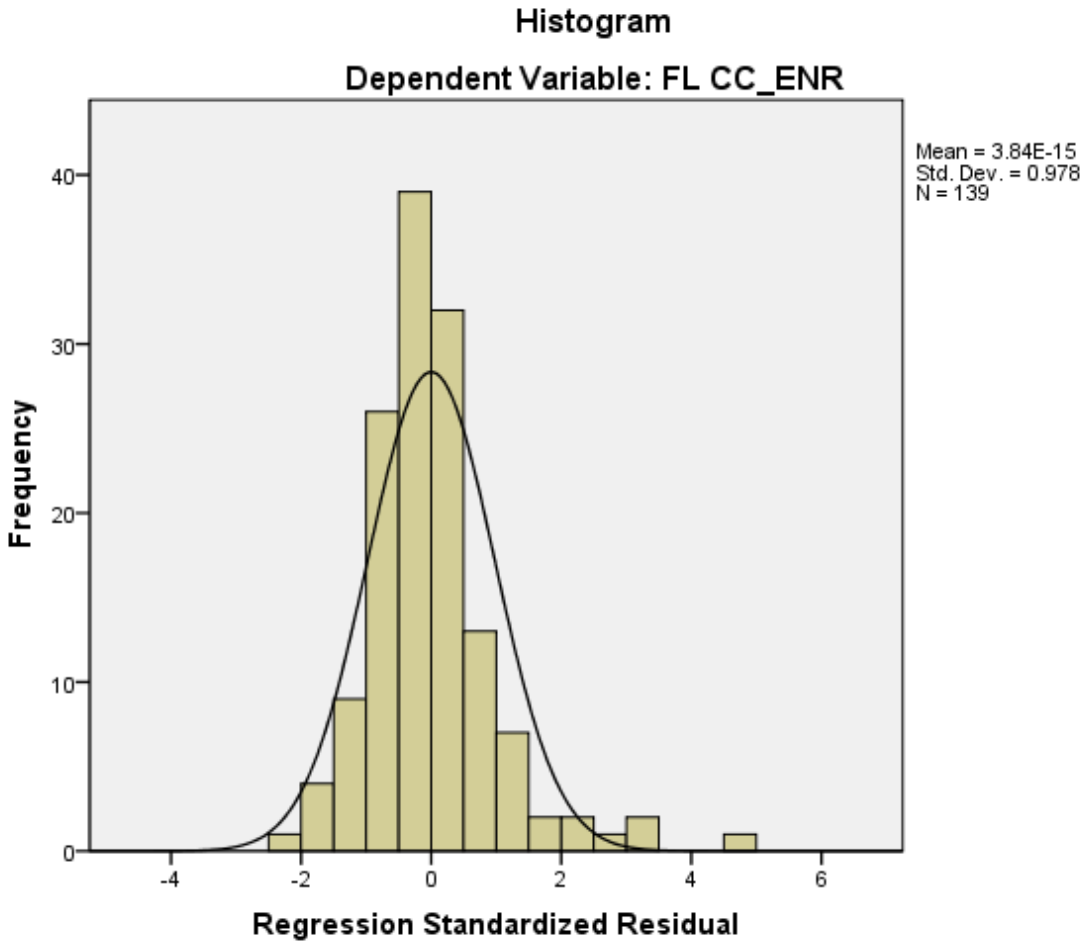


Figure 4-17. Histogram of Regression Standardized Residual

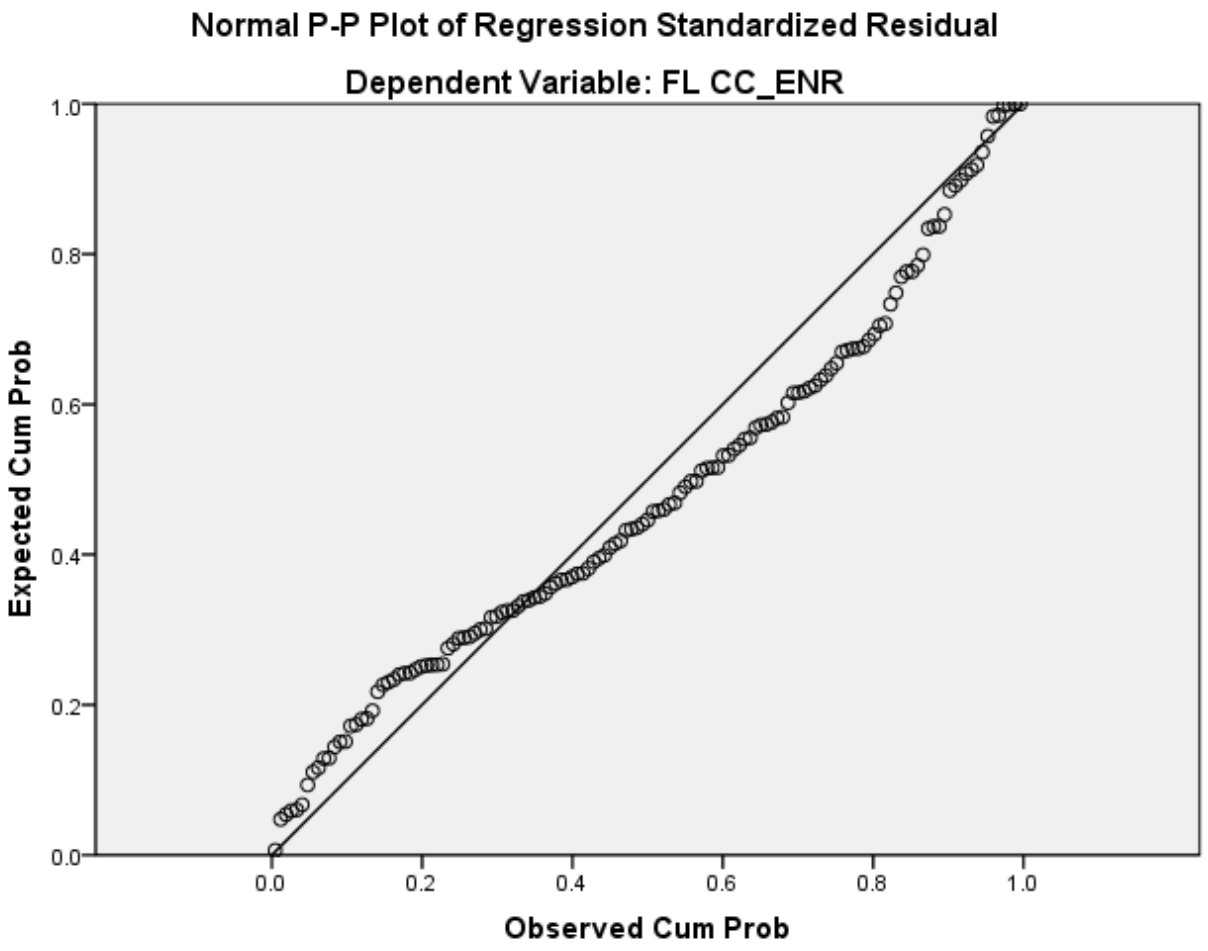


Figure 4-18. Normal P-P Plot of Regression Standardized Residual

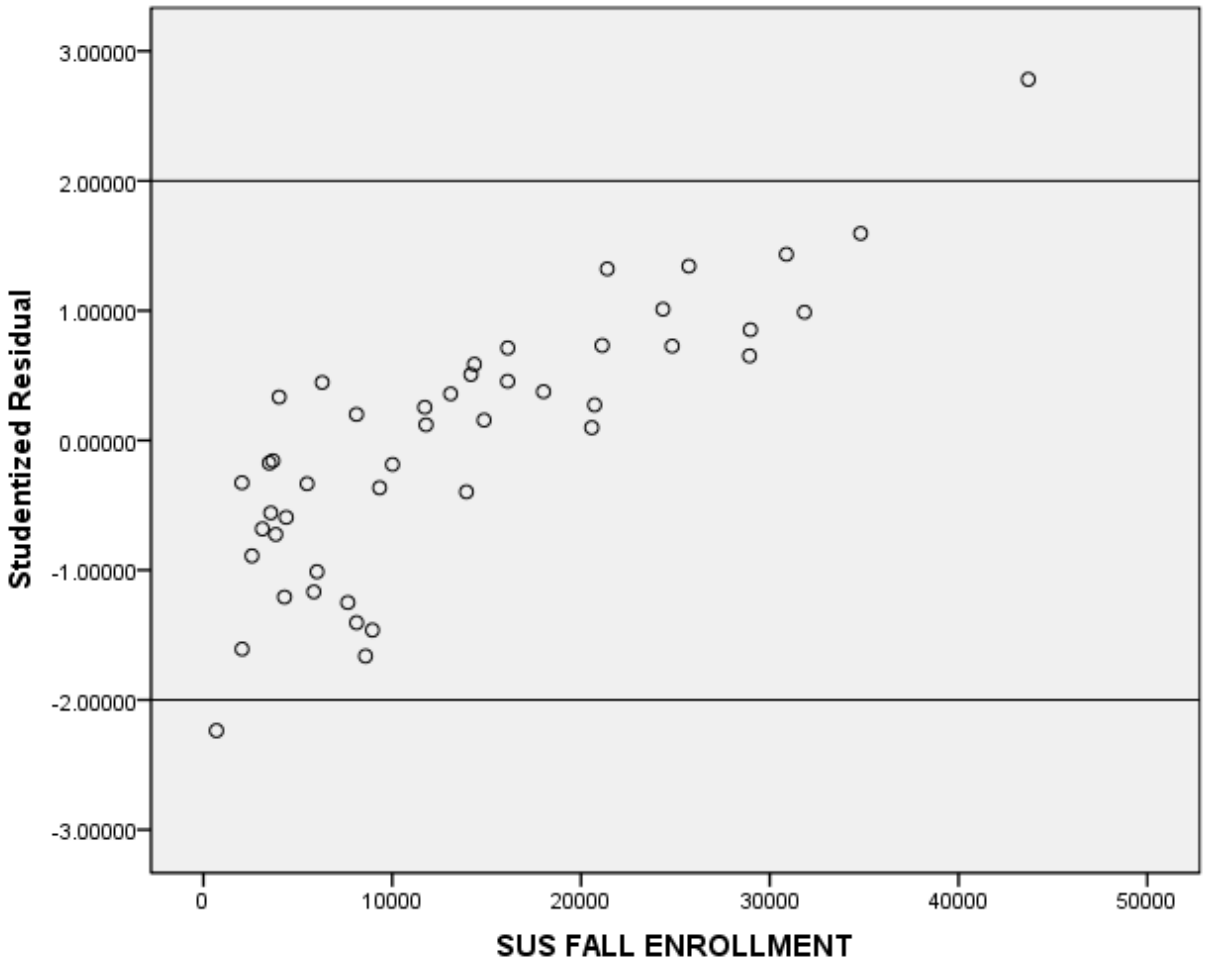


Figure 4-19. Studentized Residuals versus FL SUS_ENR

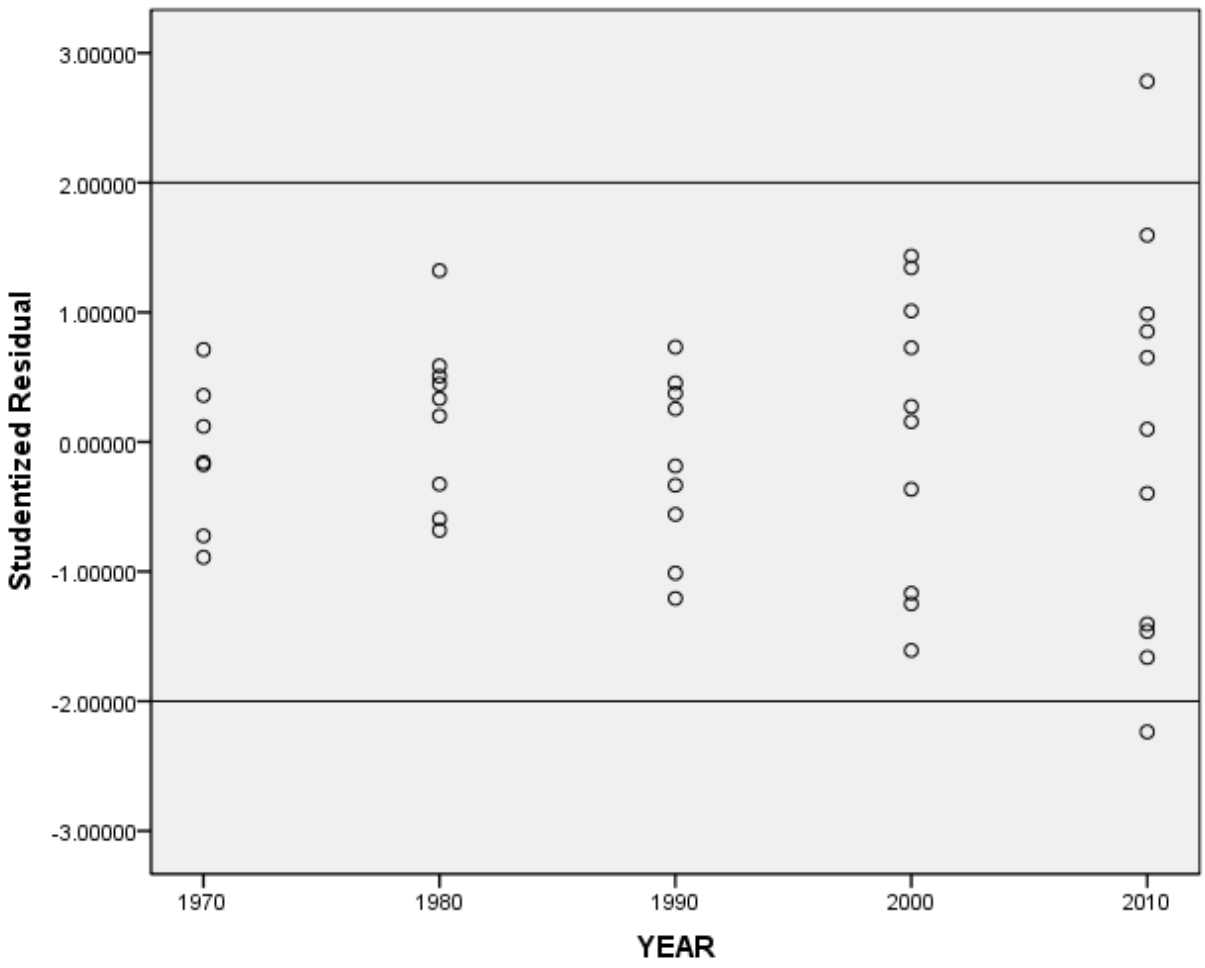


Figure 4-20. Studentized Residuals versus YEAR

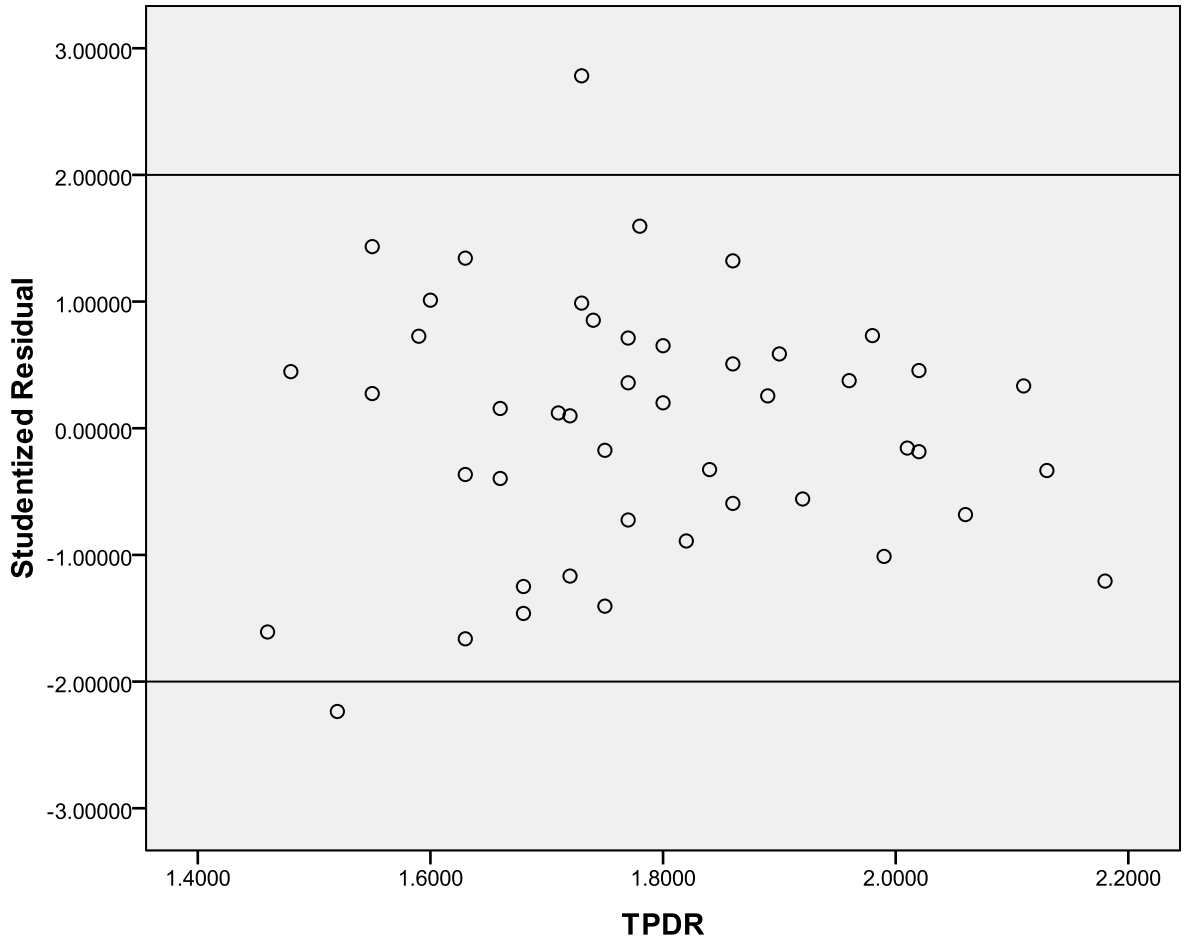


Figure 4-21. Studentized Residuals versus TPDR

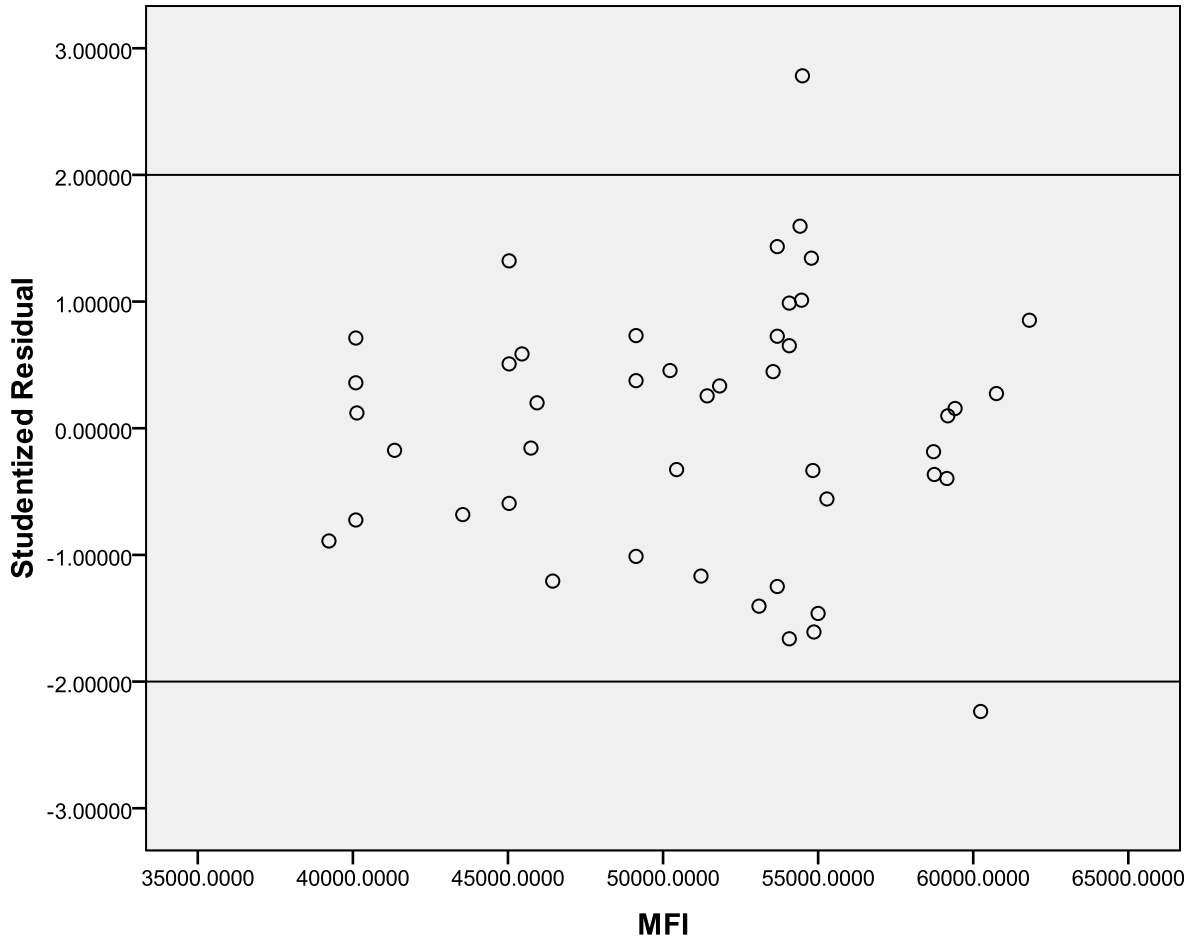


Figure 4-22. Studentized Residuals versus MFI

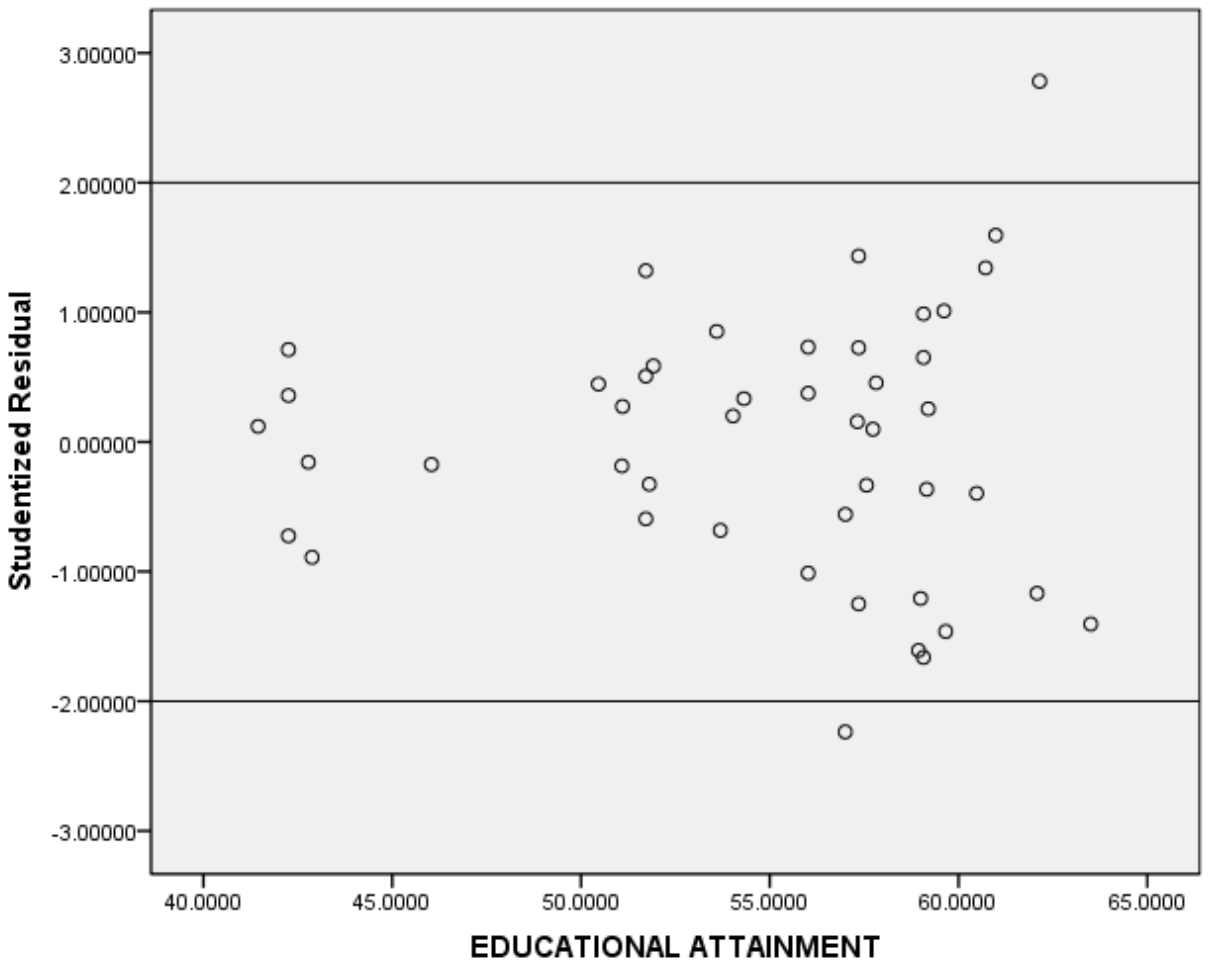


Figure 4-23. Studentized Residuals versus EA

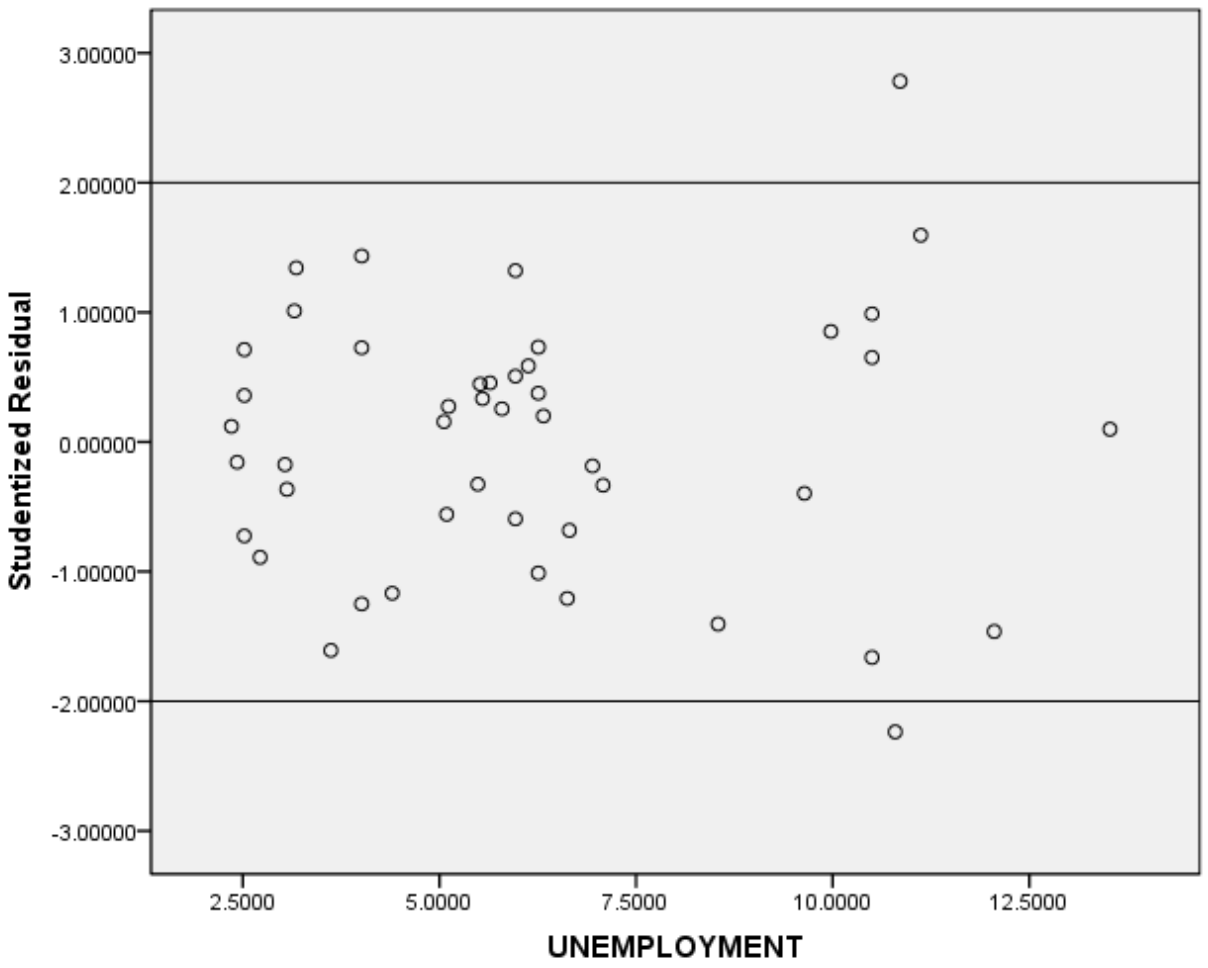


Figure 4-24. Studentized Residuals versus UNEM

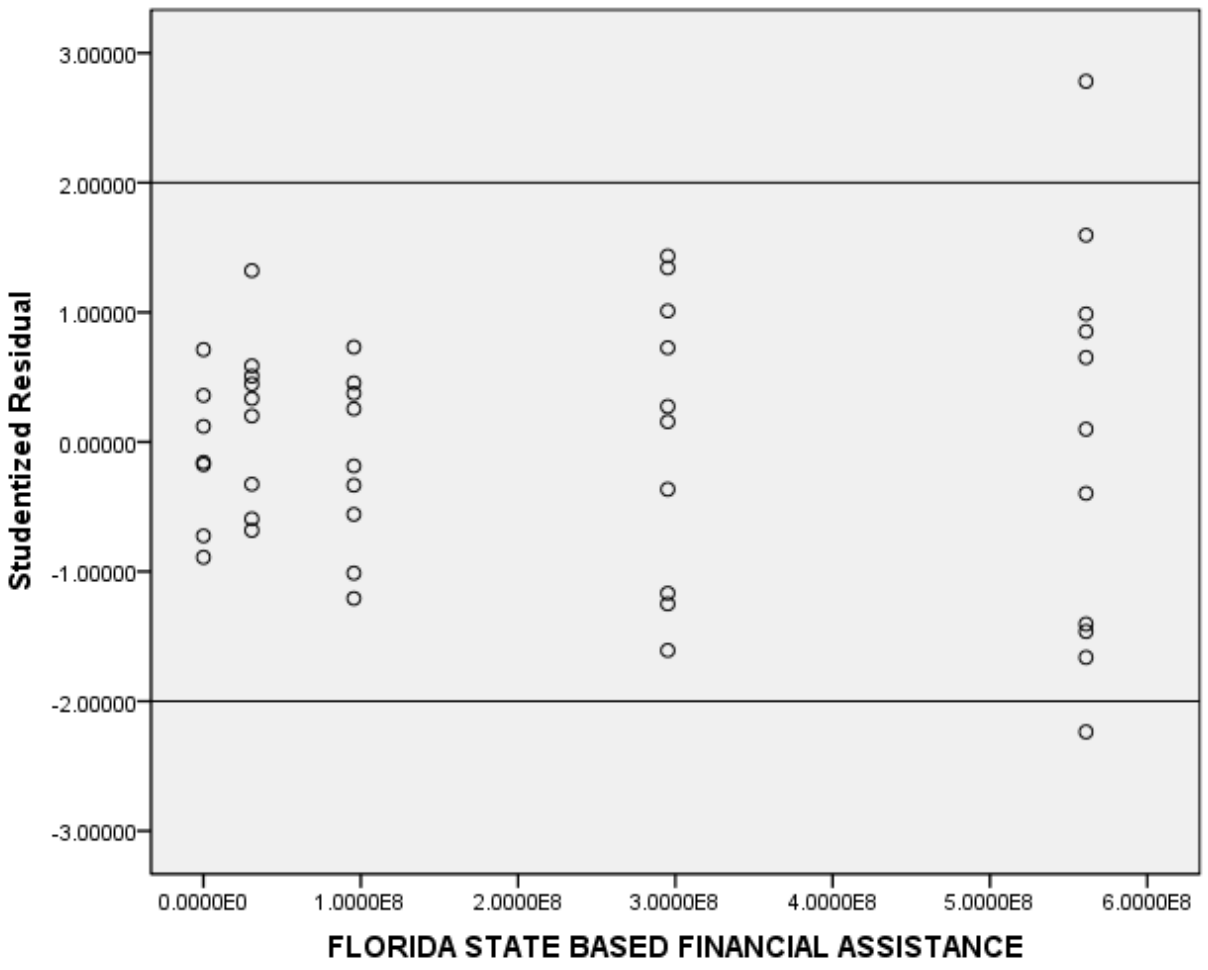


Figure 4-25. Studentized Residuals versus FLSA

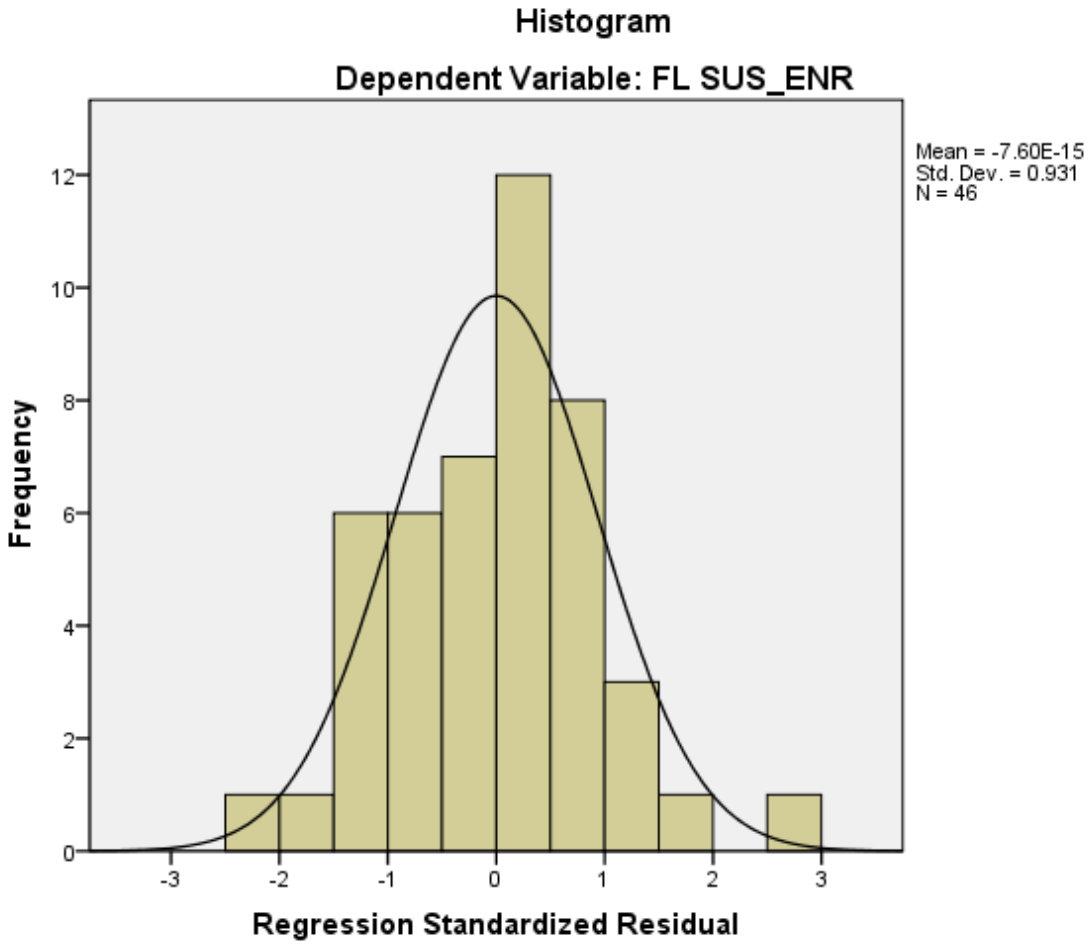


Figure 4-26. Histogram of Regression Standardized Residual

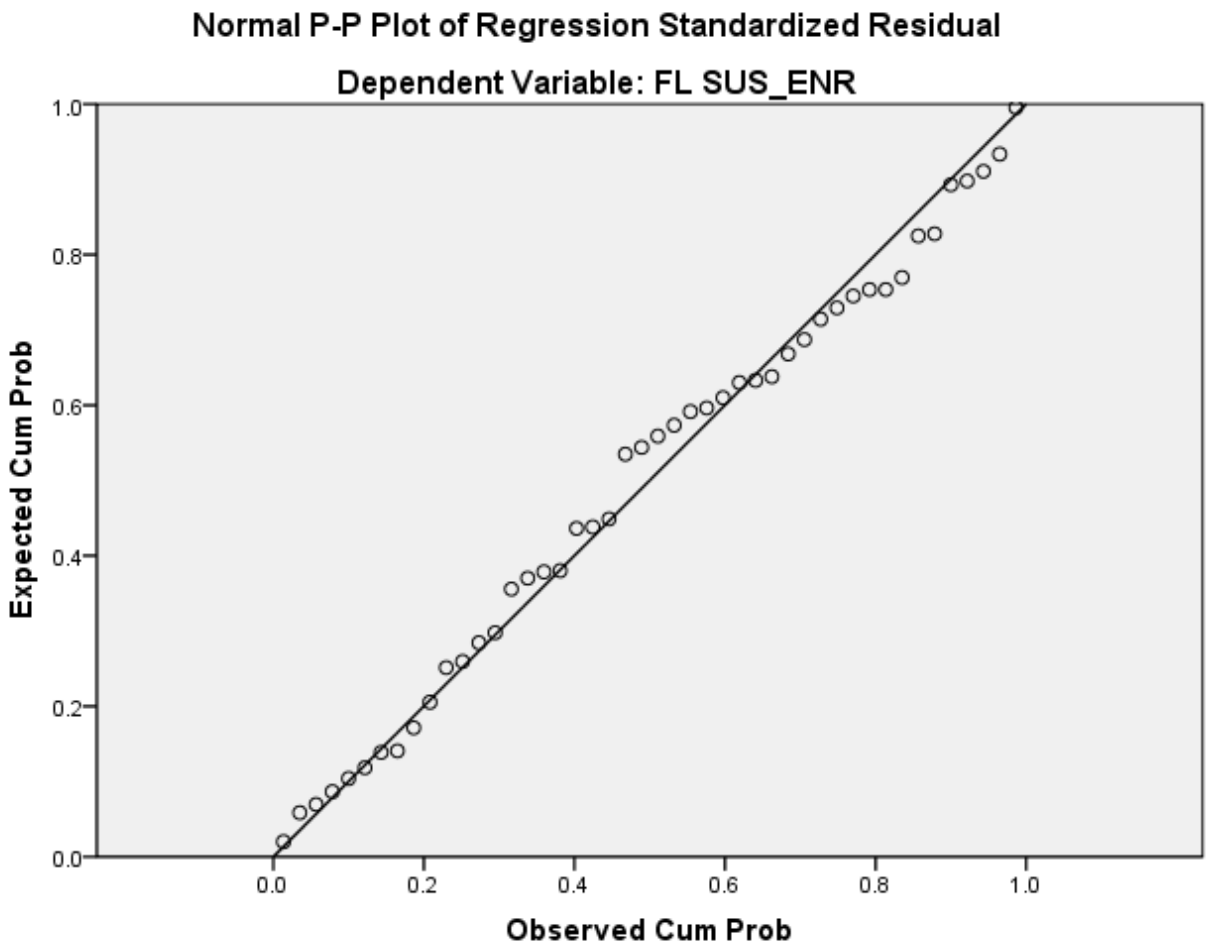


Figure 4-27. Normal P-P Plot of Regression Standardized Residual

CHAPTER 5
CONCLUSION

The nature of postsecondary education participation in the state of Florida has been discussed through the literature and quantitative analysis. This chapter concluded the results of the study, discussed the implications for Florida policy makers, and recommended areas for future research.

Discussion of Results

The purpose of this study tested student price response theory by examining the degree to which providing Floridians access to postsecondary education via the introduction of a lower-priced option, the community college, with consideration of Florida's state resources, was associated with enrollment for the years 1970, 1980, 1990, 2000, and 2010. It was hypothesized that enrollment was not significantly associated with the tuition and fee difference ratio between Florida's public community colleges and state universities and state resources for the years 1970, 1980, 1990, 2000, 2010.

The hypothesis was tested through three multiple linear regression models and statistical analysis. The dependent variables for each model were Fall Unduplicated Headcount for the five years of investigation with the only difference being the type of institution. In the full model, total Florida public higher education enrollment served as the dependent variable and in the two reduced models, community college and state university system enrollments served as the dependent variables, respectively. Through statistical analysis and specifically ANOVA evaluation of the three models, all models were statistically significant; therefore, it was decided to reject the Null hypothesis. In all three models, it was concluded that the tuition price difference ratio

(TPDR) did not demonstrate a statistically significant association with enrollment. Therefore, one could conclude that the claim of the community college institution serving as a low cost option to students seeking higher education opportunities in the state of Florida did not hold true in this model with the included variables of analysis.

The full model accounted for 33% of the variance with the included variables of type of institution, the year studied, the tuition price difference ratio, median family income, education attainment, a county's unemployment rate, and Florida State based financial aid. With the same included independent variables for the reduced models depicting specific community college and state university enrollment, the regression models accounted for 38% and 31% of the variance in enrollment respectively.

In the full model, including all seven independent variables, the regression analysis depicted the following variables demonstrating a significant association with total Florida public higher education enrollment. They included: type of institution, the year examined, median family income, education attainment, and unemployment rates. As noted, there was not a statistically significant association between enrollment and the TPDR or Florida State based financial aid.

In the first reduced model, with inclusion of only community college enrollment as the dependent variable, the regression equation demonstrated a significant association between enrollment and the year examined, median family income, education attainment, and unemployment at the $p<.01$ level. Consistent with the full model, the TPDR and Florida State based financial aid was not significantly associated with enrollment.

In the second reduced model, with inclusion of only state university system enrollment as the dependent variable, the regression equation demonstrated no significant association between any of the independent variables and enrollment at the $p<.05$ level. Although there was no statistically significant associations, there was a trend approaching significant association between median family income and the year examined, $p = .095$ and $.072$ respectively.

Enrollment and Type of Institution.

In the full model, the type of institution was dummy coded as 1 for a Community College System institution and 2 for a State University System institution. In the reduced models, the independent variable type was not included in the predictors, since each model analyzed specific community college enrollment and state university system enrollment respectively. The type of institution was positively correlated with enrollment. This was no surprise since State University System institutions had larger capacity and the ability to enroll larger cohorts of full time undergraduate students. Although, overall in the state of Florida, community colleges collectively enrolled more students as a system, the capacity for higher individual enrollment was greater at the State University System institutions.

Although the type of institution, specifically the State University System institution, was correlated with an increase in enrollment, one must be cautious in predicting a student's choice for attending a specific higher education institution. The consensus within the literature was a student's choice of higher education institution was related to three broad stages (Hossler & Gallagher, 1987; Jackson, 1982). The three stages included, first, the student's desire to pursue postsecondary education, which often began at an early age. The second stage consisted of researching

institutions and finding needed information about admission processes and actually applying to the institutions. The last stage included actual admission, enrollment, and attendance. At this stage, several factors affected the decision including tuition and financial aid packages (Hossler, Braxton & Coopersmith, 1989). Within this study, increased enrollment associated with the State University System institutions could have been a result of institutional aid which positively affected students' enrollment.

Lastly, this will be something important to monitor in the next five to ten years with the increasing number of community colleges offering baccalaureate degrees. It could be that those regionally placed individuals would be more likely to attend a state college rather than base their decision on the more commonly accepted student choice models.

Enrollment and Year of Analysis.

The year of analysis was positively correlated with enrollment in all three regression models. The results of the models, in this study, were consistent with other research studies examining enrollment. During the past 40 years, as the time period examined in this study, individuals vastly increased their participation in seeking out higher education opportunities. As noted in the literature, much of the response to attendance was based on human capital theory. Another explanation for the increased level of attendance was the initiation of programs that provided the means to afford or finance postsecondary education opportunities. Two such program that drastically increased access was the Higher Education Act and Educational Amendments of 1972 (PL 89-239, Alexander, 2003).

Enrollment and Tuition Price Difference Ratio

The student price response theory investigated in this study operationalized as the difference between the cost of tuition and fees at Florida's State University System institutions and Florida's Community College System institutions did not demonstrate a statistically significant association with enrollment. This claim was also consistent in both of the reduced models investigating specific enrollments at each institution type. Although there was not a significant association between the TPDR and enrollment, the trend was that in both the full model and the community college specific model, the TPDR was negatively associated with enrollment. The opposite was true in the state university system specific model.

As analyzed in this study and concluded, the community college was not serving as a low cost entry point for students seeking postsecondary higher education over the forty years of investigation, but was consistent with the work of Mullin and Honeyman (2008). This was interesting to the researcher because, as proposed, as the gap in tuition and fees between the cost of attendance at the community college and state university system increased, it was believed that this would have actually increased enrollment at the community colleges. These results were in contrast to Kane (1995). That study suggested that as tuition increased at four-year institutions, it would increase the effects of students attending community colleges. However, this study suggested, through the second reduced model, the increased TPDR was positively associated with increased enrollment at the state university system institutions.

This phenomena required more investigation by the researcher and could be analyzed through several different theoretical lenses. Once again, one could examine these results through higher education student choice models. Several factors included

individual student characteristics, institutional characteristics, and other contextual factors such as parental or peer influences may have affected the student's decision in enrolling at a specific institution regardless of the increased price difference in tuition and fees between the community college and state university system institutions. (DesJardins, Ahlburg, & McCall, 2006)

Another possible lens to examine the scenario outlined in this study was through the human capital theory. One could propose that those students seeking a four year degree would eventually realize larger lifetime earnings. Shin and Milton (2008) posited that disciplines expected to result in high rates of return were less sensitive to tuition level increases. This was a result of students anticipating higher rates of return for their initial investment as compared to those disciplines with lower rates of return. Furthermore, they suggested that colleges apply diverse tuition rates for academic majors by considering rates of return, but also these colleges needed to be mindful of the demographical changes of students enrolled in these majors.

Lastly, one could analyze the effects of the TPDR on enrollment by the amount of financial assistance available to the students. Although for the point of this study, financial assistance was limited to Florida State based financial aid, the federal government provided the largest source of aid for the state of Florida (Sanchez-Penley, et al., 1997) and included federal loans and grants. It was well documented in the literature the impact that financial assistance had on students' ability to attend postsecondary education opportunities. The literature also discussed this as fiscal revenue sources for institutions. Initially, student financial aid awards were intended to reduce the monetary cost of attending a postsecondary institution but became an

equalizer in allowing students to freely choose his or her desired higher education institution of attendance (Tierney, 1980)

It could be assumed that lower income families were granted more financial aid due to financial aid formulas, thus increasing their enrollment at SUS institutions. However, this was often not the case. Coles and Baum (2005) concluded that too many qualified low income students did not go to college because they believed that they could not afford it, even though they may have been eligible for sufficient financial aid. Mumpher (1996) further concluded that lower income families were often unnecessarily discouraged. He noted that these families made college attendance decisions on exaggerated estimations before they knew the type of financial assistance available to them.

Enrollment and Median Family Income

Median family income had a significant association with enrollment in the full model and community college reduced model. In the state university model, it was approaching significance. As indicated in the literature, one's ability to pay for postsecondary education was associated with the reality of actually attending postsecondary education. As indicated in the full model, as an individual's median family income increased, there was a positive association with enrollment. This was also congruent with the literature which suggested those individuals at the lower socioeconomic scales were more responsive to the cost of attendance at postsecondary education institutions. Specifically, St. John and Starkey (1995) and Heller (1997) concluded that low-income students were the most sensitive to increased tuition and fee charges. Therefore, with community colleges serving the local populace, those earning the median family income were most served by this type of institution.

Of particular interest to the researcher was the negative association that median family income (MFI) had with enrollment at the State University System institutions. The reduced regression model suggested that as an individual's median family income increased, it negatively reduced enrollment to this type of institution. One could conclude that as median family income increased, these students may have been seeking other types of institutions to enroll into, such as private institutions. This could have been made possible by the student financial assistance available to students lowering the actual costs of attending private institutions (Tierney, 1980). Hill, Winston, and Boyd (2005) found that the actual cost of attending private institutions was often much cheaper for students than attending public institutions due to the ability of private higher education institutions to discount the tuition and fee price charged to students and their families. However, they concluded that the greatest discount were for those students who demonstrated the greatest financial needs. Therefore, the phenomenon, which was presented in this study, was interesting once again to the researcher when analyzing this through the human capital theory. One would have proposed that students would seek to earn the greatest return on their investment; thus, electing to attend a public state university over that of a private university.

Enrollment and Education Attainment

Education attainment as defined in this study was a county's population of individuals who were 25+ with a high school diploma but without a four year degree. In this study, there was a significant association between enrollment and education attainment in the full regression model and the community college specific model. However, there was not a significant association between enrollment and education attainment at the State University System possibly indicating that those seeking a four-

year degree at State University System institutions would have already attained that education goal by the time of reaching the age of twenty five.

In all three regression models investigated in this study, there was a negative association with a more educated county populace and enrollment over the past forty years in Florida public higher education institution. The negative association was less in the full model and community college models as compared to the state university system only model. The results of the study suggested that as the percentage of more individuals 25 years and older with a high school diploma but not a bachelor's degree increased. The number of individuals seeking four year higher education degree opportunities decreased. They may have been redirected to other areas of employment not requiring a four-year degree. Another possible explanation, since the negative association was less with the community college model, was those individuals were seeking two-year associates' degrees. Although not part of this study, it would be interesting to examine these phenomena with enrollment in community college certificate and workforce training programs.

Enrollment and Unemployment

The unemployment rates calculated for this study were based on annual averages for a particular county and when an institution served more than one county, the rates were averaged for the years of investigation. There was a significant association with a county's unemployment rates and enrollment in the full regression model and the reduced community college model. However, when analyzing the regression coefficients, there was not a significant association demonstrated between unemployment rates and State University System institutions' enrollment patterns.

In the full model and community college specific regression models, there was a positive association between unemployment and enrollment. Essentially, as a county's unemployment rate increased, this predicted an increase in higher education total enrollment and community college enrollment respectively. Shin and Milton (2006) cautioned the interpretation of these results noting that studies utilizing total enrollment could have found a greater impact of unemployment rates than studies utilizing smaller enrollment samples.

In contrast, the State University System specific model demonstrated a negative association between the unemployment rate and enrollment. This was particularly interesting to the researcher after reexamining this specific study and the effects of median family income and the negative association with increased median family income and enrollment. One would propose that as the unemployment rate increased, which would create a reduction in the ability to pay by the students attending state university systems, that enrollment would be positively associated with the unemployment rate phenomenon. This was not the case demonstrated in this study. In contrast, when unemployment rates increased, state university system enrollment actually decreased. The situation demonstrated in this study was congruent with earlier research on unemployment and enrollment. As posited by Betts and McFarland (1995), potential students were essentially forced to enroll in the lower cost higher education option.

Another lens to view this phenomenon was through an avoidance of entering the workforce. Essentially, as a county's unemployment rate increased, those unemployed sought enrollment at the local community college for job retaining or as a diversion from

the employment sector. Heller (1999) found a significant effect between two-year colleges and enrollment, in relation to unemployment rates. He concluded that as employment possibilities lessened, individuals were more likely to enroll in community colleges as an alternative to entering the workforce. This same scenario was explained by the regression analysis in this study.

Enrollment and Florida State Financial Aid

Florida State based financial aid never demonstrated a significant association to student undergraduate enrollment in any of the three models. Furthermore, the association with Florida State based financial aid was negatively associated with enrollment in all three models as well. This was intriguing to the investigator because essentially, with state based aid, it created a false market allowing others to pursue education that would typically not have pursued higher education opportunities. It could be that students in the state of Florida relied on other means of financial assistance, such as student loans and other government subsidiaries, not accounted for with Florida State based financial aid. Another possible explanation about the negative enrollment patterns presented and the state provided financial aid, could have been that students sought enrollment in other institutions not accounted for in this study. This supports the research by Jackson (1978) which suggested that several factors account for enrollment decisions and if often more related to student choice. Lastly, as noted earlier, the largest contributor to financial assistance to students enrolled in the higher education institutions in the state of Florida was the federal government.

Directions for Future Research

The nature and framework of this study has provided several opportunities for further analysis in the state of Florida. Recently with the expansion of the Community

College System to the State College System, future studies could examine the State College Systems institutions offering baccalaureate degrees as an alternative to baccalaureate production at the State University System institutions.

As noted, the tuition price difference ratio (TPDR) utilized in this study was considered a low cost estimate of the cost of attending postsecondary education institutions. In future studies, researchers could expand the TPDR by including the total cost of attendance to include housing, meals, book costs, and other living expenses and then compute a ratio between the State College System and State University Systems. Furthermore, as state universities have begun to implement differential tuition, this could be examined as well. Lastly, as discussions have developed with Florida's State University System institutions beginning to implement block tuition, one could compare this tuition and fee structure to that of the State College System.

In comparison to the cost of attending postsecondary opportunities in the state of Florida, further research needs to be conducted on the impact of all financial aid sources and the effect on college enrollment. This will be particularly interesting with new financial aid policies being implemented both at the national and state level. Such changes include the larger per student Pell grant awards and the elimination of Bright Future scholarships covering full tuition costs. Furthermore, with the implementation of differential tuition, institutions have been legislatively required to place a percentage of this increased institution revenue into need based financial aid programs.

Lastly, the premise of the study could be further investigated through other participants' characteristics. This could include, but not be limited to, gender, race, first

time in college, and/or socioeconomic status. In addition, one could investigate the impact of attendance and future earning of a particular degree or area of specialty.

Implications for Policy Makers

The results of this study suggested that enrollment at a lower cost option in this case the community college, in the state of Florida, was not being maximized. In the case presented in this study, an increase in the tuition and fee gap decreased enrollment in community colleges. Therefore, as outlined in Mullin and Honeyman (2008) it may have been the case that the state of Florida should negate the tuition and fee difference associated with attending public higher education institutions for undergraduate education in the state of Florida.

Mullin and Honeyman (2008) further noted that with a large tuition and fee gap between community college and undergraduate institutions, a case could be made for the community colleges to offer baccalaureate degrees to maximize baccalaureate postsecondary education affordability. This claim was recently reinforced by the work of Romano and Djajalaksana (2010). They noted it was actually more expensive, to the public, to educate students for the first two years of a bachelor's degree at the community college. This work refuted earlier claims by Rouse (1998) that concluded it was more expensive to educate students at four-year institutions. Therefore, Romano and Djajalaksana (2010) suggested that community colleges be converted to lower-cost bachelor's degree producing institutions to help maximize state resources. This would also assist those students with limited financial means. Romano and Djajalaksana (2010) further concluded that this would also help to account for the research that suggested students that began a bachelor's degree at a community college were disadvantaged.

The community colleges becoming baccalaureate degree producing institutions has become a growing scenario in the state of Florida. The state of Florida was home to the largest number of community colleges authorized by the state to confer the baccalaureate degree (Floyd & Walker, 2009). The vast number of institutions authorized to provide baccalaureate degrees has been a state response to try and fulfill the supply. For example in 2006, Florida was 43rd out of 50 states in the production of bachelor's degrees per 1000 residents between the ages of 18 and 44 (Pappas Consulting Group, 2007). However, one must also look at the actual headcounts in the baccalaureate programs offered by the community colleges and the fact that their impact on baccalaureate production should not be overstated (Floyd & Walker, 2009). In fact, at the conclusion of the 2007-08 academic year, there was a total head count of 5,333 in Florida state colleges' baccalaureate programs. Therefore, it was evident that they were making modest contributions to expanding access to baccalaureate degrees (Floyd & Walker, 2009). Therefore, it is imperative to continue to analyze and implement strategies to improve baccalaureate degree production at the state colleges.

Although this study suggested an increase in the number of Florida community colleges to offer baccalaureate degrees, this study also suggested that the community college in Florida should continue to consider the polices of open access admissions and be able to continually respond to the local community educational needs. As noted, when a county's unemployment rate increased, this in turn provided an increase in the number of students enrolled at the community college. Therefore, in times of economic distress and increased unemployment rates, the community colleges needed to remain as an entry point for a population that would potentially not be seeking postsecondary

education. Furthermore, it would be beneficial for college administrators to monitor economic forecasts when planning for future enrollments. These results supported the conclusions by Betts and McFarland (1995) that suggested policy makers need to consider countercyclical funding for community college training.

A county's unemployment rate had a negative impact on State University System enrollment. As concluded in the study, as the unemployment rate increased, student enrollment decreased at the SUS institutions. This would suggest to policy makers that during periods of economic recession, the SUS tuition and fees should be more comparable to the community college tuition and fee structure, in order to maximize enrollment in all Florida higher education institutions. This has suggested that policy makers target institution based financial aid programs more towards need-based aid versus merit-based aid. It further supported the need to enhance other need-based aid programs to help offset ones decreased ability to pay for attendance at SUS institutions.

Lastly, it was demonstrated in the full model that total public higher education enrollment was positively associated with median family income. This is important for policy makers to consider when setting tuition and fee charges. This reinforced other research and claims for the increased demand of need-based aid for those most susceptible to the financial pressures of attending higher education. This was also congruent with enrollment at the community colleges.

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BIOGRAPHICAL SKETCH

Shawn Felton was born in 1977, the only child of Eddie and Mary Ann Felton. He lived in Terra Alta, West Virginia for 18 years and graduated from Preston High School in Kingwood, West Virginia in 1995. He received his B.S. in Athletic Training from West Virginia University (WVU) in 1999. He went on to earn his M.Ed. from the University of Louisville (U of L) in Sports Administration in 2001.

Upon his graduation from WVU in 1999, Shawn was hired as a Graduate Assistant Football Athletic Trainer at the U of L while he pursued his master's. In 2000, he was promoted to the Assistant Football Athletic Trainer and adjunct instructor where he remained until his resignation and moved to Florida in 2004. In July 2004, he joined Naples Community Hospital (NCH) as a Head Athletic Trainer for one of the local county high schools and was promoted to the Athletic Training Coordinator, supervising a staff of eight, in June 2005. Also during this time, he served as an adjunct instructor for the Athletic Training Education Program (ATEP) at Florida Gulf Coast University (FGCU).

In September 2005, he joined FGCU full time as the Clinical Education Coordinator and as an Instructor I for the ATEP. Shawn was instrumental in the initial national Commission on Accreditation of Athletic Training Education (CAATE) accreditation of the ATEP. He was promoted in June 2010 to Instructor II.

Shawn resides in Estero, FL with his wife, April. They have one daughter, Delaney.